Energy Justice in Dhaka's Slums

PhD Thesis

Submitted to

University College London

by

Mark Leonard Gregory Jones

The Bartlett Development Planning Unit

31 December 2020

Dedicated to

Derek L G Jones
LFRAIA

Acknowledgements

My primary thanks for this PhD are extended to Dr Alexandre Apsan Frediani, my supervisor, for his unwavering support though this whole journey. Alex's guidance on academic process, research rigour, and on the evolution of my topic have been invaluable and highly influential. I have enjoyed dozens of stimulating and enriching sessions with Alex over three years in discussing the details and direction of my research, certainly a highlight of my PhD process. Thank you also to Dr Julio Dávila and Dr Colin Marx of the DPU for early guidance on the way of a doctorate, and to Colin for ongoing support throughout the PhD. Other supportive and helpful DPU staff have included Dr Pascale Hoffman and Michael Casey-Gillam. Special thanks too are extended to my secondary supervisor, Dr Xavier Lemaire, for his valuable input, especially a thorough review of my first draft thesis.

For encouraging my original PhD application to the DPU, I am grateful to Dr Nigel Mehdi of the University of Oxford, and to Dr Vanesa Castán Broto of the University of Sheffield. My thanks to Nigel and Vanesa for sending me on this rewarding path.

I received an extraordinary boost to my PhD when in 2018, Professor Nurul Islam Nazem of the University of Dhaka agreed to act as my honorary tertiary supervisor. Professor Nazem provided advice on case-study selection, methodology and fieldwork procedures, coordinated preparation of a site map for use in my study, provided general background information on relevant political events and conditions, suggested useful contacts in Dhaka, supported my appointment as a visiting academic at UD, and organised research assistants from within the student body. This has been an immense and extremely generous contribution, which really has facilitated the whole study. I shall remain forever grateful to Professor Nazem.

The School of Architecture at my home university, the University of Queensland, hosted me for many months during the period of my PhD. This provided me with a productive workspace and access to many academics with relevant expertise, with whom I could discuss my work. Additionally, the School invited me to present my work in various formats. For this experience, thank you to Head of School, Dr Cameron

Bruhn, and particularly to my friend, Dr Chris Landorf, who invited me into this stimulating world, and provided a great deal of encouragement and advice in my PhD work. A genuinely happy outcome of this PhD is the set of friendships that I have established at UQ Architecture.

For my fieldwork, I was remarkably fortunate to have my close friend, Wendy Truer, accompany me to Dhaka for several weeks. Wendy and I shared a special experience in Dhaka and in Kalyanpur Pora Bostee, the case study slum. Having Wendy lead the female interactions was extraordinarily beneficial, and her moral support in a difficult environment helped me enormously. S M Younus, my translator and cultural guide, has been a wonderful support through these years, and he has become a friend. Also, to my research team lead by Monojit Saha, I am more than thankful. Other team members were Sauda, Sakura, Royon and Mamun. We all really enjoyed our work as a team in the slum.

Next, I wish to mention two Bangladeshi academics who supported and influenced my work: Salma Shafi of the Centre for Urban Studies and Assoc Professor Anwar Hossain of the University of Dhaka. Thank you both for your positive input. Additional thanks are due to Dr Alexander Mebius, formerly of the University of Oxford, for detailed reviews of some key chapters and particularly for helping me with academic language. I must also mention the supportive and affable staff at the Weston Library of the Bodleian in Oxford, with whom I calculate I spent at least 750 days. Special thanks to librarian, Nik O'Toole and her colleagues Sam and Oliver. This has been a wonderfully productive and happy workspace for both my Masters and my PhD years.

As would apply to most PhDs, I have been well-supported by my family in the PhD endeavour. Encouragement from my parents, siblings, and from my sons has kept me motivated through the PhD years. Above all, special thanks to my wife Claire, who encouraged me through the lows, the highs, and the long, hard grind of the PhD journey, from the initial application through to completion. I shall always be deeply grateful for her steadfast belief and support over these years.

Certainly, my greatest appreciation goes to the people of Kalyanpur Pora Bostee. My colleague Wendy and I were warmly embraced by the people of the bostee. The interactions and friendships with the bostee people have been the greatest joy of my PhD. We shared many enjoyable conversations, laughter, and tears with these remarkably resilient people. For men, women and children to live under such deprivation and injustice, and yet to remain positive about life, is inspirational. I was really privileged to have this life-affirming experience with the people of Kalyanpur Pora Bostee.

Wendy Truer and friends

Declaration

I, Mark Leonard Gregory Jones confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

Access to energy is widely acknowledged to be a fundamental determinant of human wellbeing and a key element of poverty alleviation. The UN Sustainable Development Goal SDG7, target 1 demands that by 2030, we are to *'ensure universal access to affordable, reliable, and modern energy services.'* This is an exceptionally ambitious aspiration, given that around one billion people live without electricity and about three billion, most of whom reside in the global South, depend on cooking with solid fuels. Research on the challenges of universal energy access for the urban poor has potential to contribute to substantial quality-of-life improvements for a vast population.

This study contributes to a deeper understanding of the complex and inequitable socio-technical infrastructures underlying access to energy for households in particularly challenging environments, the slums of Dhaka, Bangladesh. The nascent *energy justice* debate is far from comprehensive at this stage of its development, with a deficiency in studies in the global South and for household scale analyses. Scholarship to date is largely situated in the North and presents global or national scale principles.

An understanding of the concepts around particularities of cities of the global South developed in the Southern urban critique provides an informative entry point for energy justice deliberations relating to informal settlements in poor cities. Through engaging with the capability approach, this thesis develops a detailed appreciation of the effects of energy injustices on households and individuals in a case study slum, Kalyanpur Pora Bostee in Dhaka. In these terms, this thesis opens a new dialogue between energy justice, the capability approach, and the Southern urban critique to develop a new framework for energy justice – a framework designed specifically for urban poverty conditions in the global South. The framework presents key principles for energy justice in this environment, and maps relationships and dependencies between those principles.

Impact Statement

The research presented in this thesis is expected to be of value to academics working in the field of energy justice. My contention is that it brings a new perspective to the energy justice debate through a detailed examination of energy justice in an urban poverty setting in the global South. As such, this contribution opens up opportunity for comparative global South studies in an academic domain that has largely focussed on global conditions and universal principles to date. The energy experience in this type of community is vastly different from that experienced in the North or even from that experienced by the middle-class in the global South.

My engagement at an individual and household scale, using the capability approach, has provided me with a detailed understanding of the manifestations of energy injustice in this setting, while a 'top-down' analysis of socio-political influences has illuminated the broad context of energy justice in Bangladesh. These learnings are likely to have applicability in other settings of urban poverty in the global South, though with nuances.

In practical terms, the impact of this research would be maximised through government and NGO engagement with the new energy justice framework that it develops. Delivering energy services to informal settlements through reference to this framework would enhance the potential success of energy policy and energy projects. Traditionally, energy policy and energy projects have been considered almost exclusively in terms of quantum of energy supplied, essentially a focus on economics and technology. The new framework engages with a wide range of important success factors including capability outcomes, energy service attributes and critical underlying mechanisms, notably the political context. In these terms, the framework provides a realistic and evidence-based foundation for the design of energy policy and energy projects for informal settlements.

The findings of this thesis have had some dissemination to date, but further journal articles are planned, covering the central findings of the research, including the new energy justice framework.

Contents

List of Figures

List of Tables

Notes

- Currency conversion rate used throughout is 111.5 BDT = GBP £1.00 (rate as at 8 September 2020).
- Many Bangladeshi authors are referenced in this thesis with the surnames Hossain and Rahman. Accordingly, referencing uses the first initial in these cases to help distinguish.
- Permission has been obtained from the community leaders to use photographs of the bostee people in this thesis. All photographs in this thesis are from the case study slum (KPB) unless noted otherwise.

Supervisors

Primary supervisor: **Dr Alexandre Apsan Frediani**
                             Development Planning Unit, Bartlett School, UCL

Secondary supervisor: **Dr Xavier Lemaire**
                             Institute for Sustainable Resources, Bartlett School, UCL

Tertiary supervisor: **Dr Nurul Islam Nazem**
                             Department of Geography and Environment, University of Dhaka

Acronyms and Abbreviations

CA	Capability approach
CUS	Centre for Urban Studies (Dhaka)
DESCO	Dhaka Electricity Supply Company
DfID	Department for International Development (UK Government)
FGD	Focus group discussion
GS	Grameen Shakti (a Bangladeshi NGO)
HBRI	Housing and Building Research Institute (landowner of KPB)
IAP	Indoor air pollution
IEA	International Energy Agency
KPB	Kalyanpur Pora Bostee (case study slum/bostee)
kWh	Kilowatt hour
MW	Megawatt
NGO	Non-government organisation
PA	Practical Action (an energy and water/sanitation service focussed NGO)
PRQ	Primary research question
RAJUK	*Rajdhani Unnayan Kartipakkha*, the capital development authority of Dhaka
RQ	Research question
SDG	Sustainable Development Goal
SDG7	Sustainable Development Goal number 7 (Energy)
SHS	Solar home system
SRQ	Secondary research question
UN	United Nations
UNDP	United Nations Development Program

1   Introduction

1.1   Significance of this Study

This study examines access to energy for households in the slums of Dhaka, Bangladesh. The research aims to contribute to a deeper understanding of the complex and inequitable socio-technical infrastructures underlying energy use in a particularly challenging environment. Dhaka has at least five million slum dwellers, most of whom live in precarious circumstances, and most of whom rely on informal electricity supply and on firewood for cooking. Dhaka's slums therefore provide an exceptional setting for this study into injustices within an energy system.

Access to energy is widely acknowledged by commentators to be a fundamental determinant of human wellbeing (Bridge et al., 2018, p1; Hui et al., 2018, p2). Limited access to safe and reliable energy for many of the world's urban poor is a significant element of the poverty trap (Halff et al., 2014a, p1; Sovacool, 2012, p275). For instance, there is evidence that restricted access to energy impacts at least three pathways out of poverty: improved health, extended education, and greater livelihood opportunities (Ouedraogo, 2013, p29). Deprivation in energy access has far-reaching outcomes. The importance of energy is encapsulated in the frequently quoted statement by Ban Ki-moon, Secretary General of the United Nations in 2012: '*Energy is the golden thread that connects economic growth, social equity, and environmental sustainability*'[1]. Energy is implicated in our every practical endeavour.

A great number of households in today's world are afflicted by inadequate access to energy. The scale of the global challenge which my research aims to address is expounded in the oft repeated figures, almost a mantra, for the global population without electricity: almost one billion (International Energy Agency, 2019, p23); and for those cooking with solid fuels at possibly three billion (ibid, p87). Energy conditions fall well short of reasonable for huge numbers of people globally. Ongoing research on the challenges of universal energy access for the urban poor has potential to

---

[1] https://www.un.org/press/en/2012/sgsm14242.doc.htm - accessed 2 September 2020

contribute to substantial quality-of-life improvements for a vast population. Two energy forms constitute the experience of energy in slum households: cooking and electricity, each having substantial challenges.

The quantity and quality of cooking fuel affects human health and quality-of-life. There is extensive evidence that smoke from the burning of biomass fuels, notably wood and animal dung, has a profound effect on the health of three billion people globally, (Bridge et al., 2018, p138; Sovacool, 2012, p275). According to Bridge et al. (2018, p140), 1.5 million die per year from cooking-generated indoor air pollution[2]. Kerosene lighting, which is prevalent amongst the poor globally, also has health impacts through indoor air pollution (Bridge et al., 2018, p265). Provision of gas for cooking offers significant advantages over solid biomass fuels, most importantly the absence of smoke. Other advantages include fewer accidents and substantial time savings (Practical Action, 2019, p19). Negative impacts fall most heavily on women[3].

Figure 1 shows Tamana, a female slum dweller in Dhaka. She cooks for her family with solid fuels. This consumes at least four hours every day, during which she is breathing the harmful smoke and is exposed to the near intolerable radiant heat. Meanwhile, wealthier Dhaka residents enjoy all the benefits of gas cooking. It is easy to appreciate the injustice of these circumstances. In terms of electricity, the lived reality for Tamana and for most slum dwellers in Dhaka is reliance on informal or illegal electricity supply, which is overpriced, insufficient and unsafe. The electricity in Dhaka's slums will be shown in subsequent chapters to fall short of meeting basic human needs, another stark example of injustice in the energy system.

---

[2] Barnes et al., (2014, p54) present this figure at 3 million deaths; Practical Action, (2019, p11) claim 4 million deaths; and WHO state a figure of 3.8 million (https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health - accessed 2 September 2020).

[3] Of course, in many cultures, perhaps in most, cooking is undertaken predominantly by women.

Figure 1.1: Solid fuel cooking in Kalyanpur Pora Bostee[4] (M Jones)

Many studies show that good quality electricity supply improves happiness and human well-being through enhanced social time at night, ability to work and study at night, phone charging (extending connectivity and access to information), ability to use life-enhancing appliances and extended hours for businesses, including retail outlets (Barnes et al., 2014, p64; Niu et al., 2013, p338). Lighting as an enabler for extended access to education, livelihood and recreational pursuits is a common theme in the literature. Electricity services can also elevate the aspirations of the poor from basic survival to higher order goals, in areas such as employment and education (Parikh et al., 2012). Lack of reasonable electricity services for the urban poor represents a barrier to employment and self-improvement, perpetuating poverty (Jorgenson and Rice, 2016; Stram, 2016). Electricity has been linked to improved life expectancy and an elevated national Human Development Index (Niu et al., 2013; Ouedraogo, 2013). The literature determines that electricity provision is a critical dimension of human development.

---

[4] Kalyanpur Pora Bostee is the case study slum for this thesis. It will be introduced fully in Chapter 5.

The UN Sustainable Development Goals[5] (SDGs) represent an important global agreement on human development objectives for humanity to 2030. The goals have framed much in development programs and in development research over the last five years. They thereby provide an important baseline for studies concerned with sustainable development and social justice. Each of the seventeen SDGs has an important relationship with the topic of this thesis. My study relates primarily to the first target of SDG7: '*7.1: By 2030, ensure universal access to affordable, reliable, and modern energy services*[6]*'*. This SDG7 target sets the standards for reasonable quality energy services. 'Affordable' allows households to have sufficient energy. 'Reliable' ensures a consistent supply. The concept of 'modern' energy has been defined by Bridge et al. (2018, p133), as electricity for lighting, and non-solid fuels for cooking, solid fuels being unsafe and unhealthy. On the basis of these points, the above SDG target may be expanded slightly to encompass an aspiration for universal energy services that are (a) affordable and sufficient, (b) reliable and consistent and (c) safe and healthy. It is reasonable to argue that access to energy can only be considered fair and equitable if all of these attributes are present in an energy service, thereby providing us with a useful energy justice benchmark.

This thesis engages with the demands in the Sustainable Development Goal number 7 (SDG7) for access to decent energy services for all. The SDG represents a hugely aspirational goal, given the scale of the current deficiency in the global allocation of decent energy. This is a goal critical to the survival, and hopefully flourishing, of billions of people. As with most of the SDGs, SDG7 requires that no-one be left behind, that energy services be distributed more fairly. This is essentially a call for justice in energy provision. This brings us to the area of research most relevant to this thesis: energy injustice.

---

[5] https://sustainabledevelopment.un.org/?menu=1300 – accessed 2 September 2020.

[6] https://sustainabledevelopment.un.org/sdg7 - accessed 2 September 2020.

1.2   Contribution to Knowledge

My research principally contributes to the nascent academic stream of 'energy justice'. Energy justice, as a relatively new area of scholarship, is far from comprehensive at this early stage in its development. Chapter 3 will describe the gaps in knowledge in the energy justice literature in some detail. A brief note here about these gaps positions my contribution. This thesis contributes to addressing identified deficiencies in the debate regarding (a) global South conditions, (b) local or household scale studies and (c) the human impacts of energy injustices. A small number of articles have added some detail in these spaces and this thesis seeks to contribute further to closing the gaps.

The considerable lack of studies in the global South in the energy justice stream is identified by a number of recent authors, as will be explained in Chapter 3. This space is addressed in this thesis by virtue of the case study selection and is supported through a detailed review of the 'Southern urban critique' in Chapter 2. That review considers a set of particularities in the life experience of the poor in Southern cities. These challenging particularities are especially acute for residents of informal settlements. It will be shown that most of the particularities have implications for energy access and yet have little mention in the energy justice literature. This emphasises a need for a fresh examination of energy justice from a global South viewpoint, as will be explained in Chapter 3. It will be seen that Southern scholarship has rejected the universal cross-applicability of Northern generated urban theory in the global South. My thesis adopts a similar proposition in declaring research in a Southern city as a crucial contribution to the energy justice debate. My focus on informal settlements in Dhaka interrogates circumstances in a space where energy injustices are particularly acute.

My own positionality in this North-South tension needs to be clarified at this point and is noted in Box 1.1.

Box 1.1: My positionality

I am a product of my upbringing in the wealthy countries of Australia and the UK, while my research is firmly based in the global South. I offer this thesis as research in the South, but I make no claim to be a 'Southern scholar'. The reader needs to appreciate that this thesis represents my perspective on a Southern condition, but one informed by previous Southern scholarship, and by engagement with the urban poor of Dhaka. I start as an 'outsider' seeking a degree of 'insideness'[7] based on a respectful and open dialogue.

The literature on energy justice has been predominantly focussed on national and global scale concepts with a relative absence of local scale studies. This global scale focus is particularly evident in the offerings of frameworks for energy justice, provided by prominent authors. For the most part, principles relate to large scale issues such as intergenerational equity and national governance. The present lack of local-scale studies may be a function of the infancy of this field, with research to date mainly directed toward identifying big, important principles such as minimisation of CO_2 emissions. This thesis contributes at the fine-grained local scale through a bottom-up study, a new perspective on energy justice. These points will be expanded and justified in Chapter 3.

The principal justification for this PhD is the need to address the literature gaps noted above. In these terms, the core rationalisation for the thesis is presented in Box 1.2.

Box 1.2: Core rationalisation of this thesis

Current energy justice theory is not sufficient to address the realities of urban poverty in the global South. In order to deal with some of this insufficiency, local-scale research in Southern cities is needed to inform a new Southern energy justice framework.

---

[7] The concepts of insider and outside developed by David Crocker, (1991) will be presented in Chapter 4.

We move on now to the third point: about the human impacts of energy injustices being an under-studied area in energy justice. The important attribute of an energy service is not the energy input, but rather the benefits that users enjoy such as lighting for study, cooling of hot houses for comfort, and cooked food for good health. It follows that outcomes for human wellbeing, such as health and education, should be the ultimate aim of energy provision. Such outcomes can be defined as 'capabilities': for example, the capability to have good health and the capability to have a decent education. This is where we turn to the capability approach (CA), which is a philosophy of development focused on what individuals are able to do and able to be. It addresses the ability of individuals to lead a life that they value. This will be explained in detail in Chapter 3. It will be demonstrated in that chapter that the CA provides an effective vehicle for illuminating the effects of deficient energy services on the urban poor. Operationalising CA theory to interrogate energy justice in a particular setting represents a significant contribution of this PhD. This strategy has rarely been adopted to date in energy justice, despite an early pointer on this potential symbiosis by the most prominent scholar in energy justice to date, Professor Benjamin Sovacool, (2013, pp137-138). This thesis engages the CA in order to deepen our understanding of the impact of energy injustice on members of households in informal settlements, again offering a new insight into energy justice.

Within the scope of Bangladeshi scholarship on slum conditions, this thesis presents some originality in at least three respects. These may be claimed as incidental contributions to local research in Dhaka. Firstly, it seems that there is a lack of studies in the English language literature regarding cooking in Dhaka's slums, and little evidence of dedicated studies on slum cooking. This is particularly surprising considering that over 80% of the Bangladeshi population relies on non-modern cooking fuels. A study by Kumar, (2018, p10) presents compelling evidence of a strong bias towards electricity and away from cooking fuels in development research generally, and advocates more research on the latter. He argues that cooking has a more detrimental impact on health than does electricity, thereby representing the greater research need. In development practice, cooking receives less attention than electricity. Rehman et al. (2012) find a strong research bias toward electricity projects

over cooking in the five large Asian nations[8]. Several Dhaka-based studies make minor references to cooking in their scholarship about broader issues, but those references present inconsistent statistics and offer no analysis of the reality of cooking in the slums nor of its impact[9]. My findings regarding cooking in the case study slum appear likely to be an empirical contribution to local knowledge in Dhaka.

Poverty studies in Bangladesh have a predominantly rural focus. This is the second aspect of my thesis that has some novelty in relation to previous research. Several authors point to the paucity of research into urban poverty in Bangladesh with not only research, but also development programs, focussed mostly on rural poverty (Banks, 2016, p266; Hossain, 2013, p210). Research exploring the conditions of urban poverty are profoundly needed in this rapidly urbanising country. A third contribution of this thesis to Dhaka-based scholarship, concerns the fact that few of the urban poverty and informal settlement studies in this city have been conducted outside Korail. This is the largest slum in Dhaka and is conveniently located adjacent to BRAC[10] and BRAC University[11]. It has been the site of probably hundreds of studies[12]. Limited studies exist of my case study slum[13]. My data on a rarely studied slum contribute some detail to Bangladeshi scholarship on informal settlements.

The scope of my contribution to knowledge will be defined in more detail in Chapter 3 and described with some precision in the concluding chapter.

1.3   Research Objectives and Research Questions

The aspirations of this thesis are to firstly understand energy injustices in the case study slum and then to build a new framework for energy justice suitable for use in

---

[8] Bangladesh, China, India, Indonesia, and Pakistan.

[9] References discussed in more detail in Section 5.6.

[10] BRAC is the largest NGO in the world and has a pervasive presence in the socio-political complexion of Bangladesh.

[11] BRAC University is a well-regarded institution within Bangladesh, with a strong history in studies concerning the slums of Dhaka.

[12] including my Masters research.

[13] I have only discovered two specific articles: Badhan et al., (2017) on water suppy and sanitation, and Latif et al., (2016) on health.

energy development efforts in the global South, particularly in relation to informal settlements. This pursuit is undertaken through firstly a review of relevant strands of scholarship, followed by a case study conducted in a slum in Dhaka. In order to develop the framework, a number of necessary intermediate objectives have been established. These steps are designed to gain a thorough appreciation of the complex ecosystem underlying the discriminatory energy services in Dhaka's slums. As will be explained, I have chosen to research a particularly problematic context in the global South to provide a new perspective in the energy justice discourse. It will be demonstrated that energy provision and use in Dhaka's slums presently falls well short of the SDG target introduced above, in every respect. The reasons for this deficiency lie embedded in a multifaceted tapestry of social injustices.

I was introduced to the slums of Dhaka during my Masters research[14], conducted in the year prior to commencing this PhD. Through this exposure, it became evident that life experiences of people in these communities involve not just a range of simple physical deprivations, but also a complex set of cross-reinforcing socio-political injustices. Through my observation of energy practices in the slums during that earlier research, it became evident that energy in this context is situated within an unjust socio-technical and political regime. In essence, powerful actors gain profit through exploitation of the urban poor. Conversely, slum dwellers are locked into a state of socio-political exclusion and economic deprivation. The energy system plays a significant role in this oppression.

Banks et al., (2019, p12), commenting on current urban informality theory, call for critical exploration of networks within informal settings, to enable a detailed account of how opportunities for freedom are opened and closed, and for whom. Partly in response to this call, the starting point of my research is examination of the relationships between individuals and institutions, and the attitudes and strategies of those involved in the provision of energy in a setting of urban informality. Such an approach follows the widely accepted notion, firstly presented by Geels, (2002), of energy systems as socio-technical regimes. As stated by Bridge et al., (2018, p1),

---

[14] MSc in Sustainable Urban Development, University of Oxford, completed 2017.

'addressing contemporary concerns about energy requires a social science perspective'. This perspective provides an insight into the actors involved, including their roles in relevant social power structures and networks.

The first and second objectives of my research are to identify injustices in the energy system of the slums and to then understand their causes. As a third objective I seek to define the effects of those injustices on the slum dwellers. Armed with these three bodies of information, the development of the new energy justice framework for informal settlements in the global South becomes a process of contemplating the place of the various issues identified. This process is informed and reinforced by a thorough understanding of the particularities of cities in the global South.

Initially, this research seeks to systematically explain a set of socio-political and technical energy circumstances, which can be translated into the following research question:

1. *What are the causes of energy injustices in Dhaka's slums and what are the effects on slum dwellers' capabilities?*

'Capabilities' as a concept has been mentioned above and will be defined in Chapter 3. For the moment, a capability may be understood as the 'freedom to achieve'. My study seeks a deep understanding of the issues contained in the research question by going beneath the observable problems to contemplate 'what lies beneath'. The first research question is supported by a number of contributory questions that are presented in Chapter 4. Following on from the first question, my second research question aspires to an original contribution to the energy justice literature. That is:

2. *What are the principles of energy justice in settings of urban poverty in the global South and how do they form an appropriate energy justice framework?*

These research questions are designed to contribute to a deeper understanding of the specific socio-technical experience of energy in informal settlements of the global South. In the main, answers to the research questions will be grounded in my primary data. This inductive approach is adopted as current energy justice scholarship does not align well with the conditions in Dhaka's slums.

1.4   Defining the Study

1.4.1   Boundaries of the Study

This thesis engages a case study in order to develop a deep contextualised understanding of one setting. As stated by Marshall and Rossman, (2016, p19), case studies *'favour intensity and depth'* in research. This suits the objective of this research, being to obtain a thorough picture of people's experience of energy services in an especially deprived setting. To this end, a case has been selected for study in which residents suffer from a set of serious energy injustices. In order to provide a thorough picture, the socio-political context of that slum is studied not only locally, but also at the city and national scales. This approach identifies contextual conditions that strengthen our understanding of injustices in the slum. Flyvbjerg, (2011, p301) calls for case study researchers to define what constitutes the actual case, and further asserts that a description of the context for the study is necessary. In my research, the case is the selected slum, and the context is the city energy system and the national political landscape. The case study slum for this thesis is Kalyanpur Pora Bostee (KPB), a squatter community of 20,000 in west Dhaka. The site has been selected on the basis of criteria designed to identify what Flyvbjerg, (2011, p307) calls a '*paradigmatic study',* that is, a case that is representative of several or many similar cases. This strategy is adopted to enhance the potential of generalising findings to some degree. Details of the selection process for choosing this slum are presented in Chapter 4 and KPB is described in Chapter 5. For the moment, it is worth noting that the case study research yielded valuable data through local interviews, focus group discussions and an extensive survey in the slum. KPB has proven to be a fertile environment for the particular topic of this research.

Electricity and cooking fuel are the two forms of energy examined in this study. These represent the physical scope of energy justice defined early in the energy justice conversation by Professor Sovacool, (2013, p138), being (a) thermal comfort, (b) lighting and (c) cooking fuel. Dissimilar injustices in the systems of electricity and cooking fuel are informative and valuable for comprehensively answering the research questions. The general energy literature defines five stages in the energy lifecycle: fuel

extraction and transport, generation, supply, consumption, and waste. While all phases are important considerations of global energy justice, this study is of a local community. As such, the research is restricted to the two phases relevant to a local community: supply and consumption. Extraction, generation, and waste bear little relationship to the individual experience of energy within a slum household and are not addressed in this thesis.

To summarise the boundaries of this research, this thesis examines the supply and consumption of electricity and cooking fuels in KPB in Dhaka, with contextual analysis of the city's energy system and of the socio-political landscape of the nation.

1.4.2   Gender and the Energy Experience

As in almost any society, the energy experience of the slum dwellers of Dhaka differs between men and women. In many cultures, all cooking and stove attendance is undertaken by women, and that is the situation in Dhaka's slums. As a result, the health impact of solid fuel cooking is far greater for women than men. The time impact of cooking with firewood also has a strong gender bias. The effects of firewood cooking, including the drudgery of collecting fuel wood each day, is noted by Sudhakara Reddy and Nathan, (2013, p204). They conclude that modern cooking fuels *'can have dramatic effect on women's education, literacy, nutrition, health,* (and) *economic opportunities.'* Others assert that conversion to time-efficient cooking fuels merely leads to reallocation of other household tasks to women (Pachauri and Rao, 2013; Tucho, 2020). These patterns are due to the embedded division of responsibilities and power relationships within households. Nevertheless, many researchers find that provision of clean cooking fuel is important for gender equity in development (Barnes et al., 2014, p54). In the case of electricity, women in many societies are more affected by changes than men, by virtue of them spending more time in the home. In that respect, women can enjoy greater benefit from improved electricity services, but usually suffer more from deficient electricity. In many cultures, men will benefit from improved service with increased leisure (eg television), while women tend to work longer hours under electric illumination. Both Pachauri and Rao, (2013) and Walker et al., (2014) allude to the different agency of men and women

regarding roles and decision-making within the household. Gender norms may be merely consolidated in service enhancements (Bridge et al., 2018). Findings in relation to cooking are mostly conclusive regarding the greater impact on women. For electricity, gender dynamics appear more nuanced.

In the Bangladeshi context, N. Hossain, (2017) writes an insightful piece on the improving status of women in that society, describing the *'breaking of the patriarchal bargain'* (ibid, p75). The social status and political power of women in Bangladesh have advanced substantially over the last 50 years, particularly in reference to comparable countries[15]. The Government of Bangladesh has engaged with ideas in '*Women in Development'* (ibid, p85) to advance issues around domestic violence, reproductive rights and equity in education and employment[16]. N. Hossain acknowledges ongoing injustices in all of these areas but points to substantial progress, particularly in access to education and employment. Moniruzzaman and Day, (2020, p5) examining rural energy circumstances in Bangladesh find that men make all energy-related decisions and that many men deny the health problems of firewood cooking[17]. Further, they observe that local-scale energy projects are designed to benefit men more than women (ibid, p8). Consistent with these findings, my study identifies male dominance within urban households. Clearly, despite some advances on gender issues, women in Bangladesh remain disadvantaged on energy issues, particularly for those related to cooking.

The differing labour and health burdens of energy poverty between the genders is a widely acknowledged reality (Bridge et al., 2018, p135). It seems obvious that any framework of energy justice must address the issue of gender equity. In this study, I document the unfair different experience of electricity and cooking between the genders in the case study slum. While my research acknowledges and helps to define

---

[15] Eg Pakistan, Iran, Afghanistan.

[16] Bangladesh has seen measurable progress in all of these dimensions in recent decades (eg https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=BD – accessed 8 September 2020).

[17] Dutta and Banerjee, (2014, p144) observe the same dynamic in urban India.

this unfortunate reality, it does not significantly enrich the vast existing 'energy and gender' discourse, nor is that an objective of this study.

1.4.3   Geography of Slums

At this point, it is worth considering an under-appreciated aspect of the global geography of slums. Figure 1.2 illustrates the global incidence of slums, with countries shown in red having a majority slum population, and those in green having more than 40 million slum dwellers. Based on the data in this figure, (notwithstanding China), the majority of slums are located in the tropics. Indeed, as Sachs, (2015, p47) has identified, global poverty is largely concentrated in the tropics. Many articles in the energy justice literature note the need for adequate warmth[18] as part of the contemplation of a just energy service. While warmth in winter is an issue for slum dwellers in some countries[19], in reality, it is moderation of external heat that is the premier concern to most slum dwellers. This will be shown to be an important point.

Figure 1.2: Incidence of slum population by country
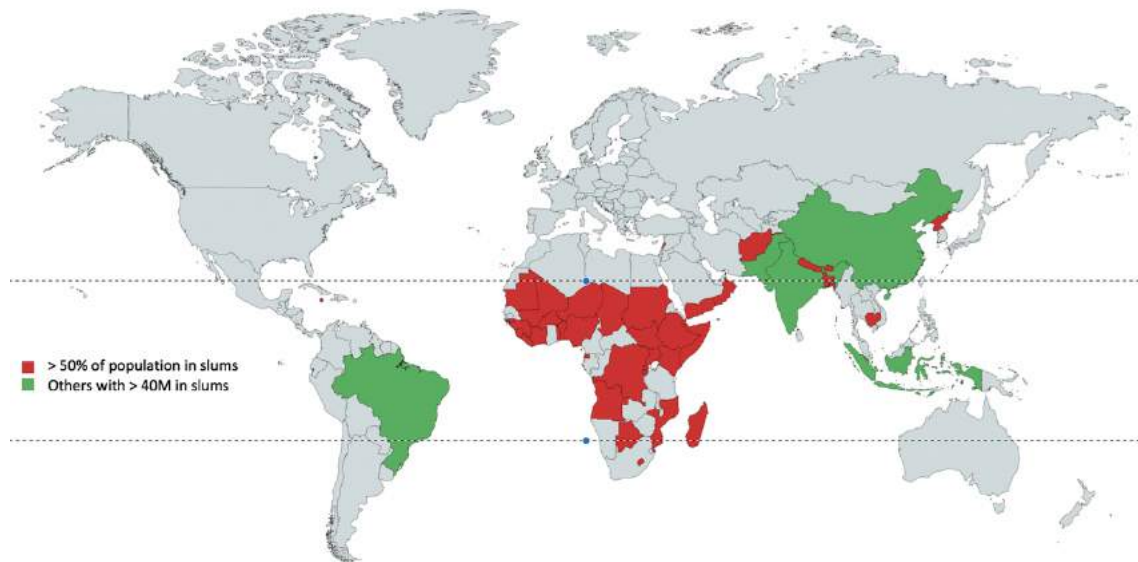
Source data: https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS?view=chart – accessed 3 September 2020

---

[18] Evidence of the global North bias in this academic stream.

[19] eg Nepal, South Africa.

1.5 Terminology

An important consideration for this thesis is the contested terms, 'global South' and 'slum'. There has been considerable debate over both nomenclatures for 20 years or more.

The term 'global South' has a long and conflicted history in academic discourse and global political relations. Earlier popular terms, notably, 'Third World' and 'developing countries' caused consternation in academic and political circles for offensive connotations. From about the 1980s, the North-South construct was introduced, ostensibly as a more respectful way to flag wealthy industrialised countries and poorer countries respectively. Other terms for the global South have been introduced into the discourse, including 'less developed countries' (LDCs) and 'majority world'. The latter arguably has the least potential to offend, as it is a factual representation of where most people live. Nevertheless, 'global South' persists in the literature. Some prominent authors have added perceptive reflections on the term, global South. Bhan, (2019, p643) applauds prominent authors in this debate, Abdou Maliq Simone and Edgar Pieterse, referencing their definition of the global South as '*cities where the majority holds political, economic, spatial and ecological vulnerability'*. Roy, (2014a, p15) presents an insightful perspective, stating *'I mean the global south as a 'concept-metaphor' that interrupts the 'flat world' conceits of globalization'*. Global South as a title then acknowledges that, despite the globalisation process, for many countries the majority live in vulnerable circumstances. In that sense, global South is an important and valuable concept. As a definition of the global North, de Satgé and Watson, (2018, p1) describe it as simply *'the advanced capitalist economies'*. I acknowledge these eminent opinions and engage the terms global South and global North with these understandings in this thesis[20]. The reality is that the term, 'global South' dominates

---

[20] Of course, it is easy to argue that this binary is a nonsensical over-simplification. It is interesting to contemplate the UN Human Development Index register at this point (http://hdr.undp.org/en/composite/HDI - accessed 3 September 2020). All 60 or so 'very high human development' countries would be regarded as of the global North. About 70 countries in 'low' and 'medium human development' are likely to be nominated as of the global South. That leaves over 50 countries with an arguable status, including China and Brazil. A more nuanced terminology (probably sub-national) seems well overdue.

the academic conversation at the present time, and I have chosen to use the term in this thesis.

The word 'slum' is viewed unfavourably in some writings for having *'inglorious associations'* (Gilbert, 2007, p697). Bertuzzo, (2009) expresses a view about the term slum, which she regards as not only derogatory, but also inaccurate in describing a wide a range of different circumstances[21]. This is a compelling argument. A number of alternative terms have been engaged in the literature. These include 'informal settlement' and 'squatter settlement', which have been commonly viewed as respectful terminology in general literature, especially through the 2000s. 'Illegal settlements' is another term adopted in some articles, though with a more specific meaning around unlawful occupation of public land. 'Bastee'[22] is the Bangla word for 'squatter settlement', relating to settlements built illegally on public land (CUS 2006, p10). Bastee/bostee has been used by many Bangladeshi authors (Mohit, 2012; Rahman, 2009; Suykens, 2015) in research articles.

According to Huchzermeyer, (2011), 'slum' tends to dominate the local discourse in cities of a British colonial past. It has favoured usage in Indian literature (eg Parikh et al., 2012; Roy, 2011a), and in the literature on Dhaka's informal settlements[23]. One prominent Bangladeshi researcher, Sabina Rashid, (2007, p370), writes *'I refer to the Phulbari residents as "slum dwellers" ... because this is how the people of Phulbari refer to themselves'.* Another set of Bangladeshi scholars, te Lintelo et al., (2018, p391) note that while some regard the term *'as derogatory others wear it as a badge of truth'*. It is demonstrably a two-edged discussion without a 'right and wrong'. The question remains unresolved in the global literature.

I conclude for this study that a choice of term based on acceptability to residents of the settlement is the critical point. After discussion with local academics, and consistent with most Bangladeshi scholarship, my thesis uses the term 'slum' to refer to informal settlements in general. I use the Bangla term 'bostee' to refer specifically

---

[21] Confirmed in an email exchange with E. Bertuzzo, 4 August 2018.

[22] Sometimes 'bostee'.

[23] Indeed, almost all Bangladeshi articles concerning informal settlements use the term 'slum'.

to illegal squatter settlements. The case study slum is such a settlement and is defined by its residents as a 'bostee'. In engaging with people in the case study slum, 'bostee' has proven to be a well-accepted term in my interactions. Accordingly, I use 'bostee' in describing squatter settlements and for specific references to the case study settlement.

1.6   Structure of Thesis

This thesis is organised according to the logic presented in Figure 1.3. Following this introductory chapter, I present two chapters of literature review examining Southern urbanism and the academic debates around energy justice and the capability approach. Thus, the literature review chapters cover the substantial academic strands in which this thesis participates. The Southern urban critique presented in Chapter 2 draws on the literature to identify distinctive characteristics of Southern cities that have relevance for people's experience of energy. This will clarify the conditions for slum dwellers' access to energy which are removed from the typical experience of residents in a wealthy city. Indeed, a number of the particularities feed through to the climactic offering of this thesis, the new energy justice framework. Chapter 3 presents the status of the academic literature on energy justice with a detailed assessment of gaps in that literature. Those gaps pertain to the global South perspective and to the human impacts of energy injustices. The CA is introduced in Chapter 3 as the most effective vehicle for examining those impacts. Chapter 3 proceeds to develop a draft list of central capabilities relevant to the urban poor of Dhaka. This becomes the basis for consultation in the slum and is revisited in Chapter 6.

Chapter 4 explains the research design and methodology that I have adopted to fulfil the research aspirations of this thesis. The methodology chapter describes the logic of the study including that for data gathering and analysis. The CA based theoretical framework of this thesis is presented in Chapter 4, the framework being then referenced in all subsequent chapters. Particular fieldwork challenges are covered in that chapter, along with research ethics, a crucial issue in cross-cultural research.

Chapter 5 introduces Dhaka as the case study city and KPB as the case study slum. The chapter provides a detailed analysis of the broad context of energy services in Dhaka's slums from national scale issues to concerns that operate at the household scale. This contextual analysis is based on the academic literature, mostly that of Bangladeshi authors. Fieldwork, which is analysed in subsequent chapters, tests these literature findings. Four analytical chapters present findings from the fieldwork as they pertain to the research questions.

In order to assess the impacts of unjust energy conditions on the people of the case study slum, this thesis undertakes a capability impact analysis. To enable a study of a manageable size, only a small number of capabilities are assessed for the impacts produced by the energy service. Selection of the most important capabilities has been facilitated with the slum dwellers. This selection is the topic of Chapter 6. The other part of the impact equation, energy practices in the case study slum, are defined in Chapter 7. Various injustices are revealed in that analysis, some of which are caused or exacerbated by the slum's inadequate housing. This condition arises as a core issue for this thesis and forms the focus of Chapter 8. Aspects of housing inadequacy, including tenure insecurity and poor habitability are covered in that chapter.

Chapter 9 engages with the most valued capabilities selected by the people (in Chapter 6), to examine the impacts of unjust energy practices on them. This draws principally on an extensive survey conducted in the case study slum on that topic. Findings of Chapter 8 and of Chapter 9 inform the conclusions of the thesis, which are presented in Chapter 10. Information has been drawn from all previous discussion in the preparation of a new energy justice framework for informal settlements in the global South. That framework is presented and defended in the concluding chapter.

Analysis of current theory in the Southern urban critique in the next chapter starts us on this research path to a new framework for energy justice as described above.

Figure 1.3: Thesis Structure
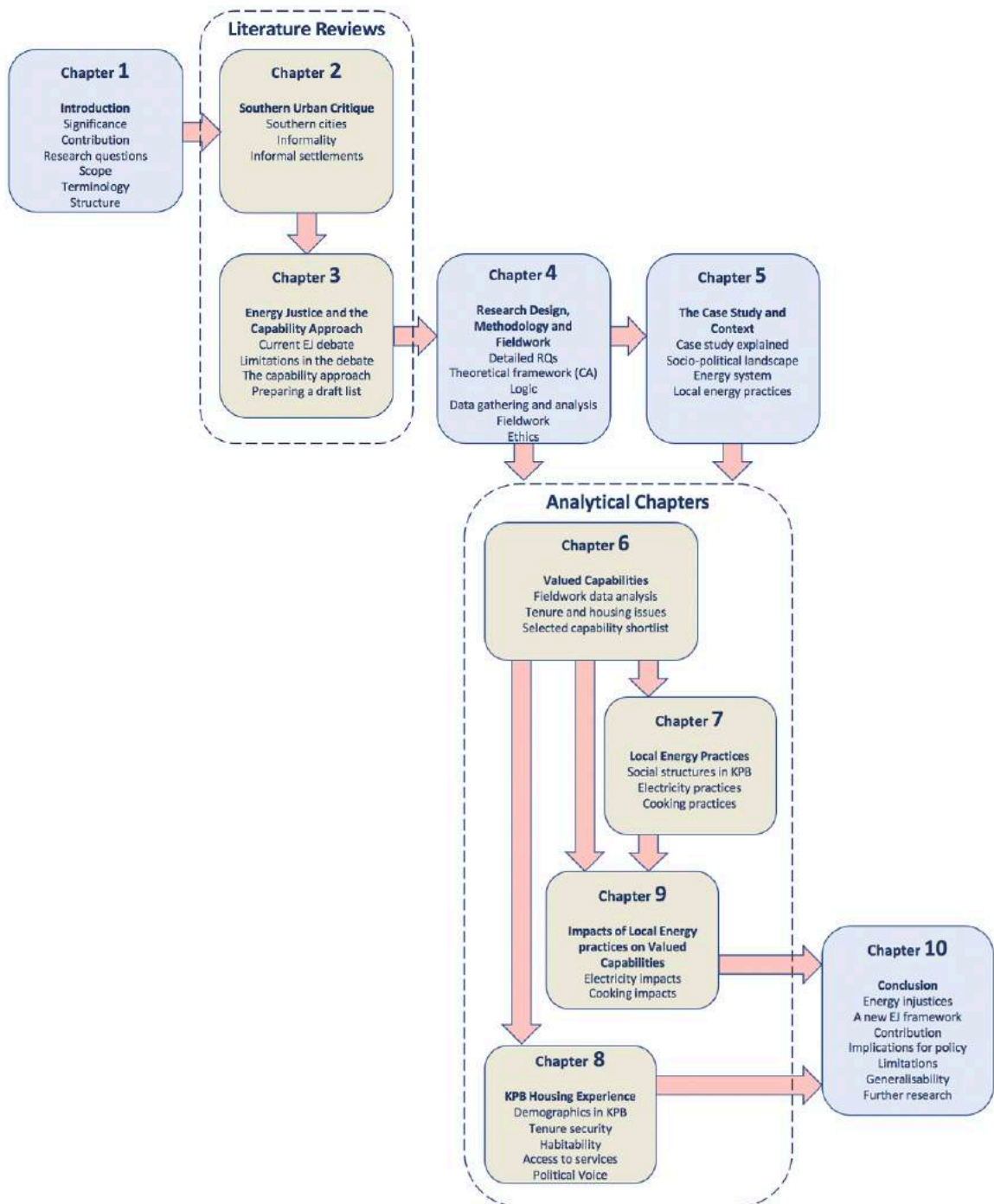
2   The Southern Urban Critique

2.1   Chapter Objective

As mentioned in the first chapter, a central contribution of this thesis is to address an insufficiency in current energy justice theory concerning the particular experience of energy for poorer residents in cities of the global South. This chapter draws on the relevant literature to explore the distinctive characteristics of cities and informal settlements in the global South. It will be shown in the following chapter that most of these characteristics are not referenced in current energy justice theory, nor in energy justice frameworks. The particular conditions referenced in this chapter build the case for a focussed energy justice framework for urban global South conditions. Various theoretical perspectives have informed the approach in this chapter, particularly academic discourses on Southern urbanism, informality, and informal settlements in the global South. The precarious residential circumstances for slum dwellers are an important part of this discussion. Tenure insecurity, poor quality housing, and an inability to access formal utilities will be shown to be impactful deprivations in the energy space. Understandings gained in this discussion will be systematically revisited in the subsequent chapter, which reviews current energy justice theory.

2.2   Background

Since about the turn of the Millennium, there has been a growing literature around what might be termed the 'Southern urban critique'. Authors contributing to this discourse commonly observe three fundamental points. Firstly, urban planning theory was developed in the late 19th century and through the 20th century, almost exclusively in the global North (P. Harrison, 2006). This partly occurred as the wealthy countries were considered to be the centres of knowledge production and is partly attributable to the fact that most of the world's largest cities were in the global North, a condition which has been reversed over the last 50 to 75 years[24]. Secondly, Southern

---

[24] In 1950, the largest 20 cities in the world included just 5 in poorer countries. Today, 18 of the largest 20 cities are in the global South (if we include four in China). Tokyo and Osaka are the only cities on the current list in wealthy countries. (https://worldpopulationreview.com/world-cities - accessed 8 September 2020)

cities have some important differences from cities of the global North, including rapid growth, challenged governance, prevalent informality, and insufficient infrastructure, amongst others (Robinson and Parnell, 2011, p521). The third common point in this conversation is that the global urban planning discourse needs to embrace a new urban reality, one in which the great urban majority reside in Southern cities, living a set of experiences which are different from those in Northern cities.

Jennifer Robinson is regarded as a progenitor in this strand of scholarship, with Lawhon and Truelove, (2020, p3) stating that she has been a leader in instigating an *'overdue conversation about the relationships between cities in the north and south and urban theory'*. Robinson, (2006) calls for a 'post-colonisation' of urban theory. She rejects the dominant notion of the 'third world city' which measures cities of the global South only in terms of the attributes of wealthy cities. Rather, Robinson sees value in drawing inspiration for urban theory from a diversity of city types, treating all cities as equal or 'ordinary', where each city is understood as *'autonomous and creative'* (ibid, p2). Harrison, (2006, p320) goes even further, suggesting that planning in the global North can learn from *'the dynamic urban experiences'* of the global South. A nuanced view is offered by Bhan, (2019, p653) who sees the Southern urban critique as providing an opportunity to *'reimagine geographies of authoritative knowledge'*, suggesting that learnings from the peripheries of Southern cities[25] may apply in many types of urban environments. In other words, Southern urban theory can contribute to all contexts, especially for marginalised populations.

de Satgé and Watson (2018, p12) observe a mounting rejection of *'dominant paradigms of knowledge'*, Northern generated theory, which has for a long time claimed its own validity in all contexts. This attitude is described by these authors as a faith in '*Western liberal democracy as a desirable normative project'* (ibid, p15). Many leading theorists note that planning practices, mostly imported from the North, have for many decades failed in Southern cities and that a fresh Southern, or at least hybrid, perspective is imperative (de Satgé and Watson, 2018; Schindler, 2017; Watson, 2009). Robinson and Parnell (2011, p523) also describe the importance of engaging with *'a*

---

[25] Bhan's research is located in Delhi, India.

world view that is disparate and divergent'. As Lawhon and Truelove, (2020, p11) observe, the Southern urban critique is an ontological position against universalism. Calls are made by several authors in this debate for ongoing research contributions to support development of the Southern urban critique (Bhan, 2019, p653; Robinson, 2006, p168). These include the authors' aspirations to build a set of global urban planning theories which include consideration of the Southern condition, and a strengthening of understandings of the dynamics and structures in cities of poorer countries.

The Southern urban critique is a rebellion against the Northern dominance of urban theory, a rejection of the idea that knowledge production in the North has universal application. While there are nuanced views and tensions in this field, there appears to be a consensus around the non-validity of the universalism of Northern theory. It seems logical that the tenor of these arguments would apply to debates in specialist strands of the urban condition, including in the space of energy access. My contention, introduced in the last chapter, is that the energy justice discourse needs to be expanded to address the particular energy experience of the urban poor in the global South. The following section explores what is distinctive about cities in the global South. The distinctive characteristics identified serve in this thesis as an entry point into development of a Southern perspective in energy justice.

2.3   Particularities of Southern Cities

One of the most respected authors in the Southern urban critique is Susan Parnell, who presents a set of eight distinctive characteristics of Southern cities (Parnell, 2015, p19). These include inadequate infrastructure, rapid urbanisation, extreme levels of income poverty, large-scale informality, and weak governance. She does not claim her framework as a comprehensive or universal list, but offers it to '*focus discussion on recognisable and often replicable conditions in cities and countries with extreme rates of poverty'* (Parnell, 2015, p18). Parnell's list is well-supported in the literature. Similar dimensions of difference in Southern cities are noted by de Satgé and Watson, (2018, p2): '*rapid urbanisation … poorly resourced and capacitated institutions of governance, largely informal urban economies and high levels of unemployment, poverty and*

inequality'[26]. Bhan, (2019, p643) reinforces Parnell's framework, suggesting that researchers deepen the Southern urban critique by starting '*from particular empirical configurations of core urban systems – land, infrastructure, economy, governance and cultural systems.'* There is a consistency of dimensions across many leading authors. It follows that it is reasonable to adopt Parnell's eight criteria as an outline for the discussion about the particularities of Southern cities.

2.3.1   A Colonial Past

Parnell's <u>first</u> characteristic of Southern cities is that they have mostly emerged from a colonial past[27]. This history applies to most of Africa, South Asia, and South America. The legacy of this colonial past is the influence on city form and infrastructure by the colonising European powers through the 19th century and the early to mid-20th century. Cities such as Mumbai, Sao Paulo, Lagos, and many more were heavily modified by European planners based on Northern principles of 'good planning'. Colonialism suppressed local ways of thinking over long periods as local knowledge was seen as '*irrational, inferior, and unscientific'* (P. Harrison, 2006, p324). The result was cities being laid out to serve the needs and desires of the privileged colonisers and to largely exclude the indigenous population. Following decolonisation, the physical form of previously colonial cities and the administrative structures to manage urban development were inappropriate to serve the needs of cities beset by poverty, informality, and accelerating demands for urban services.

2.3.2   Inadequate infrastructure

It is fair to say that almost all nations that achieved independence from colonisers through the 20th century, did so in a state of national economic scarcity. Lack of public funds prevented the upgrade and extension of infrastructures to meet the needs of urban populations.

---

[26] Other authors who reference similar conditions are P. Harrison, (2006, p322); Mitlin and Patel, (2014, p297).

[27] Parnell includes influencers other than a colonial past: '*or a recent experience of war or natural disaster'.*

Inadequate infrastructure to service all residents is the second characteristic of Southern cities presented in Parnell's framework. Infrastructure such as utilities, roads and railways were initially built by the colonising powers for the purposes of extraction of primary goods, and to serve their own population (Graham and Marvin, 2001, p82). Hospitals and schools were also built for the colonisers with limited extension to include local elites. Benefit to the indigenous population was generally small and incidental. When the colonisers departed the scene, infrastructure was far from adequate to serve remaining populations. A notable outcome of inadequate utilities infrastructure in the global South today is the highly inequitable allocation of services. In most cities, the wealthy enjoy access to modern services while the urban poor commonly rely on substandard informal services. By any measure, the glaring disparity in urban services between rich and poor in Southern cities represents a distributional injustice. I acknowledge the reality of differences in allocation of urban services in wealthy countries, but for the urban poor in the global South, deficient urban utilities threaten many people's survival. That is rarely the case in the global North. Writing about urban services in Southern cities, Jaglin, (2014, p434) refers to the wide spectrum of access, perhaps euphemistically, as a *'socio-technical diversity'.* The implications of inadequate infrastructure for energy provision are far-reaching. Allocation of energy services across a city's population is contested in any city. For poorer cities, with inadequate infrastructure and inadequate energy, that contestation is particularly intense. Many households fall short in the provision of decent energy services. This wide disparity means that a fundamental planning objective for Southern cities should be the universal provision of basic services (Parnell, 2008, p4). Inadequate infrastructure has only been exacerbated by rapid urban growth in most of these cities. That brings us to Parnell's third characteristic.

2.3.3   Rapid Urbanisation

A rapid rate of urban growth is a common condition of cities in the global South, particularly so in Africa and South Asia. Figure 2.1 shows the population growth of three wealthy cities and three poorer cities, illustrating the distinctive growth trajectory of Southern cities versus that of their Northern counterparts.

Figure 2.1: City population growth in the global North (Osaka, New York, Paris) and the global South (Dhaka, Delhi, Lagos)
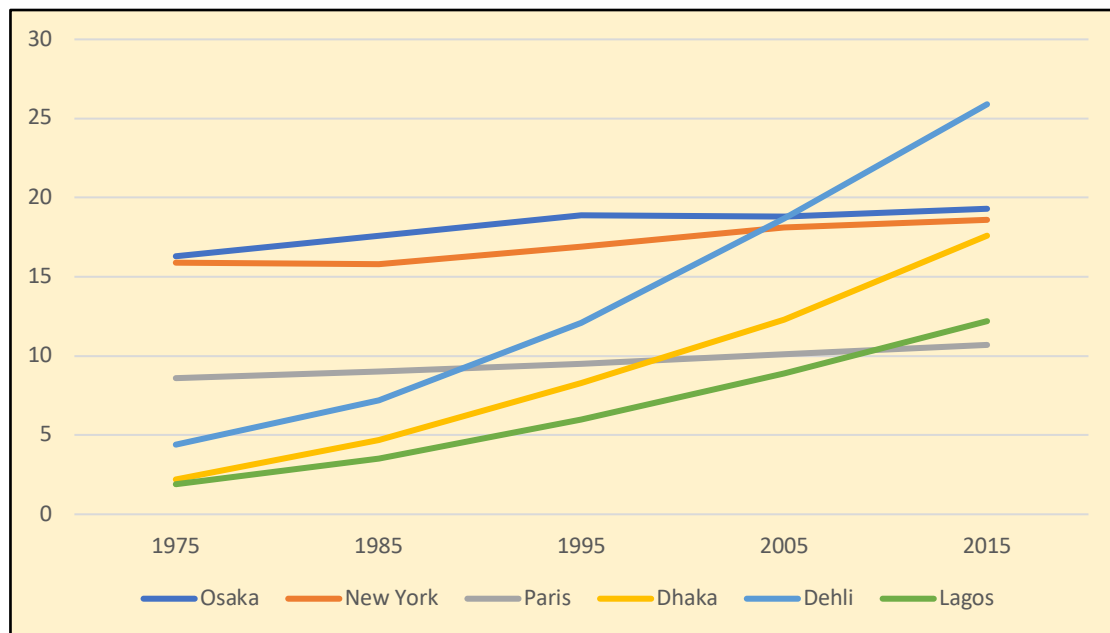
Data source: https://ourworldindata.org/urbanization - accessed 8 September 2020

This rapid growth pattern in Southern cities is largely a result of the economic process of globalisation which involves international corporations establishing production centres in countries which have low labour costs. At the same time, agricultural processes are being modernised at a large scale through replacement of human labour with mechanisation. These two forces combine to shift employment opportunities from rural to urban areas. Large-scale urbanisation results. Other contributing factors to rapid urbanisation in the global South include climate disasters in rural areas, such as droughts and floods, and the draw of superior social services in cities, notably education and healthcare. For the most part, rapid urbanisation is outside the recent experience of Northern cities, and therefore is untested in traditional urban planning theory. The challenge of rapid growth in Southern cities is exacerbated by the lack of resources that authorities in poorer countries have to deal with rapidly increasing needs. In contrast to Northern cities, the speed of change, an absence of resources, and a scarcity of appropriate theory, leave planners in cities of the global South struggling with overwhelming uncertainty. Watson, (2009, p2263) asserts that *'[n]ew forms of planning will have to find ways of responding to rapid and unpredictable*

growth'. Provision of energy infrastructure in these circumstances involves prioritising between stable middle-class environs and fragile squatter settlements, which are mounting in numbers. In these circumstances, decision-making about utilities provision, including for energy, rarely favours the urban poor.

2.3.4   Low-skilled Workforce and Income Poverty

The reality of economic demographics arising from the urbanisation process mentioned above is that a large portion of the workforce are involved in low-skill employment, and that is Parnell's <u>fourth</u> characteristic of Southern cities. This reality has ramifications at both the local scale and at the national scale. Low-skilled individuals are unable to compete effectively in the local economy and therefore cannot readily improve their income, nor improve the living conditions of their own family: a poverty trap. A nation dominated by low-skilled workers is not competitive in the global economy, suppressing as it does, the ability to elevate the quality-of-life for the whole populous. Widespread poverty is thereby sustained.

The prevalence of income poverty constitutes Parnell's <u>fifth</u> dimension. In definitional terms, Southern cities are sites of concentrated poverty. This condition represents the conventional view of cities of the global South as intense centres of poverty. While this view is clearly a reality, it falls short of depicting the substantial socio-economic inequality typical of Southern cities. These cities have wealthy households including those of business owners, professionals, senior bureaucrats, and political leaders, often living in high-quality gated communities. In most large cities of poorer countries, there is a growing middle-class comprising educated people, including those in government positions, senior police, teachers, and middle managers. Conversely, in the same cities, the largest population, the urban poor, live beside these wealthier citizens in deprived enclaves, often informal settlements. The ability to access reasonable urban services including energy is, to a large degree, a function of the household's level of wealth. Widespread poverty has implications for access to utilities in terms of the affordability of services. A common outcome for poor households is an insufficient energy service. The wide disparity in services provision is reinforced by

extensive poverty. The converse applies as the relatively high cost of utilities for the poor contributes to the maintenance of poverty.

A related consequence of extensive poverty is the limited tax base. The poor pay little or no tax in these cities and fees for informal services do not reach the public purse. Consequently, governments are starved of the funds needed to provide urban services. Absence of services hinders poverty alleviation, and so the system of public and individual poverty endures.

2.3.5 Informality and Governance

Parnell includes informality as her <u>sixth</u> distinctive characteristic of Southern cities. The condition of informality is a central topic in this thesis and is a dominant element in much of the scholarship on Southern cities. It thereby deserves detailed consideration. The literature identifies informality as operating in the economic, political and spatial dimensions (Banks et al., 2019; McFarlane, 2012). Economic informality refers to markets and labour relations that are largely unregulated and are cash-based. Taxation revenue is limited under these arrangements, restricting governments' ability to service their cities. Low-skilled workers in the informal economy are, for the most part, vulnerable to exploitive practices such as under-payment, unpaid overtime, and unsafe working conditions. Political informality references the power relations and structures of influence that are present in the highly contested spaces of informal urban services and housing provision. In many cities of the global South, provision of services to the full population is beyond the capacity of the state, and so informal providers fill this void, under informal governance structures. This has many implications for the urban poor. We shall deal with the spatial dimension of informality in some detail in the next section. The remainder of this section addresses important economic and political qualities of informality.

Consideration of a range of views about informality and governance in the global South is informative. de Satgé and Watson, (2018, p23) observe that members of the ruling class in Southern cities commonly view informality *as simply 'dis-orderliness'* and a *'violation' of rules.'* These antagonistic norms are, in themselves, a barrier to

inclusive governance. Planning thereby becomes '*a political project involving domination of one group by another*' (ibid, p23). Informality is commonly understood to be a messy, unregulated, and lawless space for the urban poor, and on the other side, formality is seen as a legal, regulated economy and property market, inhabited by the wealthy. Many scholars reject this simplistic binary view of informality and formality. Roy, (2009, p84) eloquently observes the 'formal' in Southern cities as '*moments of fixture in otherwise volatile, ambiguous, and uncertain systems of planning*'. She sees informality as operating in this same unstable space with formality, each experiencing constant movement and blurring. Caldeira, (2017, p7) also perceives the complexity and fluidity of this dynamic in Southern cities, stating that '*categories such as 'formal' and 'regulated' are always shifting and unstable*'. Further, informality is not lawless, as it has its own institutionalised processes and rules '*that may be as strong … as those managed according to formal laws*' (Banks et al., 2019, p5). McFarlane, (2012, p105) perceives that '*the idea that informality belongs to the poor and formality to the better off*' is not the reality but that both conditions are highly fluid across the wealth demographics. With a similar view to the previous authors, McFarlane sees informality and formality as forming a complex and dynamic meshwork.

This brings us to commentary about the interactions between the wealthy and the poor, and between the formal and the informal in Southern cities. As Roy, (2009, p84) states, informality '*is an integral part of the territorial practices of state power*'. That is, governments and public officials implicitly or explicitly support and participate in the informal economy and often have a powerful presence in the life of informal settlements. The existence of the informal market in Southern cities serves the interests of many in the ruling classes, while also meeting the existential needs of the urban poor. For the residents of slums, informal land occupation delivers low-cost housing proximate to places of employment (Payne et al., 2009; Watson, 2009, p2265). For wealthier residents of the city, the settlements provide a concentrated source of inexpensive employees (Payne, 2002b). Graham and Marvin, (2001, p296) state that slum dwellers '*provide the economic dynamism that makes megacities*

grow'. Relationships between slums and the city can represent important symbiotic socio-economic arrangements.

Accumulation by the powerful through exploitation of the urban poor in informal arrangements is noted by Mitlin and Patel, (2014, pp304-305) as an inherent quality of urban politics in Southern cities. Banks et al., (2019) identify winners and losers in the system. Winners are those who use informality *'to gain or protect social and political power, to maximise profit, or to avoid … tax systems.'* (ibid, p12). Those who are disadvantaged by their exclusion from formal systems are the obvious losers in informal structures. Roy, (2009, p82) finds that, *'[i]nformal urbanization is as much the purview of wealthy urbanites as it is of slum dwellers.'* Illegality is not restricted to informal settlements, as major developments by the wealthy can also be unregulated and built on public land. These modern projects are tolerated or even supported by government as they have a 'world class look'. Ghertner, (2008) argues that the state in India develops land with a Westernised aspiration to become a 'World City'. Much of this modern development falls outside of planning regulations and as such is 'illegal'. He highlights the hypocrisy of these modern developments being supported by government, while illegal occupants of informal settlements are not tolerated. Tensions such as these are far more prevalent in cities of the global South than in those of the North, where authorities are generally more accountable.

Both Watson, (2002, p38) and P. Harrison, (2006, p323) add a layer to this conversation by noting that the urban poor are primarily concerned with basic survival in a daily contest for clean water, food, sanitation, energy and housing. The poor have little interest in the higher order issues that concern many citizens of wealthy cities, such as those around political participation, urban aesthetics, and civic planning. In wealthy cities, the concept of participatory planning has been embraced as an ideal. P. Harrison, (2006) and Watson, (2002) both observe that such practices are largely non-transferable to cities with majority poor populations, where provision of basic services is such a pressing concern.

Challenges in urban planning arise in seeking to engage with the large poor population in Southern cities who are often 'invisible' through their informal land occupation and

informal employment. P. Harrison, (2006, p332) references the hidden nature of not only the people, but also the informal networks, in stating that governments have '*struggled to deal with the complex, largely hidden, network of informal rules, rationalities and desires'* that dominate the life of the urban poor. Parnell, (2008, p3) also recognises this struggle for authorities in dealing with transient and informal regimes*.* Similarly, Roy, (2011b, p7) sees planning in the global South as a powerful tension between *'the interests of economic and political regimes'* on the one hand and the *'mobilisation for justice and opportunity'* for the poor on the other. Watson, (2009, p2267) discusses this disconnect, stating that planning theory in Southern cities needs to begin with *'the assumption of a conflict model of society, rather than the prevailing consensus model'* (or perhaps consensus ideal) of Northern theory. A different planning model is needed to transcend the disconnect between governing by (and for) the elite on the one hand, and the survival strategies of the poor on the other. We shall see that this dynamic prevails in the energy system of Dhaka. The regulatory governance environment of Northern liberal democracies is starkly different in this regard, as governments are relatively exposed to scrutiny by opposition parties, an independent judiciary, and the free media.

The multifaceted and competing systems of urban regulation appear as the <u>seventh</u> and penultimate characteristic of Southern cities on Parnell's list. This references the reality that sectors such as urban land administration, utilities provision, transport and social services are a concoction of '*traditional, elected, corporate,* (and) *informal'* regulations (Parnell, 2015, p19). In many cities, a prevailing informal sector is dominated by powerful actors who rely on intimidation and violence to maintain their influential position. Scholarship on informal services provision has a consistent theme of clientelist politics and patronage (Mitlin and Patel, 2014, p297). In these circumstances, the majority urban poor rely on the benevolence of more powerful actors for services and housing, placing those at the bottom in precarious circumstances. Locally evolved systems of urban planning and service provision in Southern cities are far removed from the formalised arrangements typical of cities of the global North. For example, P. Harrison, (2006, p323) finds that Western urban theories *'assume levels of state control over the use of land that simply do not exist in*

Africa'. This is verified by Okyere and Kita, (2015), who determine that an understanding of local context, including the social complexities of informal arrangements, is an essential starting point for approaching urban development and services provision in African cities. Formal governance in urban development and land use is largely absent for substantial parts of Southern cities.

A relatively weak state apparatus is the eighth and final condition in Parnell's framework of Southern city characteristics. National government and urban governance in the global South are usually starved of resources, such that they are unable to satisfy the basic needs of their poor populations. Informality in the economy, combined with extensive poverty, severely limits the tax base. An even more significant barrier to inclusive planning is often an unwillingness or disinterest on the part of political leaders to act in the interests of the urban poor, as their own enrichment takes precedence (Parnell, 2008, p5). Levels of corruption are perceived to be greater within governments of the global South than in those of the global North. This assertion is supported by reference to the reputable Transparency International, (2020) corruption perception report. The most highly rated (least corrupt) fifteen countries are all in the global North, while the lowest ranked (most corrupt) fifty could all be defined as global South countries[28].

Urban planning theory and practice has been developed in global North contexts, which mostly have had strong democratic governments, adequate resources, and modest rates of growth. Such conditions are amenable to formal regulatory control over, for example, land use, transport, and utilities. In addition to the challenges of inadequate infrastructure, rapid growth, and excessive poverty, planning and governance in cities of the global South need to operate with the tangled mesh of informality (Watson, 2009, p2261). Supporting the survival struggles of the poor is deeply challenging in these circumstances. Clearly then, different imperatives from those of the global North guide the governance of cities in the global South. Development of modern towers, malls and highways, based on modernisation ideals borrowed from wealthy countries, often leads to socio-environmental problems in the

---

[28] Of those fifty countries, only Russia might be considered a controversial inclusion in a global South list.

South (Sintusingha and Mirgholami, 2013, p128). For example, community displacement through such modernisation is a widespread issue for people in Southern cities. Watson, (2009, p2268) asserts that such processes as the above, essentially violent modernisation, represent inappropriate priorities, and that elevation of the disadvantaged is the most pressing need in Southern cities.

Having reviewed a range of views on informality in Southern cities, we shall turn specifically to the spatial dimension shortly. Firstly however, we reflect briefly on the implications of the distinctive characteristics of Southern cities for energy access.

Consequences of the particularities of Southern cities for energy services are substantial. Inadequate energy infrastructure has profound outcomes for all residents of these cities in terms of reliability and safety. For the urban poor, insufficient energy represents a genuine survival issue. Rapid urbanisation strains governmental ability to provide energy services even to middle class residents. The poor are usually the lowest priority in service allocation. New arrivals in informal settlements suffer amplified energy hardship. The financial inability for the poor to obtain formal residency and formal energy services relegates many people to informal markets, with a range of negative consequences that will be discussed in later chapters. The weak state apparatus in most Southern cities is not equipped to overcome corrupt practices in energy services, in which the powerful seek to maximise profit through exploiting the poor in energy provision. All of these conditions substantially influence energy services in cities of the global South and are in stark contrast to the urban energy experience in the global North. We shall return to these points in more detail in the next chapter.

2.4   Spatial Informality and Informal Settlements

Spatial informality encompasses the unauthorised occupation of public land by the urban poor and other unregulated property market practices. It is the core urban condition under study in this thesis. The principal spatial manifestation of informality (and of urban poverty) in Southern cities is the vast spread of informal settlements. The following discussion reviews scholarship in this pertinent academic stream.

As noted earlier, dynamics of economic globalisation have resulted in large populations moving from rural locations and agricultural employment (or unemployment) to seek improved economic circumstances in Southern cities (Tacoli et al., 2015). Simple supply and demand economics means that rapid urbanisation has accelerated increases in land values in cities of developing countries, while large portions of city populations are seriously poor (Payne, 2002a). The urban consequence of these competing socio-economic forces, in many cities of the global South, has been the unauthorised occupation of previously unused government-owned urban land by the poor, in the form of slums (Durand-Lasserve and Royston, 2002). These informal settlements are a physical expression of social exclusion and economic inequality (Lombard, 2015, p649; UN Habitat, 2015). Commonly, residents of informal settlements do not have secure tenure, and usually occupy makeshift housing. Residential precariousness is a core human rights concern for the majority of slum dwellers and adequacy of housing has an important presence in the Southern urban critique.

An influential UN report (UN Habitat, 2009) nominates a number of criteria for assessing whether housing can be regarded as adequate, including (a) tenure security, (b) housing habitability, and (c) access to services (ibid, p4). It is important to observe at this point that all three conditions are overwhelmingly negative in informal settlements of the global South, while for residents of wealthy cities, these are mostly positive. It will be demonstrated that the conditions are largely unaddressed in previous energy justice literature and yet they are of critical importance for energy justice in slums. The three issues are central to understanding the challenges of life in informal settlements. Indeed, definitions of slums include the prevalent inadequacy in slums of each of these dimensions[29]. Additionally, researchers observe linkages

---

[29] Eg United Nations *'Challenge of Slums'* (United Nations Human Settlements Programme, 2003, p12). defines a slum as: *'an area that combines, to various extents, the following characteristics:*

- *inadequate access to safe water;*
- ***inadequate access to sanitation and other infrastructure;***
- ***poor structural quality of housing;***
- *overcrowding;*
- ***insecure residential status'***

between these three issues, as will be explained in the remainder of this section. It is important to note at this point that slum dwellers have little opportunity to escape from these vulnerable circumstances due to their invisibility in the political sphere. We shall revisit this idea shortly.

2.4.1   Tenure Security in Informal Settlements

Lack of security of tenure is listed as a key element of influence in prominent frameworks across various strands of academic literature plus significant UN reports that are relevant to this thesis. As noted above, it is one aspect of inadequate housing (UN Habitat, 2009, p4). It is also one of the central deprivations included in all definitions of slums that I have found, and it forms a part of the influential Satterthwaite, (2001) urban poverty model[30] (ibid, p146). Tenure security is mentioned by Parnell, (2015, p17 item 6) in relation to distinctive characteristics of Southern cities and by Nussbaum, (2000, p78, item 2) as part of her list of central capabilities[31]. Thus, tenure security, sitting conspicuously at the nexus of these relevant academic streams, 'shines brightly' as a key concern for this thesis.

In a similar pattern to the notions of formality and informality, the concepts of tenure security and insecurity are not a simple duality. Tenure security/insecurity should rather be understood as a continuum. Payne, (2002a) offers a band of nine categories of land occupation[32], each with a different degree of tenure security. His categories are listed in Table 2.1. This spectrum has been widely engaged in the literature since. Payne notes that in actuality, this offering is an over-simplification of a complex assortment of arrangements. Nevertheless, the list illustrates the existence of a wide range in degrees of tenure security.

(United Nations Human Settlements Programme, 2003, p12).

[30] We shall revisit this model in more detail in Chapter 5.

[31] This is outlined in the next chapter.

[32] expanded in Payne and Durand-Lasserve, (2012, pp14-15) and more recently presented as a similar list in UN-Habitat, (2018, pp10-11).

Table 2.1: Land occupation types

Item	Form
1	Pavement dweller
2	Squatter tenant
3	Squatter 'owner'
4	Tenant in unauthorised subdivision
5	Owner in unauthorised subdivision
6	Legal owner – unauthorised construction
7	Tenant with contract
8	Leaseholder
9	Freeholder

(Source: Payne, 2002a, p8)

Globally, there are more than one billion slum dwellers UN-Habitat, (2018), the common condition for whom is inadequate residential tenure (United Nations Human Settlements Programme, 2003, p vi). In contrast to legal residents of a city, residents of squatter settlements have limited rights. Commonly, squatters have no legal rights to sell, sublet or bequeath their house or land, or to benefit from capital appreciation. Slum dwellers suffer from various socio-economic and physical manifestations of insecure tenure. Common implications are exclusion from formal financial systems and social services, from formal utilities and, in many cases, from decent quality housing (Field, 2007; Payne, 2004). Most authors are cautious about ascribing causality across these conditions; however, linkages are widely discussed. All of these related deprivations serve to handicap the equitable participation of the urban poor in the political economy of the city. Various consequences of tenure insecurity reinforce the poverty trap for millions of slum dwellers.

Importantly, Durand-Lasserve et al., (2007, p12), define secure land tenure as property rights *'that are opposable to a third party'*. For most slum dwellers, their land occupation is opposable by other parties, meaning that they are vulnerable to eviction by landowners. Eviction, attempted eviction, and the threat of eviction represent the reality of life for people living without secure tenure. In most squatter settlements, residents are deprived of the peace of mind that secure tenure would provide. UN Habitat, (2009, p21) reports that about 2 million slum dwellers globally are evicted every year. Considering this as the population of Manchester or Birmingham being

evicted annually, shows that slum eviction is a large-scale phenomenon. Eviction is acknowledged to be *'the most detrimental manifestation of tenure insecurity for the urban poor'* (Payne and Durand-Lasserve, 2012, p9). Major evictions and their injurious effects are documented through studies in India (Bhan, 2009), Zimbabwe (Muchadenyika, 2015), China (Wilmsen, 2016) and many other places.

Literature referencing tenure insecurity in slums decries the detrimental outcomes of eviction, both for the evictees and for the city (Durand-Lasserve et al., 2007; Field, 2005). The influential 2003 UN '*Challenge of Slums'* report asserts that *'[f]orced eviction and demolition of slums, as well as resettlement of slum dwellers create more problems than they solve'.* (United Nations Human Settlements Programme, 2003, p xxviii). Large-scale eviction is usually justified by aspirations of the elite concerning city aesthetics, modernisation, and commercial optimisation. As discussed earlier, these urban objectives have been rejected as inappropriate planning goals in cities characterised by extensive informal settlements and by the prevalence of poverty (Davis, 2006; Roy, 2011a). Commercial pressures for 'modern' development represent a core element of the constant threat of eviction. Mitlin and Patel, (2014, p304) observe *'elite accumulation strategies',* which exploit the vulnerability of slum dwellers. These forces reflect David Harvey's, (1996) famous phrase *'accumulation by dispossession'*. Through eviction processes, the poor are dispossessed in order that the wealthy and powerful may accumulate.

Secure tenure may be seen as a desirable condition for slum dwellers, but several authors note the immensity of the mission of individually titling many millions of slum dwellings. The scale of the task, combined with a paucity of public resources, plus the rapid transformation of Southern cities renders universal titling of slums a near impossibility (Payne et al., 2009). Durand-Lasserve and Royston, (2002) and Payne, (2002b), assert that other dimensions of slum improvement have to be incorporated into this discussion: capacity building, gender equity and broad poverty alleviation programs should be integrated with tenure security development to ensure successful outcomes. While this is a worthwhile set of aspirations, it adds further to the complexity and scale of the task.

To better appreciate the importance of tenure security, it is worth examining whether granting secure tenure to slum housing would improve people's lives. The issue of secure tenure in informal settlements is highly contested in the literature, Varley, (2017, p385) describing it as a *'battleground of ideas.'* The following discussion sets out some of the pertinent points of discussion.

Generating widespread commentary is an economic theory on this topic, posited by Hernando de Soto, (2000). He asserts that the granting of secure tenure to squatters in informal settlements would realise *'dead capital'* through enabling the urban poor to use their formalised property rights to access formal credit, thereby generating entrepreneurship and economic improvement. The theory was initially embraced by major institutions such as the World Bank but swiftly attracted substantive criticism in academic circles. Varley, (2017) regards this theory an expression of neoliberal faith in the promise of free market forces to serve the public good[33]. Other reviewers assert that de Soto's work presents little evidence for his economic assertions (Field, 2007; Gilbert, 2002). Woodruff, (2001, p1222) makes the vital point that formal titling alone would be insufficient as critical underlying support structures need addressing including *'[i]mproving the efficiency of judicial systems, re-writing bankruptcy codes,* (and) *restructuring financial market regulations.'* Partly in response to de Soto, a number of authors have undertaken empirical research to determine the outcome reality of awarding secure title to residents of informal settlements. Results are nuanced.

A core argument of the de Soto thesis, the outcomes of access to credit, is effectively disproven by several authors. In a South African case study, Payne et al., (2009, p450) find that *'[p]ossessing a title deed has little effect on borrowing/ accessing credit'*. Gilbert, (2002), Field, (2007) and Galiani and Schargrodsky, (2010) all support these findings in various research contexts. These studies conclude that it is more the limited income and assets of the urban poor that handicaps their participation in formal credit, rather than the absence of formal land titling.

---

[33] Davis, (2006, p185) is rather less forgiving in his critique: *'De Sotan slogans simply grease the skids to a Hobbesian hell.'*

A principal area of the debate, arising from de Soto's work, concerns the process of gentrification. The Payne et al., (2009) study mentioned above, finds that freehold title increases property value, thereby tending to force poor residents out of a settlement. Van Gelder and Luciano, (2015, p498) cautiously support the essence of this finding. Gilbert, (2002) and Varley, (2017), however, question the assertion, finding little evidence of that pattern in their case studies in Central America. The gentrification notion seems plausible but is inconclusive at this stage.

Consideration of another dimension of tenure condition is more informative; that is, the collective versus the individual. Various authors identify positive social characteristics of slum settlements. For instance, Lombard, (2014) finds an affirming sense of community in Mexico's slums. Okyere and Kita, (2015) support that view based on African studies. The notion around the positive value of 'community' in slums stimulates further critique of land titling for informal settlements. Davis, (2006, p80) argues that titling in slums undermines collective solidarity through individualising homeowners' interests. Formalisation of land ownership, which converts the communal nature of a slum into individual parcels, has also been questioned by Frediani, (2009), who notes *'the potential to break collective bonds'* (ibid, p9), through introducing *'a private property ideology which can be socially divisive'* (ibid, p12). Consistent with these views, Payne, (2002a) advocates allocating not individual, but community title in order to maintain social cohesion and to minimise property speculation that would likely emerge from individual titling. This has been carried out successfully in Kenyan villages, for example (Yahya, 2002) and in slums of Bangkok (Archer, 2012). We revisit the second example shortly.

The debate that was magnified by de Soto has been productive in the sense that a complex set of dynamics has been quite comprehensively researched with some valuable findings. A manageable, incrementally staged process towards tenure security is offered by various authors, where basic services are firstly secured, shelters are upgraded and then some form of tenure security is delivered along with a reformed regulatory framework (Malaque et al., 2018; Minnery et al., 2013). Suggestions of incrementality and holistic delivery of secure community-scale tenure for slums, appear to be the most robust recommendations of researchers in this field.

2.4.2   Housing Habitability in Informal Settlements

By definition[34], housing in most slums is of a poor quality, and housing improvement lies beyond the financial capacity of most slum dwellers. Dwellings in slums are usually structurally fragile and they offer poor protection from the elements. Slum shacks are vulnerable to damage by climate events, notably floods and cyclones[35],which prevail in many Southern cities. Fires also represent a real threat to people's security in these houses. Most squatter shacks are constructed of reused materials such as corrugated steel, plastic sheets, and cardboard, each with little or no insulative value. Further, such dwellings often lack adequate ventilation. Reasonable moderation of external tropical heat is not attainable in these types of houses. The hot conditions which prevail inside many slum dwellings have been shown to lead to not only bad physical health outcomes for occupants (French and Gardner, 2012), but also poor mental health (Gruebner et al., 2012). Further, scholars have identified housing as a basic condition upon which many human functionings are dependent (King, 2003, p671). Habitability is clearly a significant determinant of peace-of-mind and quality-of-life for people generally and certainly so for slum dwellers. Energy use for thermal moderation has a place in this discussion and we shall return to that notion in later chapters.

A considerable body of literature examines the relationship between housing habitability and tenure security, with a number of authors making a strong connection between these conditions in informal settlements. For example, Durand-Lasserve et al., (2007, p1), state that *'[l]ack of tenure hinders most attempts to improve shelter conditions for the urban poor'.* Strengthening tenure security has been found by several authors to be a positive influence on residential investment and housing improvement. For instance, Field, (2005), investigating a titling program in Peru, observes a '*68% increase in the rate of housing renovation within only four years of receiving a title'.* Galiani and Schargrodsky, (2010) conduct an extensive quantitative study in Buenos Aires in a set of informal settlements, where one group of occupants

---

[34] As per the UN definition above (footnote 28).

[35] As noted in Chapter 1, most slums are located in the tropics.

have been allocated title, and another have not. Their findings include measurable dwelling size increases and housing improvements arising after formalised titling. They observe, *'individuals underinvest if others can seize the fruits of their investments'* (ibid, p700). Even where secure tenure is not allocated, but slum dwellers are given a formalised 'right to use'[36], Nakamura, (2017) has found substantial self-help housing improvements in Pune, India. The literature mostly supports the idea that secure tenure promotes improvement in housing quality, and that insecure tenure tends to constrain such improvements.

Some authors suggest that the linkage is more nuanced. Van Gelder and Luciano, (2015), also studying slums in Buenos Aires, find a link between housing habitability and 'fear of eviction' rather than tenure insecurity itself. Archer, (2012) extends that notion in a study on Bangkok, finding that perceived tenure security is influenced by the level of confidence in community leaders, in people's own financial security and in the long-term plans of the landowner. This is a complex area. While findings of a direct causality from tenure security to housing habitability may be contestable, it is clear that these two conditions have a substantial connection.

2.4.3   Access to Utilities in Informal Settlements

It is widely recognised in the literature that access to utilities in slums is intrinsically linked to tenure security. Although there are exceptions in some contexts, most occupants of unauthorised settlements are unable to participate in formal systems of services provision. Public authorities and private corporations view illegal squatters as low-return and high-risk, and therefore non-viable as formal customers (Durand-Lasserve et al., 2007, p1). Graham and Marvin, (2001, p2) assert that in many Southern cities, the ideal of delivering universal utilities *'has long been abandoned'*. Instead services are splintered across the wealth divide. The literature identifies many situations where tenure insecurity means access to legal utilities is unavailable (Dhingra et al., 2008; Mimmi, 2014). Informal arrangements often fill this void. Providers in this informal market are often powerful people with links to gangster-type

---

[36] Defined as a 'slum declaration' in this case study.

activities. Graham and McFarlane, (2015, p63) observe this pattern in water services, stating that *'water racketeering* (is) *sustained by the so-called water mafia ... The middleman ... organizes the installation of the water pipe, giving a cut to municipal officials, and even the police and local politicians.'* Unregulated services are often unreliable and poor quality, which in turn impacts negatively on health and safety for slum dwellers (Graham and Marvin, 2001, p132). Rufín et al., (2020, p2) note that these informal services '*typically involve bypassing safety regulations to access electricity networks, which leads to numerous accidental deaths and fires.'* These authors identify a link between the absence of the state in control over property rights and the presence of crime and violence in informal settlements (ibid, p4). Indeed, exclusion from formal networks criminalises users of those networks. Typically, informal utilities markets involve slum leaders, public officials and their enforcers maximising personal profit, with little regard for the welfare of their customers. Services are consequently over-priced and unreliable for the urban poor (Parnell, 2008, p12). Informal utilities markets are essential for millions of the urban poor, but usually with the substantial negative consequences discussed above.

Examples of allocating secure tenure in slums, thereby allowing legal utilities connections are uncommon in the literature. An exception is Archer, (2012) who examines a slum upgrading program in Bangkok. She records that allocation of a collective lease from the state to the slum community has facilitated connection to legal water and electricity networks. This program represents one of two important counterpoints to the situation in Dhaka described in this thesis. The other is a rare example of providing legal electricity connections to slum households that continue to have no legal tenure status. That is a case in Kibera, a large slum in Nairobi, where the World Bank has funded an intervention by the electricity authority for legal connections. A 2015 World Bank news report[37] proclaims some success in this project, applauding the '*community-based approach'*. The result is legal electricity connections with slum residents using a prepaid chit system. Interestingly, the report states that

---

[37] https://www.worldbank.org/en/news/feature/2015/08/17/bringing-electricity-to-kenyas-slums-hard-lessons-lead-to-great-gains - - accessed 3 September 2020

'*many of the former vendors of illegal electricity are now in the (legal)[38] business of selling Kenya Power chits*.' A more independent assessment of the program is provided by de Bercegol and Monstadt, (2018). These authors acknowledge the good intentions of the authorities and commend the participatory objectives of the program. They also laud the efforts to defuse the subversive power of informal providers by integrating them into the formal system (ibid, p254). On the other hand, they find that the program in Kibera has faced stiff opposition from informal providers and that installation has '*provoked riots and violence against technicians*' (ibid, p249). In an insightful observation, de Bercegol and Monstadt, (2018) record that the legal electricity intervention reconfigures power relations in the slum and therefore resistance can be forceful. We shall return to these two examples later in this thesis.

The significance of neoliberalism is a widely discussed topic in this debate. The privatisation of public services and a retreat of the state in favour of corporate delivery of utilities permeates almost all modern societies. Within the energy justice discourse, McHarg, (2020, p18) observes '*the failure of neo- liberalism to deliver an effective and balanced, long- term energy system'.* Structural adjustment policies of the World Bank and other international development agencies, in favour of private service delivery, have prevailed for decades throughout the global South. The effect has been the weakening of already deficient infrastructure for populations which do not have the collective strength to overcome the resulting deprivations (Graham and Marvin, 2001, p289). Watson, (2002, p46) states that '*neo-liberal development philosophies promoted through structural adjustment policies have been downright destructive'* in the global South*.* Private delivery of services involves maximising returns to shareholders, prioritising profit over the public good, and leaving no space for equitably servicing the disadvantaged. The literature is conclusive in determining that the neoliberal model for utilities provision, so popular for decades in the North, has proven inappropriate in contexts where the majority live in poverty and in informal settlements.

---

[38] Brackets in original.

This section on spatial informality and informal settlements has illustrated a set of precarious residential circumstances under which slum dwellers live. Intertwined and cross-reinforcing sub-conditions of adequate housing (tenure insecurity, poor quality housing and inability to access formal utilities) entrench poverty and maintain socio-political exclusion for the urban poor. Non-recognition of households without secure tenure is widely understood to be a fundamental social problem in cities of the global South, with consequences for housing habitability and access to decent utilities. Tenure security features as the central condition in this interlinked set of deprivations. Implications for energy services from the conditions of spatial informality and inadequate housing are considerable. These issues are revisited in later chapters.

2.5   Chapter Conclusion

In Susan Parnell's, (2008) influential work on *Urban Governance in the South,* her final clarion call is for theoretical inquiry *'to search for strategies for effective, just and sustainable state intervention in cities that are characterized by informality and inequality'* (ibid, p14). My thesis seeks to contribute to that search. Discussion in this chapter has illustrated that Southern cities face immense governance and planning challenges arising from the particularities presented by Parnell, (2015) and others, as addressed in the preceding discussion. It will be shown in Chapter 5 that Dhaka represents an 'extreme' example of each of the characteristics discussed here.

This chapter has demonstrated that cities of the global South have a number of characteristics that render them empirically distinct from their Northern counterparts. Planning and infrastructure provision in Southern cities operates in conditions where the majority struggle on a daily basis for survival. Meanwhile, the ruling elite has little interest in addressing the basic needs of the urban poor. The weak and inadequate state apparatus and a pervasive informal sector create conditions where the poor are dominated by powerful identities, motivated principally by self-gain. These conditions are even more potent in informal settlements, in which the urban poor, without political voice, are entrapped in their unfortunate circumstances. Poor quality housing, insecure tenure, and inability to access decent utilities are significant outcomes of this unjust ecosystem. Differences in circumstances between cities of the global North and

those of the global South are so profound as to call into question the suitability of Northern-generated urban theories in Southern contexts. One important strand of urban theory concerns the planning for and provision of utilities including urban energy services. My contention is that energy justice studies represent one of the academic bodies that must be tested in Southern conditions.

The inequitable distribution of energy services in cities of the global South, the non-recognition of slum dwellers, the paucity of good governance, and non-inclusive procedures in these matters, all point to distinctive, or at least nuanced, injustices in energy services in Southern cities. The next chapter starts with a review of the academic field most relevant to the study of these circumstances, *energy justice*.

3   Energy Justice and the Capability Approach

3.1   Chapter Objective

We have seen in the previous chapter that the particularities of cities in the global South manifest as urban inequality in a society dominated by informality. Inequitable access to energy services is one significant outcome. The urban poor, especially those living in slums, suffer the greatest hardships in terms of problematic energy access. This clearly represents a set of injustices. We turn now to the academic stream with the strongest potential to interrogate these issues: *energy justice*.

This chapter firstly reviews the academic literature which has contributed to the discourse on energy justice. As an academic stream, energy justice has emerged from earlier justice scholarship, which is initially described, before reviewing the current status of the energy justice debate. Existing energy justice theory is then shown to be insufficient for addressing the primary research question of this thesis, concerning the causes of energy injustices and their effects on slum dwellers. The capability approach (CA) is adopted in this thesis as a vehicle for facilitating a deeper understanding of the effects of energy injustices on people in the case study setting. The reasons for engaging the CA in this research are presented in this chapter and are followed by the development of a list of central capabilities, which serve as a basis for the fieldwork of this thesis.

3.2   Theories of Justice

Justice is a topic that has occupied philosophical thought since at least the time of Plato and Aristotle (Brighouse, 2004; Hinman, 2008). In essence, justice demands that no-one suffers from maltreatment by others, and that no-one benefits from wrong treatment of others (Brighouse, 2004). In his celebrated work, *'A Theory of Justice'*[39]. John Rawls, (1971) introduces the concept of the 'original position'. This is posed as a 'thought experiment', in which participants consider the essential qualities of a system

---

[39] Alexander, (2008, p31) refers to this work as a *'monumental classic'*.

of justice without knowing where they themselves would be situated, that is, they would be behind a 'veil of ignorance', enabling impartiality in designing an ideal justice system. Rawls argues that such an experiment would result in two essential principles. Firstly, the redressing of unfair allocation of benefits through redistribution of primary goods. These goods are *'rights and liberties, powers and opportunities, income and wealth'* (Rawls, 1971, p62). Primary goods are the currency of justice, which demands that these goods be distributed fairly across a society. Secondly, the greatest support in society would be extended to the least advantaged through redistribution. These concepts have been adopted in ongoing justice scholarship but with significant development of the theory.

The notion of distribution is crucial, but it leaves unanswered the question of why inequality endures. Iris Young, (1990) extends Rawls' distributive paradigm of justice, seeking remedy for the underlying causes of inequity. She starts by questioning what it is that determines unfair distribution. Young asserts that lack of recognition, in the form of institutionalised oppression and political exclusion, reinforces socio-economic inequity. Consequently, recognition of marginalised groups, and some level of redistribution through impartial and inclusive procedures will deliver improved justice outcomes. Procedural fairness is needed to achieve parity across society.

Where and how to apply the concepts of distribution and recognition are important considerations. Building on Young's ideas, Nancy Fraser, (1997, p92) calls for '*the elimination of social inequity'*. Fraser identifies two types of injustice, (a) socio-economic injustices as in exploitation and deprivation and (b) cultural injustices as in ethno-religious domination and non-recognition. The remedy for socio-economic injustice is redistribution, and the remedy for cultural injustice is transformation of societal patterns to deliver recognition and political participation for the marginalised.

Equal political participation for all is clearly a worthwhile objective of social progress. Alex Honneth, (1995) condemns social domination as a fundamental injustice. He provides a framework for social improvement, presenting a theoretical ideal of a true democracy based on universal recognition, public rights, and social solidarity. The themes of social inclusion and cultural respect run through the writings of Young,

Fraser and Honneth, and are consistent with influential contemporaneous development scholarship by Mahbub ul Haq, (1995) and Arturo Escobar, (1995). Haq, (1995) offers four essential principles of human development, these being equity of opportunity, efficiency in the use of resources, participation and empowerment of people, and sustainability of development over time. Escobar, (1995) calls for an approach centred on political mobilisation, cultural recognition and preservation, and individual empowerment. These works reinforce the recognition, procedural and participation aspects of the justice theories of Young, Fraser and Honneth. Scholarship in theories of justice has led to the conception that justice assumes three interrelated tenets: *distributional* justice, justice as *recognition* and *procedural* justice.

The foundational works on theories of justice outlined above have generated several focussed justice debates. One of the most important and far-reaching strands is 'environmental justice', which is discussed in the next section.

3.3   Environmental Justice

Environmental justice is a large and complex domain involving many important aspects of modern society. The literature explores two major streams: (a) a concern about detrimental human impacts on the natural environment and (b) a concern about the uneven allocation between people of the benefits and burdens of resource and energy consumption. This covers all phases of the resources system from extraction to waste. The environmental justice movement emerged from growing concerns in the 1960s and 1970s, particularly in the USA, about unequal allocation of the impacts of environmental degradation resulting from industrial processes, including air and water pollution, toxic waste and loss of natural habitats (Agyeman and Evans, 2004). Discriminatory impacts on people of colour and those living in poverty have been a core issue in environmental justice since those times. Walker, (2012, p1) observes that some people *'consume environmental resources at the expense of others, often in distant places.'* That is, wealthy groups substantially benefit through consumption and suffer little from externalities. Poorer groups benefit to a lesser extent and suffer, in most cases, from consequential burdens. This describes distributional environmental justice.

Procedural environmental justice concerns fair process. That includes providing environmental information for all stakeholders, inclusion of affected people in environmental decision-making processes and access to legal redress for the aggrieved. Schlosberg, (2004) recalls Young and Fraser in noting that environmental justice demands participatory decision-making and equality of recognition. Recognition is at the root of the environmental justice movement. Indeed, the idea of *'environmental racism'* is identified in the environmental justice literature (Agyeman et al., 2016, p323; Bullard, 2005, p439). Misrecognition has a deep history in environmental justice as marginalised groups have been frequently disregarded in industrial, urbanisation and environmental policies and processes.

Taylor, (2000) conducts a detailed analysis of environmental justice theory, exploring how ideas in this arena have been socially framed by different affected groups. A compelling set of principles of environmental justice is assembled by Taylor from both previous scholarship and the objectives of activist movements. These have been extensively referenced since. Table 3.1 presents a summary of this framework.

Table 3.1: Principles of environmental justice (Taylor 2000, p539-541)

Item	Environmental Justice Principle	Description
1	Ecological principles	Interdependence of all species; ethical use of resources; reduction in consumption; fair access for all to resources; environmental education.
2	Justice	Intra-generational equity; inter-generational equity; human rights, freedom, participation, and respect; clean air, land and water.
3	Autonomy	Self-determination; cultural integrity.
4	Corporate relations	Liability and accountability; cost allocation for repatriation; protection for all from environmental hazards and toxicity; occupational health.
5	Policy, politics, and economic processes	Full political participation; environmentally safe economic activity.
6	Social movement	Building activist movements.

These principles urge responsible stewardship of the earth and make the call for equitable access to the benefits of resources, including for future generations. They also include guards against the unfair outcomes of asymmetrical power relations. The

Taylor model recognises an important relationship between environmental management and social inequality. Overall, the framework encompasses the justice dimensions of distribution, procedure and recognition outlined earlier.

Environmental justice has spawned a number of academic streams, the most notable of which is climate justice, a debate that has a major presence today in the global political economy. Climate justice concerns the unfair distribution of the benefits of energy use and the unequal burdens of the consequential climate change impacts. In general, poor nations and poor communities suffer greater harm from climate change, while wealthy nations and communities have enjoyed long-standing and continuing benefits of fossil fuel usage (Dryzek et al., 2013; Incropera, 2016). The *'wicked problem'* (Incropera, 2016) and *'perfect moral storm'* (Gardiner, 2011) of human-induced climate change is severely problematic for the global community. Wealthy resource and energy consumers maintain the growth of carbon emissions without regard for, or even awareness of, consequences for the poor, who remain largely invisible (Klein, 2015; Wallace-Wells, 2019). Environmental justice and climate justice are the main precursors to the more recent discourse on energy justice. All three fields rely on '*a similar analytical framework*' engaging the three tenets mentioned earlier (Graff et al., 2019, pS30). Energy justice is a narrower academic stream than its precursors with its singular focus on energy related issues. Heffron et al., (2015, p175) observe that environmental justice and climate justice have been unsuccessful in adequately influencing policy and that energy justice offers greater hope for inspiring change due to its tighter focus.

3.4   Energy Justice

Energy justice is a relatively new field in the academic literature (Heffron and McCauley, 2017; Pellegrini-Masini et al., 2020), becoming recognised as a distinct domain worthy of theoretical study from about 2012 or 2013 onwards. Interestingly, Graff et al., (2019, pS21) review the parallel environmental justice literature from 2014 to 2017 and find that energy studies dominate the discourse through that period. In 2017, the prestigious *Nature* journal series (Nature Energy) listed energy justice as a new research topic to be separately covered by that journal (Heffron and McCauley,

2017, p658). Energy justice is emerging as a powerful public policy tool (McCauley et al., 2019, p916) and is now generating a critical mass of academic research (Pellegrini-Masini et al., 2020, p1). The debate is now well-established.

As demonstrated in Chapter 1, energy access is fundamental to human well-being but current levels of access to energy are far from fair and equitable. An entrenched imbalance of the benefits and burdens of energy use is evident, not only between nations, but also within nations, and even within communities. Many authors call for all citizens to be provided with an equitable opportunity to access modern energy services, and for inclusive processes in energy system development (Malakar, 2019; McCauley et al., 2019). These are calls for energy justice. Healy and Barry, (2017, p452) offer a potent representation of the global political reality of energy systems:

> *'Global energy systems are shaped by a political economy in which the interests of elites and powerful actors are more often than not misaligned with the energy needs and environmental vulnerabilities of the world's poorest people'.*

This socio-political and economic imbalance in energy systems is the fundamental concern of scholars involved in the energy justice debate.

3.4.1 Foundational Work

A highly-cited book in the energy justice literature that may signify the emergence of the energy justice debate from earlier justice studies is, '*Energy Justice in a Changing Climate'* by Karen Bickerstaff et al. (2013). The emphasis of the chapters in this book is on the influence of energy practices on climate change, but implications of wider energy justice issues are evident in the writings. At a similar time, Benjamin Sovacool published what is clearly a foundational work in the energy justice debate, '*Energy and Ethics: Justice and the Global Energy Challenge'* (Sovacool, 2013). This work appears to have set the scene for much of the debate that has ensued.

Immediately prior to the works mentioned above, Walker and Day, (2012, p69) make a prescient observation. In an article concerning energy poverty in the UK, they may have helped initiate the field of energy justice in stating that energy poverty necessitates:

> *'not only seeking a fairer distribution of access to essential energy services, but also the pursuit of fairness in procedural terms and in achieving the fundamental recognition of the diversities and needs of culturally marginalised and excluded social groups.'*

Another set of scholars were active in this field at about this time. McCauley et al., (2013) offer the three-tenet justice model as an entry point for what they propose as an important new discourse in energy justice. A legacy of Rawls, Young, Fraser and others, these three tenets of justice, distribution, procedure, and recognition are addressed in subsequent works by most energy justice scholars (Lacey-Barnacle et al., 2020, p123; McCauley et al., 2019, p917). As such, the triumvirate provides a useful charter for framing concepts presented in the energy justice literature. The following discussion is organised accordingly.

3.4.2 Distributional Energy Justice

The energy justice literature addresses the widely understood reality that human energy systems benefit some parts of society more than others, while externalities of energy use (climate change, waste, pollution, spatial impacts, ecosystem impacts) manifest inequitably between different social groups. To a large degree in most countries, major beneficiaries of energy systems are the wealthier classes and the ills are borne disproportionately by poorer groups (Bickerstaff et al., 2013, p1). Distributional energy justice recognises this fundamental issue and the need to pursue a correction to the unequal allocation of energy benefits and burdens (Jenkins et al., 2016, p176; Samarakoon, 2019, p6). These concepts of inequity and redistribution are drawn directly from the environmental justice debate (McCauley and Heffron, 2018, p3). It is reasonable to claim that all people are entitled to an energy allocation *sufficient* to enable a satisfactory level of well-being (Islar et al., 2017, p671; Sovacool, 2013, p12). Energy insufficiency for the poor is a clear case of distributional injustice. Distributional energy justice normally has a spatial dimension, that is, a geographic clustering of the advantaged and the disadvantaged. People in poor enclaves, including slums, are usually disadvantaged in terms of having limited access to

reasonable[40] energy services, while the neighbouring wealthy are well-serviced. There is also a temporal dimension to distributional justice, as present energy usage with fossil fuel generation will impact on future generations (McCauley et al., 2019, p917). Most scholars do not advocate the pursuit of equal services for all, but rather an equitable opportunity to obtain sufficient energy services.

3.4.3 Procedural Energy Justice

The allocation of finite energy services within a society inevitably involves political decisions in determining apportionments of energy. Certainly, energy distribution is highly political and this process invariably involves socio-political contestation (Becker and Naumann, 2017, p1). Procedural energy justice *'requires the use of equitable procedures* (in energy allocation) *that engage all stakeholders in a non-discriminatory way'* (Heffron et al., 2015, p170). Walker and Day, (2012, p72) identify three pillars of procedural justice in the provision of energy. Firstly, disclosure of information is required, with the information to include allocation of costs and benefits, and information on energy alternatives. Secondly, participation of all affected groups in decision-making processes is essential in achieving just outcomes (also Samarakoon, 2019, p8). In that regard, Jenkins et al., (2016) point to the value of mobilising local knowledge as a procedure to ensure the acceptability and success of energy policy and projects. And thirdly, access to legal processes seeking redress of any perceived injustice is a critical instrument in achieving procedural justice (also McCauley et al., 2013; Yenneti and Day, 2015). Examples of procedural injustice in the energy sector include involuntary displacement of communities for large energy infrastructure projects such as dams, mines, and power stations. Exclusion of disadvantaged groups from participation in formal energy markets is also an example of flawed energy justice procedures. Procedural fairness, impartiality, and transparency in decision-making in these types of situations would deliver more just outcomes.

---

[40] Affordable, reliable, clean and safe energy (SDG7), as discussed in Chapter 1.

3.4.4 Energy Justice as Recognition

Recognition in energy justice seeks to address the underlying causes of deprivation and inequality. Common patterns in this respect include exclusion of the marginalised from political and legal processes and inadequate protection of disadvantaged groups by the state. Described another way, the poor suffer through political voicelessness. McCauley et al., (2019, p917) point to the environmental justice roots of energy justice as recognition, where marginalised groups are excluded on the basis of race or poverty. Socio-political exclusion of the poor is a widespread governance reality in the provision of energy (Halff et al., 2014b), particularly in the global South (Cloke et al., 2017). Energy justice as recognition references universal political rights, free association, the right to protest and be heard, and freedom from threats of violence in provision of energy infrastructure (Jenkins et al., 2016, p177; Samarakoon, 2019, p7). Munro et al., (2017) note that socio-economic circumstances vary between different contexts. Therefore, recognition in energy justice demands site-specific consultation to identify the needs and aspirations of all affected groups. Energy justice as recognition has particular application where large populations live in challenged circumstances. Disadvantaged people are often neglected in energy-related policy and projects. Inevitably, in poorer countries, lack of resources combined with large numbers of urban poor means that universal recognition is especially difficult to achieve.

It can be seen that the energy justice discourse has built on the concepts and principles established by earlier justice and environmental justice scholars. The focus of energy justice is on redressing unfair differences in access to energy, establishing fair procedures for that endeavour, and taking care to address the needs of the marginalised.

3.5 Energy Justice Frameworks

Attempts at defining energy justice have included considerable exploration of universal energy justice frameworks, that is, models for assessing the equitable design and implementation of energy policy and energy projects. These have been in two forms, the principles-based, and those aligned with the three tenets justice model

(Wood and Roelich, 2020, p2). The most influential of the principles-based frameworks is that of Sovacool, (2013) in the foundational work mentioned earlier. He begins with a Rawlsian 'veil of ignorance' enquiry: *'how we or a society would design a global energy system if we didn't know where we would fit within it'* (ibid, p137). Sovacool builds on a substantial body of previous scholarship to offer a compelling set of eight energy justice principles. Subsequent works by Sovacool (and colleagues) saw the refinement of these principles and the addition of another two. This framework has been widely cited in the energy justice and related literature since. Indeed, it is safe to state that most energy justice articles since 2014 make some reference to this particular framework. The ten principles, as recently presented, are set out in Table 3.2, with a brief associated description. In theory, compliance with the Sovacool principles would ensure an equitable allocation of energy access, a fair and inclusive process with all objections given due consideration, recognition of all affected groups, and care taken to minimise environmental impact, including through minimised carbon emissions. Reference to the earlier Table 3.1, which presents principles of environmental justice, reveals a close alignment with the framework below.

Table 3.2: Principles of energy justice

Item	Energy Justice Principle	Description
1	Availability	People deserve sufficient energy resources of high quality.
2	Affordability	All people, including the poor, should pay no more than 10% of their income for energy services.
3	Due Process	Countries should respect due process and human rights in their production and use of energy.
4	Transparency and accountability	All people should have access to high-quality information about energy and the environment and fair, transparent, and accountable forms of energy decision-making.
5	Sustainability	Energy resources should not be depleted too quickly.
6	Intragenerational equity	All people have a right to fairly access energy services.
7	Intergenerational equity	Future generations have a right to enjoy a good life undisturbed by the damage our energy systems inflict on the world today.
8	Responsibility	All nations have a responsibility to protect the natural environment and minimize energy-related environmental threats.
9	Resistance	Energy injustices must be actively, deliberately opposed.

Item	Energy Justice Principle	Description
10	Respect	Intersectional differences in knowledge and epistemic upbringing, culture and experience, and race and gender have to be respected in energy decision-making.

Source: Sovacool et al., (2019, p497). Precursor work includes: Sovacool, (2013); Sovacool et al., (2018, 2017); Sovacool and Dworkin, (2014)

As noted earlier, the three-tenets-of-justice model in itself has been claimed as a framework of energy justice. Lacey-Barnacle et al., (2020) conduct a literature review of the energy justice field to date. They find that the Sovacool (and colleagues) principle-based model, and the McCauley et al., (2013) three tenets model are the dominant frameworks in the energy justice discourse. It could be argued that the latter is merely a reapplication to energy studies of earlier scholarship, with modest additional value, while the principle-based model substantially advances thinking in this new field. The Sovacool framework appears to be a richer contribution. In any case, both methods of framing the debate have been engaged extensively in the energy justice conversation since the (roughly) 2013 genesis. A number of nuanced frameworks of energy justice have been presented in more recent literature and appear to add some value to the discourse. Four are outlined here.

Heffron et al., (2018, 2015) reference the well-known energy trilemma, which identifies the tension between energy economics, energy security and the environment. They perceive this as a constant struggle, in which each of the vertices seeks to pull energy policy towards itself. To date, the economic dimension has dominated at the expense of the environment. Heffron and his colleagues posit that the energy trilemma can be resolved through applying energy justice principles to balance the three vertices. The authors present an Energy Justice Matrix (EJM), which includes a number of cost and benefit parameters for assessing how different energy markets (countries) perform across the three dimensions. This framework is less explicit on procedural and recognition justice than that of Sovacool, but as an economic assessment tool, it would have useful application.

Theoretical modelling work by Sareen and Haarstad, (2018) combines the low carbon transitions literature with the energy justice literature to derive a synthesised energy justice framework. They offer the dimensions of institutions, materiality (technical infrastructure) and relationality (energy systems as a social product). This is an interesting addition to the energy justice literature, bringing an understanding of the enabling and constraining effects of institutions in effecting just or unjust outcomes. Highlighting the significance of the social structures in energy justice is consistent with other commentary. However, the model does not seem to extend beyond the Sovacool, (2013) and McCauley et al., (2013) offerings.

An energy justice model with a temporal dimension is offered by Malakar et al., (2019). Two principles of energy justice are presented, they being (a) equal rights to reliable and affordable modern energy services (essentially UN SDG7), and (b) benefits and burdens of modern energy systems should be shared equitably, a transfer of an original distributional environmental justice concept. The model is overlaid with a representation of energy phases. This framework adds value to the debate by exploring the dynamic nature of energy justice and the need for policy to address the constantly changing circumstances of energy systems.

Fortier et al., (2019) build a set of indicators arranged to address energy justice issues for four stakeholder groups in the electricity market: consumers, the community, workers, and society. They deepen their analysis by examining the whole energy lifecycle. This framework is rich in principles concerning participatory decision-making. Unlike other frameworks outlined above, Fortier et al., (2019) do touch on local/household scale issues, by providing a set of indicators concerning energy justice for consumers. These concern such issues as access to information, right to protest, reasonable and equitable pricing, and reasonable and equitable penalties for late payment. The innovative multi-perspective approach of this model seems to add some depth and value to the energy justice discourse, although it is restricted to electricity only, excluding cooking.

Apart from that one portion of the Fortier et al. framework, all offerings represent large-scale, top-down approaches. Principles included in each framework address

large global issues, and each has a 'big picture' perspective. These authors and others have each added value by taking a different viewpoint on energy justice to the Sovacool framework. However, in terms of a useful framework, through all of the energy justice scholarship, there appears to have been little advancement or broadening of concepts beyond the latest offering from Sovacool et al., (2019).

3.6   Energy Justice Debates: knowledge gaps

The energy justice discourse is more thinly populated than the longer established debates around environmental justice and climate justice. As a new field, it is far from comprehensive at this stage of its development. This section examines the insufficiency in the energy justice debate for dealing with the setting of this thesis: urban poverty in the global South. General theory is discussed firstly, followed by the energy justice frameworks covered in the last section. As stated in Chapter 1, my contention is that insufficiency in the debate concerns (a) global South conditions, (b) local or household scale studies and (c) the human impacts of energy injustices. This section will substantiate these insufficiencies. We shall return to the third (human impacts) at the end of this section. For the meantime, the first two items are addressed in some detail.

Firstly, we discuss the global North bias. It is important to concede that global South based energy studies address issues relevant to justice concerns, without referencing the energy justice concept (Cloke et al., 2017; Guruswamy, 2011). Indeed, McHarg, (2020, p16) observes that issues of energy justice have been discussed for some time '*without being specifically labelled as questions of 'energy justice''.* This point is probably deepened if local language studies, inaccessible in the Anglosphere, have been addressing topics allied to energy justice. Nevertheless, the existing energy justice conversation is yet to be informed by a depth of global South studies. As stated by Day et al., (2016, p257), the energy circumstance *'in much of the global South is of course very different from that in the North'*. This perspective emerges as crucial in the debate.

Moving on from that point, a Northern dominance of the energy justice discourse has been evident since its origins in the UK around the years 2012/2013 (Malakar, 2019, p16). At the commencement of my PhD in 2017, I could find very few papers on energy justice emanating from the global South or examining global South contexts. As of mid-2020, the situation has developed, but the discourse remains heavily weighted in the UK/European research[41]. Lacey-Barnacle et al., (2020) review energy justice scholarship to date for its coverage in the '*developing world*' and find that there are *'few evaluations of particular energy justice issues or themes arising in developing world contexts'* (ibid, p123). They go on to state that new theoretical approaches for the global South are therefore required to address this deficiency. This appeal replicates those made by urban scholars in the Southern urban critique presented in the last chapter. The Southern urban critique calls for a questioning of the uniform application of Northern urban theory in the South. My proposition is that the same tension applies in the energy justice debate, and that existing Northern dominated theory in energy justice needs to be challenged and extended by ongoing Southern research.

My contention is consistent with assertions by Castán Broto et al., (2018). In assessing justice in energy transitions in Mozambique, they review current energy justice theory and call for *'contextual understandings of energy justice rather than universalizing approaches'* (ibid, p654). These authors critique global level or universalist discourses, especially from a Northern[42] perspective, as being '*wholly inappropriate*' (ibid, p646) for specific contexts, particularly in post-colonial societies. They call for development of energy justice theory to address the complex and different socio-economic needs in settings of the global South. As such, Castán Broto et al., (2018) reinforce the need for the nominated contribution of my thesis. We return to the global North bias and the universalism issues when reviewing sufficiency of the energy justice frameworks shortly.

---

[41] Interestingly, three heavy CO_2 emitting countries of the global North (USA, Canada, Australia) have little presence in the energy justice debate to date.

[42] The authors use the term 'Western', a curious nomenclature duality in the development discourse.

The second insufficiency noted above concerns the absence of studies in energy justice at a household or community scale. Damgaard et al., (2017, p13) observe that energy justice tends '*to be perceived in relation to large scale processes'*, whereas poverty alleviation discourses are typically '*more concerned with individuals.'* These authors perceive this as an unfortunate disconnect that needs to be addressed. That is clearly a reasonable assertion, given that energy access is an essential component of poverty alleviation. Almost all energy justice discussion to date occurs at the national or global levels. Indeed, Sovacool's much cited definition of energy justice[43] references the '*global energy system'* (Sovacool et al., 2017, p677). This deficiency in the literature is surprising as household scale issues are likely to differ from the global, and household concerns represent the real-world human experience of energy justice. It follows that this is an important research area. In these terms, it could be argued that my study assumes an original and much needed entry point into the energy justice discourse.

We turn our attention now to the frameworks of energy justice presented earlier. On the basis of its ubiquitous presence in the literature, it is reasonable to state that that the Sovacool framework commands considerable respect. Nevertheless, some commentary in the literature challenges certain aspects of that framework.

The first challenge concerns operationalisation of the framework. Heffron and McCauley, (2017, p660) state that there has been '*little reflection of how to transfer these* (Sovacool) *principles into practice'.* Operationalisation into policy and into energy projects from the framework in its present form presents a challenge, according to these authors. This is due to an absence of detail on how and by whom the principles are delivered or enforced. Indeed, this critique highlights the fact that there has been little work done on operationalising energy justice to date.

One such effort at operationalisation is that by Islar et al., (2017), who engage six of Sovacool's principles of energy justice to assess energy access in Nepal. They

---

[43] '*a global energy system that fairly disseminates both the benefits and costs of energy services, and one that has representative and impartial energy decision-making'*. (Sovacool et al., 2017, p677).

respectfully note that the Sovacool framework has been an *'inspiring approach'* (ibid, p 670), but then assert that energy justice needs to be understood from various perspectives, including from those outside the global North. The energy experience differs between wealthy countries and poor countries, such that *'[w]hile some may be able to meet most of the* (Sovacool) *principles, others, most notably less developed countries, may not'* (ibid, p647). This replicates the critique of the global North bias discussed earlier. Another criticism of the framework by Islar et al., (2017) is that it does not allocate responsibility for discharging the principles, thus presenting a challenge for applying the framework, and thereby reinforcing Heffron and McCauley's, (2017) criticism. This thesis seeks to address that criticism.

LaBelle, (2017) finds the Sovacool framework to be too 'universal', noting that it needs a *'different interpretation at the local level'* (ibid, p615). He calls for an approach that engages with Sovacool's universal understanding of energy justice, but which examines localised values and norms. Labelle (2017) suggests that Sovacool's universal energy justice framework can attend to distributional and procedural justice at a national scale, but that local socio-cultural and political issues demand reference to recognition justice. Munro et al., (2017, p640) also call for a local examination of energy justice as recognition that *'helps to articulate voices and knowledges from people experiencing energy poverty'*. Both articles represent an assertion that the particularities of community-scale practices be examined in order to appreciate energy justice at a fine-grained level. The work of Castán Broto et al., (2018) mentioned earlier, supports these critiques in its criticism of universalism in energy justice. I have responded to this call by structuring my research to articulate the voices of the urban poor.

The preceding commentary suggests that the Sovacool framework is a tool suited to global considerations of energy justice. There is some logic in this critique given that the original publication is titled '*Justice and the Global Energy Challenge'* (Sovacool, 2013). The recent literature seems in agreement that the framework is not suitable for local-scale application, with additional limitations for a global South setting. Applying the same test to the other frameworks presented earlier produces a similar conclusion

about those frameworks. The following discussion considers further insufficiencies in the energy justice frameworks presented earlier for research in the global South.

The first point concerns the level of energy usage in an average slum household. Slum dwellers use a miniscule quantum of energy and therefore their carbon emission impact on the world is negligible. While global average slum energy usage data are not available, the average per capita usage of slum dominated nations is informative. Figure 3.1 presents the world's four largest countries that have a majority slum population[44] plus two nations of the global North, showing annual per capita energy use (which includes that of wealthy residents). Unsurprisingly, energy usage in the poor countries is relatively small. It follows that energy usage by the poorest households in those countries is minute.

Figure 3.1: Annual energy use per capita (kg oil equivalent)
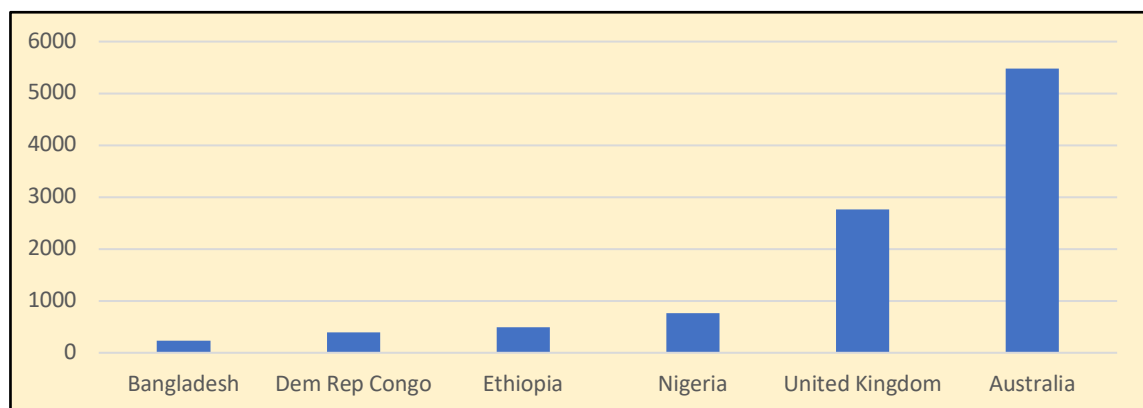
Source: World Bank data (https://data.worldbank.org/indicator/EG.USE.PCAP.KG.OE - accessed 8 September 2020)

This miniscule energy use in slums challenges all frameworks presented earlier in one substantial respect. The negligible carbon emissions by slum dwellers renders all dimensions/principles/vertices concerned with environmental sustainability largely irrelevant. Slum households could multiply their energy usage several times over and

---

[44] Four countries determined from World Bank datasets including that from:
https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS - accessed 8 September 2020.

still have much lower emissions than their average global North counterparts. If that argument is accepted, four of ten principles of the Sovacool framework do not apply in slums. And for the trilemma model, one vertex disappears.

The household experience of energy in the global North differs from that in the South and is particularly different from the slums. We now deepen our understanding of that comparison by applying some of the literature review findings on the Southern urban critique in Chapter 2. From that discussion, five particularities of Southern cities are referenced in this analysis.

Firstly, to the differences in infrastructure for energy. Infrastructure in the global North generally provides a consistent, reliable, and non-problematic supply of energy. For the Northern household, the technical infrastructure is largely 'out of sight and out of mind'. In most cases, for the slum dweller in the global South, technical infrastructure in the formal sense is absent in many respects. Additionally, people in the global North can, for the most part, access as much modern energy as desired, subject only to what they are willing to pay. For those in the global South however, there is limited availability of modern energy. Deficient infrastructure and resources in Southern cities limit the supply of energy. Therefore insufficiency of energy is a far more prevalent problem in the South than in the global North (Monyei et al., 2018, pp69-70), an issue exacerbated in the slums. Secondly, rapid urbanisation in the global South creates a dynamic space of intense contestation for scarce resources, including for energy. This has severe outcomes for energy access, affordability, reliability, and safety. Indeed, this contestation involves many households struggling for survival. Such concerns apply to a far lesser degree in wealthy cities. The third criterion is that of income poverty. The intense poverty levels of millions of slum dwellers in cities of the global South greatly restricts household expenditure on energy. Life is a daily struggle to afford and access sufficient energy for minimal needs in lighting and cooking. The fourth characteristic of note concerns governance. For many Southern cities, the state apparatus is weak, even corrupt under many assessments. Sovacool himself (and colleagues) acknowledges that energy justice conditions might be different in a 'corrupt' state, in stating that his '[e]*nergy justice principles, evidently, apply to near just societies. How do they differ in corrupt and unjust political regimes?'*.

(Sovacool et al., 2017, p688). This is an invitation from a progenitor of the energy justice discourse for research to include more challenged political economies, many of which are situated in the global South[45].

The energy justice frameworks presented earlier pay little regard to the four distinctive characteristics of the Southern urban experience discussed thus far (inadequate infrastructure, rapid urbanisation, poverty, weak governance). We now move on to a <u>fifth</u>, the prevalence of informality and its myriad of consequences for the urban poor. Economic and political informality in informal settlements means that the socio-technical systems of energy supply are sites of contestation, and largely hidden from view. Issues such as availability and affordability can change day-to-day and can be concealed from outsiders. Principles of due process, transparency and the right to protest are almost invariably absent in these structures. Therefore, satisfying socio-political principles for energy justice is effectively unattainable in the slums. Again, these challenging circumstances are so different from the Northern experience as to demand a different energy justice perspective.

Moving on to spatial informality, a number of dimensions have influence on energy justice. It was explained in the last chapter that for informal settlements, three overlapping conditions are significant: (a) tenure insecurity, (b) poor housing habitability, and (c) inability to access formal utilities. It was further demonstrated that these three interlinked dimensions contribute to unfair utilities arrangements in informal settlements. Strikingly, none of the frameworks for energy justice presented in the literature reference any of these three issues. This is probably due to their not being matters of great distress in the North. As we have established, knowledge production in energy justice to date has been largely based in the North. Unmistakably, the debate has not addressed some critical characteristics of urban poverty in the global South.

---

[45] I acknowledge the fact that many global North countries may be defined as 'corrupt' and vice versa, but the reality is that most countries that are poorly rated by the respected NGO Transparency International are in the global South.

Based on the preceding discussion, it is reasonable to assert that energy justice theory will be enriched by empirical research in a global South setting. Further, it is clear that current frameworks for energy justice available in the literature are insufficient to address the particular circumstances of slum households in the global South. Each of the energy justice frameworks mentioned earlier contains certain principles that can apply to Southern cities. However, they are demonstrably insufficient for comprehensive coverage in this setting.

This far in the discussion, we have clarified two of the insufficiencies in the energy justice debate (including the frameworks), they being (a) global South conditions and (b) local or household scale studies. We close this discussion with the third, (c) the human impacts of energy injustices.

Surprisingly, while there is extensive discussion in the energy justice literature on actual injustices, there appears to be little engagement with the individual human impacts of energy injustices. Wood and Roelich (2020, p15) observe a constrained ability of '*both the TCEJ* (triumvirate concept of energy justice) *and principled approach* (eg Sovacool) *to create a space in which to articulate and understand the impact of energy dilemmas on those who suffer them'*. An appreciation of such impacts will contribute to understanding the fundamental qualities of a just energy system. By occupying this space, I am seeking to help bridge the divide between current energy justice theory and realities of energy justice for individuals. Such an appreciation has potential to inform a set of energy justice principles that will be effective at a grass-roots level. Such research should not only add value to the academic discourse, but also provide effective guidelines for policymakers and practitioners. The question then arises as to how best to assess the impacts of energy injustices on the people and for that we turn to the capability approach (CA). The next section defines the CA, explains why it is selected, and how it contributes to this thesis.

3.7 The Capability Approach

The CA is a philosophy of development and an academic discipline focused on what individuals are able to do and able to be. It is an approach that considers that which makes a person's life worthwhile. Capabilities represent the freedom that a person has to enjoy valuable functionings. Under the CA, functionings are types of achievements that a person has reason to value, including being healthy, having mobility, being educated, and the like. Capabilities represent an individual's freedom and ability to accomplish these functionings.

3.7.1 Foundations of the Capability Approach

Amartya Sen, (2010, 1999, 1985) is recognised as the founder of the CA. Sen's seminal, '*Development as Freedom*' (1999) presents an approach to development *'that focusses on freedom, seen in the form of individual capabilities to do the things that a person has reason to value'* (ibid, p56). Rather than simply as low income, poverty is best understood as deficient capabilities; that is deprivations that impact on an individual's ability to lead a life that he or she values. Alexander, (2008) asserts that Sen was more alert to the problems of the poor than were his academic predecessors such as Rawls and contributes a stronger appreciation of poverty and development.

Sen acknowledges the value of Rawls' (1971) contribution but critiques his concept of 'primary goods' as the measures of poverty, pointing out that individuals have differing capacity or opportunity to convert primary goods into well-being. Sen's critique largely concerns the diversity of human beings and identifies conversion variables such as the political environment, personal disadvantages, environmental diversity, and social conditions. According to Sen (1999, p3), '*[d]evelopment requires the removal of major sources of unfreedom'* [46]. The success of a society can be judged

---

[46] I had an interesting discussion with Professor Adil Khan (https://social-science.uq.edu.au/profile/135/adil-khan), a Bangladeshi, at UQ on 5 March 2020, who described a story of Amartya Sen living as a teenager in Dhaka, during the Indian partition of 1947. His Hindi family had a local Muslim house servant, a male. During the religious violence of the partition, the man's family was without food, so he made the trip from his Muslim enclave through a Hindi area to ask the Sen household for some food. He was murdered en-route by the Hindis. Professor Khan describes this event as the moment of Sen's realisation that the man experienced an 'unfreedom', as he had no choice but to make that journey in an attempt to feed his family.

by the level of substantive freedoms enjoyed by every individual. Sen further identifies distinct types of freedom, including political freedoms, economic facilities, social opportunities, transparency guarantees (governance), and protective security (Sen, 1999, p10). According to the CA, to effectively deliver sustainable and meaningful improvement in people's lives, that is '*to advance the general capability of a person*' (ibid, p10), all of these dimensions must be addressed. We shall revisit these foundational CA concepts a number of times through the remainder of this thesis. Critically, the CA addresses conditions for every individual, not merely national or community averages (eg for educational levels).

Martha Nussbaum, (2011, 2000), a collaborator and a critic of Sen develops a slightly different CA philosophy, building on the work of not only Sen, but also of Aristotle, Marx and others. Her writing '*enriches the theoretical foundations of the capability approach*' (Alexander, 2008, p61). In her most influential work, '*Women and Human Development: the capabilities approach*', Nussbaum, (2000) develops a list of ten central capabilities. Asking '*[w]hat does a life of human dignity require?*' (ibid, p32), Nussbaum concludes that the essential capabilities are: life itself, bodily health, bodily integrity, senses and imagination, emotions, practical reason, affiliation, respect for other species, play, and control over one's political and material environment. This list is derived from extensive philosophical sources, including the feminist paradigms. Her capabilities list is compatible with allied literatures such as human wellbeing (White, 2010) and human rights (United Nations, 1948). Nussbaum asserts that '*The capabilities in question are important for each and every citizen, in each and every nation*' (ibid, p6). She states that at least a threshold level outcome in all ten capabilities is critical; that is, one cannot be deficient in one, relying on an 'excess' in another. This determination of a fixed universal list of capabilities is an explicit and defining departure from Sen, and the foundation of considerable academic deliberation ever since.

The philosopher, John Alexander, (2008) asserts that Sen '*defined*' the CA, and that Nussbaum '*philosophised*' it. He goes on to credit another scholar, that is, Elizabeth Anderson (1999),with '*democratising*' the CA. Anderson delivers a theory of democratic equality based on the CA, which '*integrates principles of distribution with*

the expressive demands of equal respect' (ibid, p289). People are entitled to be free of oppression, entitled to equal participation in a free and democratic society, and are entitled to a *'capability set sufficient to enable them to function as equals in a society'* (Anderson 2010, p83). Sufficiency is an important concept in the CA discourse. While the concept is difficult to quantify, CA scholars call for every individual to be afforded a sufficient level of every valued capability in order to lead a good life.

Several prominent authors represent the CA in model form (Biggeri and Ferrannini, 2014; Frediani, 2019; Robeyns, 2017; Trani et al., 2011). An amalgam of the common elements of these models is presented as Figure 3.2. We return to this model in the next chapter in formulating the theoretical framework for this thesis. According to capability theory, human development involves converting resources into an individual capability set and then individuals choosing how to engage and leverage each capability. Capabilities include such freedoms and opportunities as those of Nussbaum, outlined above. Converting resources into capabilities is constrained or enhanced by conversion factors such as the local climate, the built environment, the political system, and social norms. These influences operate across different scales. The choice to convert a capability into a human function is partly personality dependent but also influenced by a person's autonomy. As a feedback loop, as shown in the model, achieved functionings allow a person to improve their own access to resources and to overcome hindering conversion factors.

Figure 3.2: The Capability Approach Framework
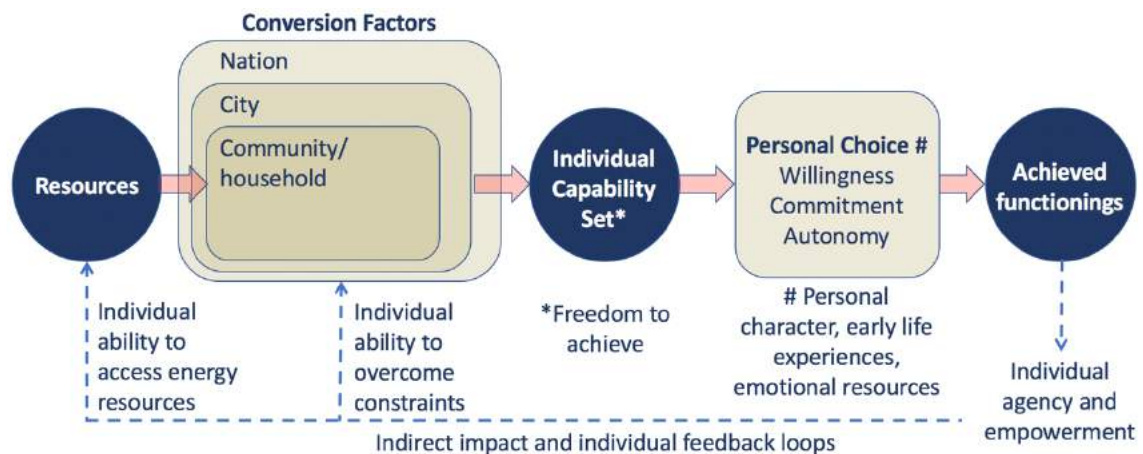
Source: Principally, Biggeri and Ferrannini, (2014, p62). Also: Frediani, (2019, p263); Robeyns, (2017, p83); Trani et al., (2011, p252).

3.7.2   CA Perspectives on Theories of Justice

This thesis is a study in social justice engaging a CA perspective, and thereby another debate has an important place in my research. Commentary regarding the potential of CA theory to contribute to a theory of justice is reviewed here, and we shall revisit these concepts in the concluding chapter of the thesis. For some time, the CA has been embraced in wide scholarship concerning equality and justice. CA theory has established that a focus on capability in the pursuit of justice has greater value than a resource focus. The former represents ends while the latter represents means. People and societies value ends (eg health, personal security), not means (eg resource inputs). This is a fundamental concept in the capability approach.

The notion of a capability based theory of justice has been a sphere of vibrant exchanges amongst theorists, with particularly significant contributions from Elizabeth Anderson, (1999, 2010), Martha Nussbaum, (2003, 2006), and Amartya Sen (Sen, 2010a, 2010b). Anderson, (1999) builds on Sen's early ideas regarding 'equitable freedom to achieve' to build a theory of 'democratic equality'. In a just society, citizens living in a community of equals make claims on one another by virtue of their equality, rather than on the basis of inferiority. Anderson points out that Sen's capability theory leaves open the question of which capabilities a society should seek to equalise. She

offers three areas of capabilities to be addressed, '*the capability to function as a human being, as a participant in a system of cooperative production, and as a citizen of a democratic state*' (Anderson, 1999, p317). Individuals require a capability set across these dimensions sufficient to enable them to function as equals (Anderson, 2010, p83). Nussbaum tightens that proposition by developing her central list of ten capabilities, as mentioned in the last section. She offers her list as '*part of a minimum account of social justice'* (Nussbaum, 2003, p40). Nussbaum, (2003, p56). states that the CA can craft an '*adequate account of social justice'*. As such, she states that her theory is '*a partial and minimal account of social justice'* (Nussbaum, 2006, p71), noting elsewhere that achievement of threshold levels of capability will not be sufficient for full justice to have been achieved (Nussbaum, 2000). Nevertheless, Robeyns, (2017, p153). asserts that this is the most complete capabilities-based theory of justice offered to date. In essence, Nussbaum's theory provides for elevating the disadvantaged to a level of sufficiency but is silent on how society is managed once those thresholds have been met. Anderson's, (2010) response is that universal achievement of threshold levels of capability should be the immediate objective. Deliberation on what constitutes an ideal society may follow.

Sen takes a somewhat different stance to Anderson and Nussbaum on the development of a theory of justice. He argues against aspiring to a utopian ideal in terms of social justice, making the point that such an outcome is unattainable. Assessing how to improve specific situations of injustice to make them fairer is a realistic objective, and therefore represents a more practical focus of theory development. In other words, Sen observes that theories of justice promoting an ideal society are 'transcendental' and that 'comparative' approaches are more useful and applicable for real world advances in justice (Sen, 2010a). By way of example, he points out that the elimination of famine and universal literacy would be accepted as advancements in justice but that even such large-scale achievements would not deliver a fully just society (Sen, 2010b). Sen asks, 'how would justice be advanced?' rather than 'how would a perfect society be achieved?'. Deneulin, (2011) undertakes a critical review of Sen's position, lauding the value of his concepts (freedom, capabilities, agency) as '*starting points for thinking about justice*' (ibid, p796), but

observing that a better society can only be achieved with an appreciation of the economic, social, and political structures which constitute that society.

Partly responding to the shortfalls noted by Deneulin, (2011), a recent work by Belda-Miquel et al., (2020) provides an noteworthy application of capability theory to not only advance a theoretical framework for justice but also to test that theory in the field. These authors open a dialogue between the 'just socio-technical transitions' literature and capability theory in order to build a theory of justice framework. The application of their framework appears successful in exposing a path towards justice in a particular setting, based on grassroots innovations.

My study has a different set of objectives. I seek to address specific injustices in a specific community. I am interested in the emancipatory potential of this research, presenting concrete ideas for improving circumstances of one set of injustices, rather than appealing for a utopia. Therefore, I find the direction of Sen more useful to this research than those of Nussbaum and Anderson. That is, I am not seeking to contribute a theory of justice, not even a micro-theory, but rather to institute a set of guidelines for a real-world advance in justice for a set of specific circumstances.

Having thus far outlined the core qualities of the CA, the next section explains the reason for selecting this philosophy as the theoretical basis to deepen our understanding of energy injustices.

3.7.3   Vehicle for Analysis of Human Impacts of Energy Injustices

It is logical to state that the important attribute of energy services is not resource inputs, but the benefits that people enjoy from those services. In other words, what people can achieve from energy services, for example with health and livelihood, clearly matters more than resource allocation. Such achievements may be viewed as capability outcomes. From Sen to more contemporary authors, (Alkire, 2015; Frediani et al., 2014) there has been extensive advocacy of the benefits of the CA for analysis in the development and poverty alleviation process.

Within the discourses of environmental and climate justice, the CA is offered by several authors as enabling a holistic integration of the three tenets of justice:

distributive and procedural justice, and recognition (Walker, 2012, p52; Edwards et al., 2016, p766). Examining the value of the CA for climate justice, Schlosberg, (2012) notes that the approach bridges the gap between abstract justice theory on the one hand and the reality for policymaking on the other. Writing about environmental justice, Day, (2017) points out that the CA's focus on outcomes, what people can do and be, is more effective than the traditional focus on resources that people receive. She states that the CA '*is persuasive in its argument that we should focus on real outcomes for people as the basis for assessments of inequality and for claims of justice and injustice*' (Day, 2017, p134). Application of the CA has enriched the academic streams on environmental justice and climate justice. The logic of Schlosberg, (2012) and of Day, (2017) is transferable to the energy justice debate.

In his foundational work on energy justice, Sovacool, (2013) explores the main theories of justice that were covered earlier in this chapter. He includes a discussion on the CA as a philosophy to help appreciate energy injustice. Referencing the CA, Sovacool, (2013, p138) concludes that energy justice '*involves creating a life for households where they have the warmth*[47]*, light, and cooked food to maximise their potential'.* He observes that maximising people's ability to lead a life that they value is the primary objective of an energy system.

The CA provides a practical framework for understanding the links between energy and many important consequences in people's lives such as for health, education, security, and recreation. A number of energy poverty researchers have engaged this approach. Day et al., (2016) bring the CA to bear on energy poverty studies as a '*theoretically coherent means of comprehending the relationship between energy and wellbeing'* (ibid, p255). Fernández-Baldor et al., (2014), using the CA in researching technological transitions in rural Peru, find that the CA provides information about the real freedoms that people can enjoy through electrification projects. Samarakoon, (2019, p4) examines the relationships between energy poverty, justice and wellbeing, determining that a '*framing of energy poverty as a form of capability deprivation*

---

[47] A bias towards the global North. Most slums being in the tropics (Chapter 1) means that for most slum dwellers, cooling not warming is most important.

brings the relationship between energy and wellbeing into sharper focus'. Gardiner, (2018) states that a central justification for using the CA in an energy study is that it focusses on what matters, this being human flourishing, rather than on resource inputs. Lacey-Barnacle et al., (2020, p131) observe that CA-based research would make a valuable contribution '*towards reshaping understandings of energy justice in the developing world'.* Many such assertions are evident in the literature.

Despite these appeals, the use of the CA in energy justice studies is rare to date. An exception is Damgaard et al., (2017), who engage the CA to illuminate individual agency and social power structures underlying bioenergy projects in Nepal. Interestingly, they find spatial variation in capability outcomes from an energy project, dependent upon social and political connectedness. These authors conclude that further capability-focused research would advance the concept of energy justice (ibid, p14). The literature supports the notion that the CA can make a meaningful contribution to the energy justice debate. On the basis of the arguments presented above, this thesis uses the CA as a vehicle for analysis of the human impacts of energy injustices.

In order to undertake a meaningful assessment of the impacts of energy practices on the slum dwellers, it is necessary to develop a list of the specific capabilities to be considered. The remainder of this chapter describes the development of such a list.

3.8 Capability Lists: The Democratic and Philosophical Positions

We now review key CA literature in this section, building the case for developing a locally specific capability list. It is worthwhile firstly to review the critique of Sen's and Nussbaum's early CA ideas. Reference is made particularly to Sabrina Alkire, (2007, 2005, 2002) and Ingrid Robeyns, (2006, 2005, 2003), significant early scholars in the CA debate. Though Sen's theory has been widely embraced in development circles, both Alkire, (2002, p3) and Robeyns, (2005, p192) have asserted that the approach needs to be less abstract, or somewhat simplified, to have practical application (also Frediani, 2010). Similarly, while a great many writers reference Nussbaum's, (2000) famed list of

central capabilities [48], Robeyns, (2003, p68) asserts that *'it is formulated as a highly abstract level'*. Alkire, (2002, p32) regards the list as *'valuable at a political level,* (but) *'overdetermined' for use in development at a microeconomic level'*. Sen's and Nussbaum's foundational CA work has undergone development by many researchers over more than twenty years to facilitate application 'in the field'. During this time, numerous CA writers have responded to Sen's call for situation-specific determinations of what people value.

Importantly, Sen, (2004) advocates a process of consultation and public reasoning in applying the CA. Alkire, (2002) draws on Sen's idea that important capabilities are those freedoms that people value, making the logical point that in order to determine those valued freedoms, consultation with those affected is essential. Frediani et al., (2019, p4) note that under Sen's theory, freedom *'is defined as the choice, ability and opportunity people have to pursue their aspirations'.* As such, it is essential to understand what constitutes the particular aspirations for individuals in a particular demographic. What freedoms do specific groups of people value?

Both Byskov, (2017) and Claassen, (2011) define Sen's position as *democratic*, on the basis that Sen advocates localised consultation on localised capability sets. They see Nussbaum as having a *philosophical* perspective, developing a list of central capabilities through building on previous theory and contemplating what constitutes a good life. After a detailed discussion, Claassen, (2011) argues that the philosophical position prevails by virtue of its inherent respect for democracy and the inevitable connection between philosophical reasoning and public reasoning. He argues that philosophers build theory, not only through contemplative thought but also through *'practical investigations* (which) *influence their theories'* (ibid, p505). Byskov, (2017) takes a slightly different stance in developing a central list of capabilities for his study. He argues for a democratic approach fortified by a philosophical perspective such that *'the democratic and philosophical positions can be mutually reinforcing, rather than opposing, approaches to the selection of capabilities'* (ibid, p4). He references many eminent CA authors in arguing convincingly for reinforcing the democratic position

---

[48] With over 10,000 citations according to Google Scholar.

with the philosophical approach. This is not far removed from Claassen's conclusion though admittedly with a reversal of emphasis. The amalgamated perspective, bringing together democratic and philosophical positions, is consistent through much of the CA literature that addresses the operationalisation of the philosophy.

An important feature of Sen's, (1985) early argument for the CA was that poverty cannot reasonably be evaluated as simply a financial measure as it is a multi-dimensional phenomenon. It follows that in order to apply the CA, a set of dimensions must be assembled. Sabrina Alkire has been a prominent writer on how to determine those dimensions. She identifies that researchers have used several methods to determine central capabilities, notably (a) the use of existing data, (b) using previous theory to make assumptions, (c) drawing on existing lists that were collectively assembled, (d) using participatory processes and (e) engaging empirical studies of people's values (Alkire, 2007, p97). In another work, Alkire, (2005, p128), establishes the principle that *'operationalization depends upon the thoughtful participation of many users and much public debate'*. Participation by those affected is a common theme in the CA operationalisation literature. Frediani et al., (2019, pp12-14) revise and extend Alkire's assessments mentioned above, pointing to the value of 'bottom up' studies of human values. They propose interviews, surveys, and mixed method research as value-adding research processes for selecting capabilities. Robeyns, (2003) adds an important layer to the discussion in demonstrating that any set of selected capabilities should be assessed against a number of criteria, including: (a) having a methodological justification for the selection, (b) having a sensitivity to the context, and (c) taking care to achieve an exhaustive list (ibid, pp70-71). A number of researchers, in operationalising the CA, have worked with the strategies and principles established by Alkire and Robeyns, and have further developed the ideas of those two authors. Discussion on a number of highly regarded works follows.

A valuable overview of CA operationalisation is provided by Ibrahim (2014). In order to identify the most valued capabilities and functionings of a specific group, she advocates a process initiated by a review of relevant literature, followed by input from other sources and finally discussion with local participants (ibid, p18-19). The last point is essential to facilitate the capture of the multi-dimensional complexity of individual

needs in a given context. These procedures are consistent with the processes offered by Alkire and Robeyns mentioned earlier. In essence, such an approach has broadly been adopted in many studies.

Biggeri et al., (2006) reference Nussbaum's, (2000) and Robeyns', (2003) central capability lists to develop a draft list, and then consult with a representative sample of participants[49]. Finally, they give consideration as to whether any capability has been overlooked, principally by studying the United Nations Convention on the Rights of the Child for relevant principles. This last step is an effective method of complying with Robeyns' call for developing an exhaustive capability list. Vizard, (2007) reinforces the notion of referencing international human rights agreements in engaging the CA. She asserts that international human rights agreements *'can provide a pragmatic terrain of consensus for the specification and justification of "authoritatively recognized" … basic capability sets'* (ibid, pp247-248). Both studies demonstrate that referencing international human rights agreements provides an extra level of rigour to the process of developing an exhaustive list of capabilities.

Burchardt and Vizard, (2011) engage the CA to develop a capability set for monitoring human rights in contemporary UK. They develop and then test a two-stage approach. Stage one involves deriving a capabilities list from the international human rights agenda (top-down); and for stage two, a deliberative process of consultation with participants is conducted (bottom-up). The second stage assesses authentic and fine-grained local needs, expressed as capabilities. In a philosophical overview of the CA literature, Hick and Burchardt, (2016) examine capability deprivation as a basis for understanding poverty. They state that sole reliance on a participatory process is insufficient, as participants may lack complete knowledge and some participants may be dominated by others. Developing a draft list of capabilities from the literature overcomes the limitations of a purely participatory approach. This is an insightful point, reinforcing the value of combining the philosophical and democratic approaches in CA research. Expressed differently, merging top-down with bottom-up analysis will most likely produce effective results.

---

[49] In this study, the participants are children.

A number of studies identify the need to appreciate existing power structures in communities in order to successfully apply the CA. Frediani, (2010) incorporates a study of existing power structures into his research, analysing various notions of power in the community. This study determines that analyses of poverty situations need to unpack power structures to fully appreciate and define local injustices. The relative strength of actors in the power hierarchy opens opportunities, freedoms, and choices and thereby the capability set of each individual.

In summary, CA scholars have commonly employed a set of core strategies to determine a localised list of central capabilities. The first stage is usually engagement with previous CA literature including 'universal' capability lists. Secondly, a test of exhaustive inclusion is undertaken, often against international human rights agreements. The third and final step is consultation with affected participants, ideally drawing out information on socio-political structures and power relations.

To extend this process a little further, I argue that the literature engagement stage should explore beyond CA scholarship to include general scholarship about the socio-economic conditions lived by the subject population of my study in Dhaka. This equips the researcher with an appreciation of what the local people are likely to value. Further, I hold that a review of writings on the living conditions of the study participants, in my case the urban poor, provides the researcher with an extra depth of understanding prior to the formulation of a capability list. These additional steps have been undertaken in my research, as will be demonstrated in the next section.

3.9   A Draft Capability List

My process for formulating a draft (long) list of central capabilities for Dhaka's slum dwellers for use in my fieldwork is described in this section. Processes tested in earlier research, as described in the previous section, have guided my approach for assembling this specific set of central capabilities. The first step in my process has been a thematic analysis of previous lists of central capabilities. I have selected the following highly cited works to be used as reference studies in this analysis:

- Nussbaum, (2000)

- Robeyns, (2003)

- Biggeri et al., (2006)

- Vizard and Burchardt, (2007)

- Alkire et al., (2009)

One additional more recent work by Greco et al., (2015) is added to the group to provide a global South perspective to the analysis, most of the above having a global North bias. Having reconfigured the lists offered by each of these authors into themes, I have developed a draft list of central capabilities for Dhaka's slum dwellers. My readings about the life conditions for the urban poor and about the socio-cultural dimensions of Bangladesh have further informed the list, as will be explained shortly.

With a view to achieving an exhaustive list, and as a cross check, I have then aligned the resultant list with the UN Declaration of Human Rights (United Nations, 1948). This step is drawn from that used in several studies mentioned in the last section. The thematic analysis is outlined fully in Appendix 3.1 and the review with the UN Declaration of Human Rights is presented in Appendix 3.2. Finally, in considering inclusions and exclusions, I have referenced seminal scholarship on urban poverty. The resultant central capability list as determined by this process is presented as Table 3.3. The list of fifteen capabilities is considered manageable for this research[50].

A number of items on the list are unanimously included in the reference studies and have obvious importance to slum dwellers. These are coded in green in Table 3.3. In this category are health, physical security, education, dignity, valued activities, decent housing and having a social and family life. Discussed below is my reasoning for including the remaining capabilities in my draft list.

---

[50] and is consistent with the size of Robeyns (2003) list at fourteen capabilities.

Table 3.3: Central capabilities list for Dhaka's slum dwellers: draft list

Item	Capability
a.	Having good health
b.	Having physical security
c.	Having legal protection
d.	Having an education
e.	Having dignity and self-respect
f.	Having a job and fair pay for work
g.	Having secure occupation of your house (secure land tenure)
h.	Having opportunity for activities you value and enjoy (such as art, reading, music, sport, games)
i.	Having freedom for religious observation
j.	Having decent housing
k.	Having decent clothing
l.	Having a political voice
m.	Having a family life and a social life
n.	Having freedom to be with anyone you choose
o.	Having control over your assets

	Unanimous inclusions in the reference studies
	Political capabilities

Four 'political' capabilities are included, which are shown in blue in Table 3.3. All of these dimensions are related to socio-political empowerment for the urban poor. I draw here on Satterthwaite's, (2001) seminal work defining aspects of urban poverty[51]. It can be argued that issues deriving from the last two of Satterthwaite's, (2001) aspects, inadequate legal protection and political voicelessness, are life-defining for slum dwellers. Other literature supports this assertion (Davis, 2006, p44; United Nations Human Settlements Programme, 2003, p130). Further, both of these capabilities are mentioned in not only some of the reference studies but also in Bangladeshi socio-political literature (Lewis, 2011; Shafi, 2010). On that basis, I have included the opportunity to have both legal protection and political voice on my list.

---

[51] Satterthwaite's, (2001, p146) aspects of urban poverty
1. Inadequate income
2. Inadequate or unstable asset base
3. Inadequate shelter
4. Inadequate provision of public infrastructure
5. Inadequate provision for basic services
6. Limited or no safety net
7. Inadequate legal protection
8. Voicelessness

Additionally, I include the closely related capability of having affiliation with others, also mentioned in a number of the reference studies. The right to own property is enshrined in Article 17 of the UN Declaration on Human Rights[52] (United Nations, 1948). Equitable freedom to achieve property rights is defined as a central and important capability by Nussbaum, (2000, p47) and Vizard and Burchardt, (2007, pp6, 8). Claassen, (2015) provides a detailed philosophical review of property rights as a capability. He concludes that *'an individual's right to hold private property'* (ibid, p233) should be on any list of central capabilities. Based on earlier discussion in this thesis, I have interpreted this set of concepts as relating to tenure security, reworded for my fieldwork as 'secure occupation of one's home'. It is reasonable to conclude from the CA literature that this is a justifiable aspiration for all people, including for slum dwellers.

Two more capabilities that feature in some of the reference studies are clearly critical for the urban poor. These are livelihood and control over one's assets, both inescapable determinants of wellbeing for slum dwellers. Again, these are present in Satterthwaite's dimensions. The right to fair work is the topic of the United Nations Declaration of Human Rights (1948). Accordingly, these two items are included on my list. I choose to include the capability of decent clothing. This is listed as a central capability by two of the reference authors. That Dhaka's slum dwellers are almost invariably attired in decent clothes (Figure 3.3), is partly because garment-making is Bangladesh's principal industry[53], but most likely also because decent clothing is tightly linked to people's self-esteem in Bangladesh.

---

[52] Article 17
    1. Everyone has the right to own property alone as well as in association with others.
    2. No one shall be arbitrarily deprived of his property.

[53] Meaning that clothes are inexpensive.

Figure 3.3: Slum dwellers in Dhaka (M Jones)

The final inclusion to mention is the freedom for religious observation. The justification for this is partly founded on the fact that religion (Islam) is pervasive in Bangladeshi society (Khan, 2015; Riaz, 2014a)[54]. Lewis, (2011, p25) states the *'religion constitutes a critical component of Bangladeshi identity'.* The capability of having religious observation is included on the basis of the Bangladeshi literature noting the primacy of religion in Bangladeshi society, and on the basis of it being on three of the reference lists, including Nussbaum's.

Condensing six lists from the reference literature into one has involved some exclusion decisions. Two key exclusions for my central capabilities list from the referenced lists are 'having a life' and 'being able to experience emotions'. These are clearly valuable conditions, but each is difficult to apply to my research. For the 'life' capability, exclusion is based on the cryptic or 'high-level' nature of that concept. The limited support in the reference literature for the 'emotions' capability has influenced that exclusion. Further, I consider these to be too abstract for discussion in relation to 'what constitutes a good life?', particularly in an energy study.

---

[54] Over 98% of respondents in my case study survey identified as Muslim.

Other exclusions from the reference lists are made on the basis of their unavailability or being a low priority for the bostee residents, plus being unsupported by a majority of the selected scholars. Nussbaum's, (2000) 'other species' is a concept too remote from the realities of life in an urban slum of Dhaka to form a useful discussion point. It is also not included on any of the other writers' lists. Further, I have chosen to exclude the capability of having mobility. Slum dwellers in Dhaka, for the most part, cannot afford public transport or any assisted mobility.

While some of my exclusions could be challenged, I am satisfied that the selected list of capabilities represents a practical, robust, and reasonably exhaustive foundation for my study. The list of fifteen capabilities developed here (Table 3.3) forms the basis for discussions with the bostee residents on what it is that constitutes a good life, and for choosing their most valued capabilities. The selection process of the most valued capabilities is described in Chapter 6.

3.10 Chapter Conclusion

Discussion in this chapter has shown that energy justice is an effective lens through which to understand the fair and equitable opportunity to access to energy services. For addressing circumstances in Dhaka's slums however, the energy justice literature in its existing form has a number of limitations in its coverage. This dissertation then, seeks to make an empirical and a theoretical contribution to knowledge through a global South focus. The theoretical insufficiency in the existing energy justice discourse concerns (a) global South conditions, (b) local or household scale studies and (c) the human impacts of energy injustices. I contribute to righting these insufficiencies through undertaking a detailed bottom-up study in a slum in Dhaka, including a capability-outcomes analysis for the people of the case study slum. My research contributes to energy justice scholarship through engagement with the capability approach, and with the Southern urban critique. In the next chapter, we shall examine the research design and methodology engaged to meet the research objectives.

4 Research Design, Methodology and Fieldwork

4.1 Chapter Objective and Research Questions

Previous chapters have provided the background for this study through reviewing the literature across several relevant streams. We now turn to an explanation of the design and methodology of my research, including the epistemological and ontological positions, the data analysis methodology, and the data gathering methods engaged. We also cover fieldwork considerations. The research design responds to my search for understanding the complex network of socio-technical infrastructures in energy services in a setting of urban poverty in the global South. As will be verified in the following chapter, injustices are manifest for users of energy in Dhaka's slums. My research questions are designed firstly to expose the causes and effects of these injustices. Secondly, I explore the potential of utilising this knowledge for a wider application in energy justice research, energy policy development and energy project management. This aspiration is realised through development of a new energy justice framework for informal settlements in the global South.

The primary research question for this thesis is:

1. *What are the causes of energy injustices in Dhaka's Slums and what are the effects on slum dwellers' capabilities?*

This question is addressed through a process of contributory questions. These are:

a. *What constitutes the socio-political landscape, energy system, and local energy practices for Dhaka's slums?*
b. *What are the energy injustices in the socio-political landscape, energy system, and local energy practices of Dhaka's slums and what are their causes?*
c. *What are the most-valued (energy-related) capabilities of Dhaka's slum dwellers?*
d. *What effects do the energy injustices have on Dhaka's slum dwellers' valued capabilities?*

The first set of tasks in this study concern identifying energy injustices and their causes at each of the research levels being addressed. Next, the study involves discovering

the human impacts of those injustices. This is undertaken through a capability impact analysis with the slum dwellers.

A secondary research question has been posed as follows:

2. *What are the principles of energy justice in settings of urban poverty in the global South and how do they form an appropriate energy justice framework?*

In addition to the outcomes of the RQ1 enquiry, contributory questions add to this phase, they being:

a. *What are the energy-relevant particularities of urban poverty in Southern cities and what energy justice principles emerge?*
b. *What are the principles of energy justice needed to address the detrimental effects of unjust energy practices on people's capabilities?*

Resolving the secondary research question involves developing a set of principles based on the findings of the previous stages of the research. The framework developed in this thesis incorporates principles involved in providing fair and equitable access to energy in the case study setting. Additionally, the framework maps key relationships between the identified principles. The wider objective of this study is for this new energy justice framework to offer broad application in settings of urban poverty across the global South. The realisation of that aspiration is reviewed in the concluding chapter.

4.2   Theoretical Framework

This section establishes the theoretical framework for my thesis, which will be presented in graphic form. Firstly, we return to the notion presented in Chapter 1 about case study research. The importance of examining the context of a case study as emphasised by Flyvbjerg, (2011, p301), was advanced in that earlier discussion. For my thesis, this has involved context analysis at cascading scales, as outlined below.

4.2.1 Levels of Analysis

In order to identify and scrutinise energy injustices for slum dwellers in Dhaka, my study seeks to understand as full a picture as possible by analysing different contextual levels of influence on energy practices. Of central importance in an energy study is the socio-political dimension of energy systems. As stated by Bridge et al., (2018, p100), energy systems *'are intimately bound into the way social and political power are organised and exercised over space'*. Sovacool et al., (2014, p115) state that energy systems *'both reflect and reinforce the structure of political and economic power within a society'*. Understanding the interplay of socio-political actors and institutions across a broad context is therefore integral in building a complete picture of energy arrangements for any context.

This multi-scalar approach for development research is endorsed by Banks et al., (2019, p1), scholars respected in the informality field, who see value in deep critical analysis of informal sites at the local, municipal and national scales These authors support this perspective to facilitate appreciation of how the spectrum of actors find *'opportunities for extraction, exploitation, and exclusion for diverse groups'*, an important part of my study. Additionally, a leading group of academics in the energy justice arena, Jenkins et al., (2018) verify this approach through deliberation on energy justice theory using the widely referenced multi-level perspective (Geels, 2002)[55]. These two pertinent papers are strong validations for use of a multi-scalar approach as an effective analysis structure for my research. Another energy justice review by Sovacool et al., (2019b) advocates a three level analysis of energy systems, using the terms micro, meso and macro. In the CA discourse, Frediani, (2019, p264) identifies the importance of analysing *'local social and collective dynamics'* along with *'underlying political and economic facilities'* to provide a more complete appreciation of both the manifestation of poverty and the underlying mechanisms of poverty.

---

[55] Geels, (2002, pp1261-1263) describes a multi-level perspective, which recognises the socio-economic and political structures within which energy is delivered across three scales: the broad landscape, socio-technical regimes, and niches.

On the basis of these substantial precedents, this thesis examines this socio-technical geography of energy at three levels, these being: (a) the socio-political landscape of Bangladesh, (b) the energy system of Dhaka and (c) local energy practices in the slums. These nested levels are represented in Figure 4.1. The tri-scalar view accounts for the wide range of institutions and actors influencing governance and energy services in informal settlements. Further, this format will reveal how power structures provide opportunity for exploitation and exclusion of poorer groups. This perspective encompasses both the socio-political and spatial conditions of life in the slums, providing a comprehensive understanding of energy circumstances for Dhaka's urban poor.

Figure 4.1: Levels of analysis
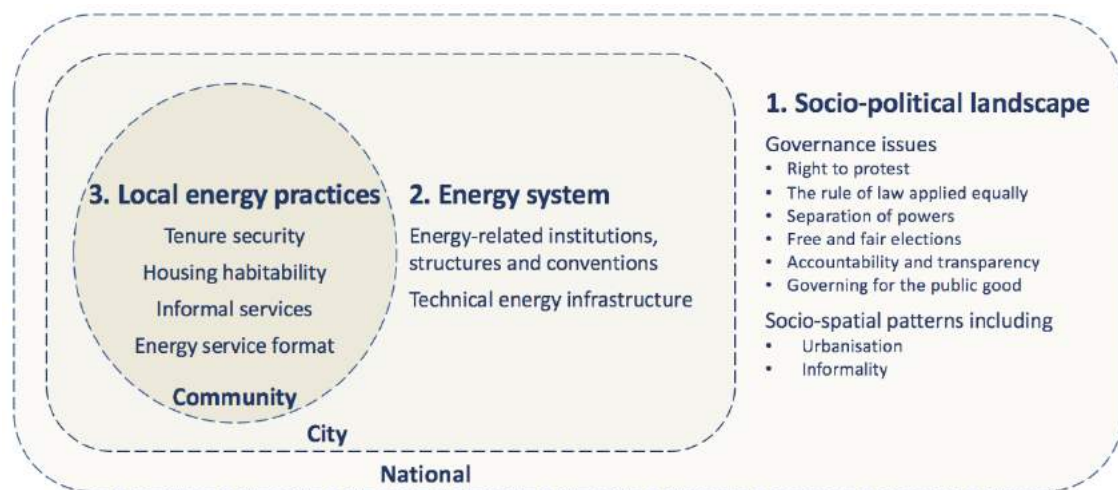
4.2.2 Theoretical Framework for this Study

Discussion in Chapter 3 determined that the capability approach (CA) is a particularly helpful lens through which to appreciate the effects of energy injustices on people's wellbeing. A diagram representing the CA was presented and described in Chapter 3 (Figure 3.2), which shows conversion factors in a three-level format. Based on the discussion above, the three levels of Figure 4.1 serve as conversion factors shown in Figure 3.2. These conversion factors influence capability outcomes from energy resources. We are now in a position to apply an energy dimension to the CA

framework and to integrate the defined conversion factor levels into the CA model. Figure 4.2 presents the CA diagram with these additional inputs. The diagram now serves as a graphic representation of the theoretical framework for this thesis, and we shall revisit this framework in each chapter through the remainder of this thesis.

Figure 4.2: The capability framework and energy (in)justice
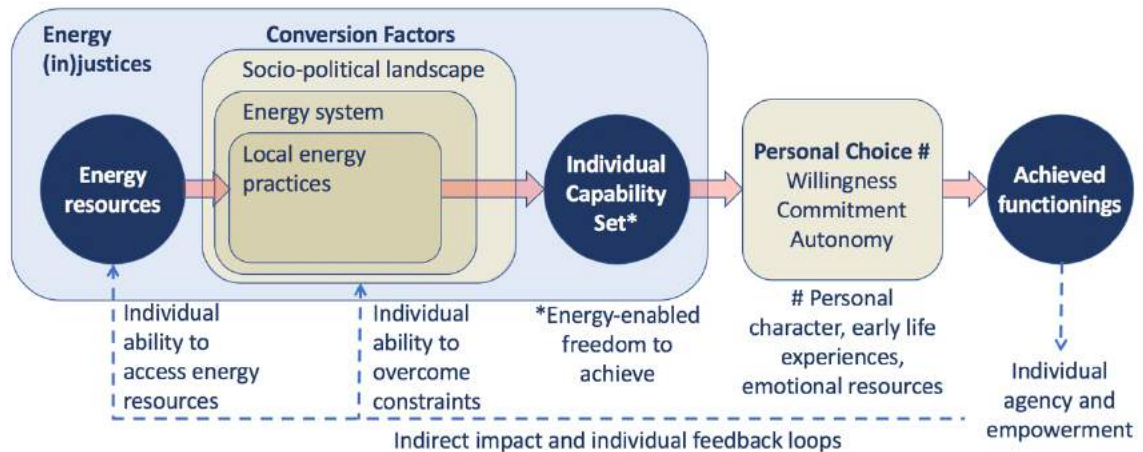
Working through the diagram, energy resources are delivered to households and are converted into individual capability sets. That conversion is affected by conditions (conversion factors) in the socio-political landscape, the energy system, and within local energy practices. Energy injustices occur across energy resource provision, the conversion factors just mentioned, and the capability set outcomes. Issues of personal choice and achieved functionings (to the right of the diagram) fall outside the scope of energy justice under this theoretical framework.

4.3   Logic of the Study

This thesis is built on a considered philosophical approach which is outlined in this section. Moses and Knutsen, (2012, p4) describe the *'three musketeers'* of the philosophy of science: epistemology, ontology and methodology. Following an investigation into suitable approaches for my research, I have assumed a philosophical structure for this thesis, which follows the logic represented in Figure 4.3. The following sections explain the rationale for selection of these modes for the research.

Figure 4.3: Logic of epistemology, ontology, methodology, and methods for this thesis
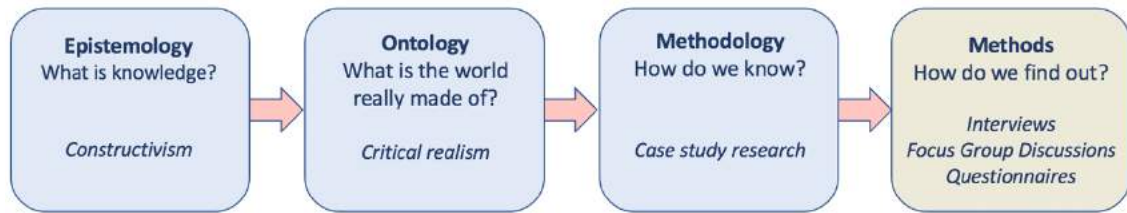
Derived from Gray, (2014, p19); Moses and Knutsen, (2012, pp4-5)

4.3.1   Epistemology

Defining the researcher's understanding of the nature of knowledge establishes the philosophical foundation of a research project. My study adopts an epistemology of constructivism. The constructivist perspective on knowledge assumes that people make sense of their world based on subjective social perspectives (Creswell, 2014, pp75-77). Geertz, (1973, p5) has a perceptive and poetic angle in this regard, stating that *'man is an animal suspended in webs of significance he himself has spun'*. My study explores a complex matrix of socio-political relationships. Understanding participants' interpretations of, and placement within these networks is fundamental to my research topic. A constructivist epistemology is eminently compatible with examining individual perceptions and experiences of a social justice issue.

This thesis engages principally with two bodies of academic scholarship: energy justice and the capability approach (CA). As was noted in Chapter 1, it is important to perceive energy practices largely as social practices (Bridge et al., 2018), allowing a deep engagement with people's experience of the benefits and burdens of energy use. The socially grounded nature of energy poverty and of energy justice favours an epistemology of constructivism. In terms of CA studies, a constructivist epistemology is not universal. A prominent CA scholar, Ibrahim, (2014), notes that either positivist or constructivist epistemologies may be engaged when applying the CA and presents a set of variables for when making this choice (ibid, pp10-14). Positivist studies are mostly top-down, large-scale, and are often quantitative; while constructivist research

operates more at a grassroots level, is small-scale and usually involves qualitative methods. As a localised study engaging qualitative methods, my thesis is positioned firmly on the constructivist side of Ibrahim's ledger. A constructivist epistemology has guided development of my research questions, data collection methods and data analysis, all of which focus on the socially constructed aspects of energy practices in Dhaka's slums.

4.3.2 Ontology

Traditionally, academic research in the physical sciences favours a positivist world view, while a greater portion of the social sciences has adopted an interpretivist view on the nature of existence. Positivism assumes a knowable objective reality, whereas interpretivism accesses reality through human constructions such as language and negotiated shared meanings (Creswell, 2014, pp7-9). My thesis engages with observable objective realities such as hard infrastructure and physical processes, along with social interpretations around political relationships and cultural norms. Accordingly, my study follows a third way, critical realism, which accepts and rejects aspects of both positivism and interpretivism. Rather than reality being either positive or a human interpretation, reality is seen as being constructed of layers. Bhaskar, (1978) first defined these layers of reality as follows:

1. Empirical: that which can be observed
2. Actual: that which exists whether observed or not
3. Real: that which can produce events; although the mechanisms are not directly visible

In this way, critical realism goes some way to addressing complex situations. As observed by Clarke, (2012), critical realism accepts complexity. He states that *'[r]ather than controlling for or simplifying complexity artificially, the approach advocates that complexity must be embraced and explored'* (ibid, p168). Critical realism is a movement in the social sciences in which attention is directed beyond observable structures and events to what causes those structures and events. Under this world view, the starting point is the observable, followed by asking 'what must reality be like to make these observations possible?' (Archer, 1998; Belfrage and Hauf, 2017). More

succinctly, in order to reveal causal mechanisms of social and physical phenomena, critical realism asks, *'What makes X possible?'* (Danermark et al., 2002, p97).

For this thesis, local energy practices in the bostee represent the observable or empirical layer, or Bhaskar's level 1. I have investigated the underlying structures of Dhaka's energy system that underpin its energy practices. These structures exist independently of participants' observations, lying as they do at level 2 of Bhaskar's layers of reality. Level 3 of the critical realism model, which asks, 'what makes circumstances in the other levels possible?', constitutes the broad socio-political landscape. This landscape will be revealed as the foundational material for all that exists and operates at the other two levels. The three-layer critical realism ontology and the flow of the research process are represented in Figure 4.4. Relationships with the research questions (RQs) are also mapped onto this diagram, as described below.

The three-level investigation for RQ1a provides a detailed context for exposing energy injustices in Dhaka's slums and their causes. Energy injustices are the subject of RQ1b. Then, RQ1c defines the capabilities of most value to the bostee residents, contributing to the investigation for RQ1d, which exposes the effects of energy injustices on the people's valued capabilities. Findings for these contributory questions provide the basis for answering RQ1, the primary research question of this thesis. All of the work addressing RQ1, along with an appreciation of the Southern urban critique, informs development of the new energy justice framework, the subject of the secondary research question, RQ2.

Figure 4.4: Critical realism, the three levels of this study, research flow and the research questions
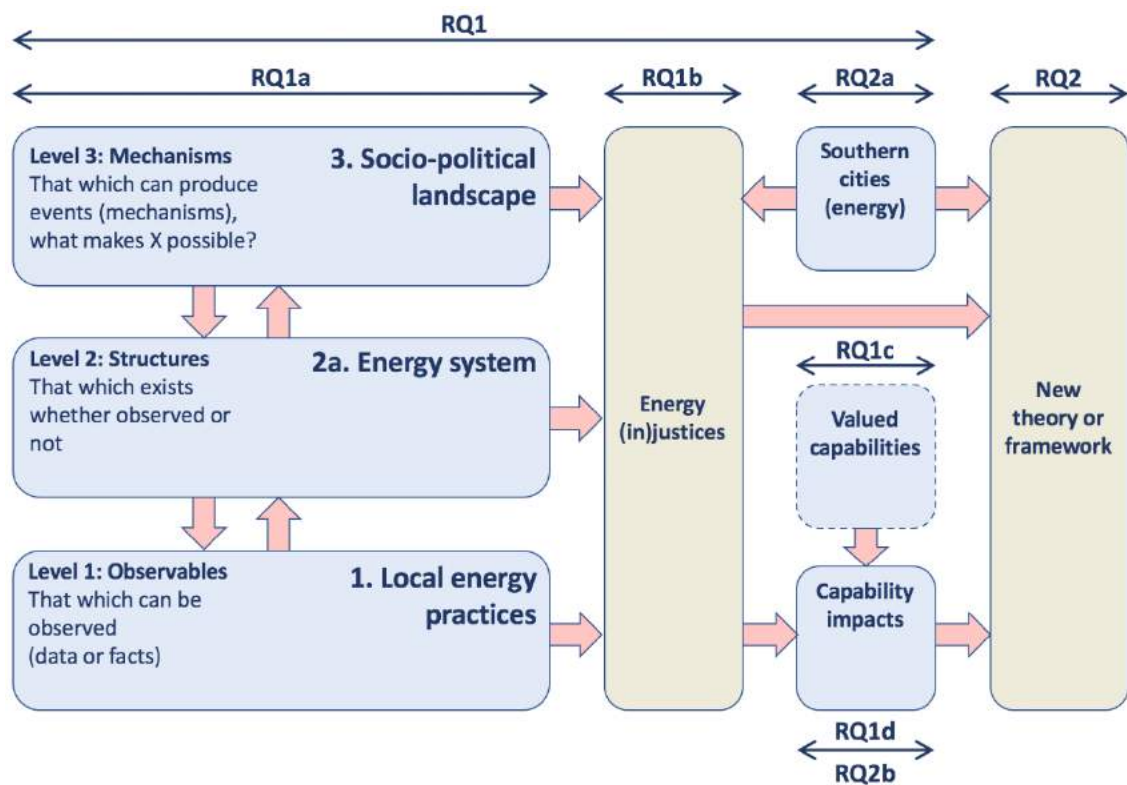
It is worth noting at this point that the three critical realism levels (Figure 4.4) align with the three analysis levels discussed earlier (Figure 4.1). Development of the ontological model and the research flow diagram, along with planning the research questions, has facilitated a legible organisational structure for the literature reviews and enabled an efficient and focussed process through the data gathering and data analysis phases of my study.

4.3.3   Methodology

My research engages with a case study methodology to gain a deep understanding of people's engagement with energy services in a slum community. My study concerns social phenomena, for which I seek a detailed explanation, and I seek to build a thorough picture of causes and effects. Case studies favour in-depth research of particular instances of social phenomena (Babbie, 2016, p302), and are effective in identifying causal relationships (Gray, 2014, p124). As such, the case study methodology is most suitable for this research.

For this study, my task commenced with acquiring a detailed understanding of socio-technical conditions in Dhaka's slums, and a sound appreciation of existing theory in various fields. As Gray, (2014, p124) notes, case studies benefit from *'prior development of a theoretical position'* in order to guide the data collection and analysis processes. This has largely been the format of my study. In that sense, my case study research has been a deductive mode of inquiry. I entered the field with a set of expectations, prepared structures, and a theoretical framework, all of which were based on the literature and on my previous experience in Dhaka's slums. As eloquently stated long ago by Geertz, (1973, p27), *'Although one starts ... from a state of general bewilderment as to what the devil is going on ... one does not start (or ought not) intellectually empty handed'*. Entering the field with prepared frameworks and structures has allowed me to be alert for both contradictions and consistencies with existing theory and previous research.

Given the paucity of engagement between the energy justice literature and global South environments, my case study research also involved a degree of inductive theory-building, largely from my primary data, with the objective of building an original energy justice framework suitable for the needs of the case study population. However, this theory-building leans heavily on the academic literature across several streams noted earlier[56]. My research proposes a new theory, or framework, based on findings from a single case study and from the literature. To draw on concepts described by (Moses and Knutsen, positioned, p140), the new theory then stands as a *'preliminary theoretical construct'*, serving with other research as a building block in the development of a *'stronger theoretical edifice'* (ibid, p140) over time. I feel that this is a defensible description of the role of my research.

My research methodology draws also from constructivist research concepts outlined by Kathy Charmaz, (2014). She describes strategies for understanding participants' experiences of the multiple realities of social justice, advocating the gathering of *'rich data'* and *'thick descriptions'* about participants' views and feelings, to understand how they construct their world. Charmaz, (2014, p34) states that the fundamental

---

[56] In particular energy justice, the capability approach, and Southern urban theory.

question to keep asking is '*what's happening here?*'. This approach aligns well with the mission of critical realism to identify underlying mechanisms which explain observable phenomena. Many research authors including Charmaz, (2014, p26) explain that research methods '*flow from the research question*'. We move on in the next section to outline the data gathering methods used in this case study research, designed both to satisfy the objectives mentioned above and to resolve the research questions.

4.4   Data Gathering: Background

This section explains the rationale for adoption of each data gathering method engaged in this thesis and how each method has been applied. In each case, consideration has been given to which data gathering method would be most successful in building a reliable body of data from which the research questions could be effectively addressed. Before describing the research methods, explanations about my research team and issues of translation are presented.

4.4.1   Research Colleague and Research Assistants

Through my main fieldwork, I have been in the fortunate situation of being supported by a research colleague, a translator, and a small team of research assistants. At its peak, the team total was eight including myself. My friend and colleague, Wendy Truer, an urban planner experienced in facilitating focus group discussions (FGDs) joined me in Dhaka for three weeks of June 2019. She led the female FGDs with a female translator and assisted in the bostee survey. Having a female colleague was beneficial in optimising the quality of data obtained from female participants.

Younus was my translator during my Masters fieldwork in 2017, and I re-engaged him for a considerable volume of work in my PhD. Younus provided valuable cultural advice, in fact acting as an '*ethnographic informant*' (Bujra, 2006, p177). He also provided feedback on my research instruments prior to testing them in the bostee and took an active role in the leaders' and male FGDs and in the bostee survey. Sakura co-facilitated female FGDs and had a lead role in the bostee survey. The remaining four team members were students in Geography and Environment at the University of

Dhaka, all recommended by Professor Nurul Islam Nazem[57]. The leader of these was Monojit, who prepared sampling maps and capability posters, was involved in the bostee survey, produced the FGD transcripts and undertook a small household survey later in the process. Sauda assisted with the two bostee surveys. Mamun and Royon assisted in the main bostee survey. Figure 4.5 shows the full research team after a day's work in the bostee. Apart from my colleague Wendy, team members were paid for their work[58].

The advantages to the research quality of having this team have been substantial. Possessing the local language and some cultural affinity with the bostee residents, the research assistants obtained less 'spoiled' primary data compared to what I alone would have obtained with a translator. Another significant advantage of engaging a team of eight was the reduced survey quantum per researcher, avoiding the 'research fatigue' that I would likely experience in conducting 150 to 200 surveys alone. The team approach to fieldwork enabled optimisation in the time efficiency of my fieldwork.

---

[57] My honorary tertiary supervisor at the University of Dhaka (http://geoenv.du.ac.bd/author/nazem/) (http://cusdhaka.org/users/nurul-islam-nazem-2).

[58] I funded Wendy's accommodation in Dhaka. Payments to the team, on a daily basis, ranged from 1,500 taka (£13.60) for the most junior to 3,400 taka (£31.00) for the senior interpreter.

Figure 4.5: The research team during the bostee survey (M Jones)

Left to right: Royon, Mamun, Wendy, Sakura, Younus, Mark, Monojit, Sauda

The main risk of having a team undertake the bostee survey was inconsistency of approaches in engagement with respondents. This was mitigated through a half day workshop with my full research team, conducted prior to the data collection activities. In that session, I explained the research objectives and the data gathering processes. I had the team practise the bostee survey with members role-playing interviewer, translator, and slum dweller. The session proved essential to properly prepare the team for the mechanics of the data gathering, including use of the mobile data collection App. A local academic, Professor Anwar Hossain, assisted with the session and made helpful suggestions on the conduct and content of the survey. A moment in the briefing workshop is captured in Figure 4.6. Each morning of the survey, I briefed the team at the bostee on the day's tasks prior to commencement. One such briefing is shown in Figure 4.7.

Unexpected affirmative outcomes of engaging local research assistants included the positive team morale and the skill development of the team members. The latter, I believe, has been a modest contribution to local capacity building, leaving team

members with exposure to good quality research and with a set of new skills. All

research assistants expressed their appreciation for the learning experience[59].

Figure 4.6: The initial research team workshop at University of Dhaka. Professor Anwar is on the extreme left. (W Truer)

Figure 4.7: A morning team briefing at the bostee (W Truer)

---

[59] Monojit and Sauda have since successfully applied for Masters degree positions in North American universities, supported by written recommendations from me.

4.4.2 Translation

An important issue in my research is that I do not speak Bangla, the local language. English is widely spoken in the educated class of Dhaka, but this is not the case for bostee dwellers, almost none of whom speak English. As such, it was necessary for me to employ translators for work in the bostee. As outlined in development research literature, it is not sufficient to engage someone who merely speaks both languages. Familiarity with qualitative research is also important (Liamputtong, 2010, p140). A person with the right demeanour, with respect for participants, and with cultural sensitivity are also critical success factors. As mentioned earlier, I was fortunate to have an experienced research translator for my work, originally recommended by a local NGO for my Masters research. Younus was further briefed prior to my PhD data collection by Professor Nazem on such issues as the neutrality and the independence of a researcher.

The literature speaks to the reality that the different language between participant and researcher can exacerbate different realities and worldviews (Liamputtong, 2010, p136). Meanings pass through several processes from informant to translator to researcher, and back again in the form of follow up questions. The chances of misunderstandings are significant. Esposito, (2001) provides useful discussion points for conducting effective cross-lingual FGDs and surveys with a translator:

> *'The use of two different translators, multiple focus groups, and triangulation of participants, methods, and the investigators, including outside bilingual reviewers, will help to validate the translation of the general content'* (Esposito, 2001, p577).

These points are reinforced by Bujra, (2006) and Liamputtong, (2010). My study has adopted all of those recommendations. In particular, the use of an independent party to prepare transcriptions has been beneficial. Another valuable strategy to minimise misinterpretations has been to keep the research instruments as simple as possible. I cannot be certain that participant perceptions and meanings have survived the data collection and management processes entirely unadulterated. I am reassured

however, by the consistent themes and patterns emerging through most of the data, which have been sourced through various methods.

4.4.3   Data Gathering Process

The process of data gathering aligns with the ontological structure of this thesis. Figure 4.8 re-engages with the critical realism and research flow diagram (Figure 4.4), with the data gathering method employed through each phase of the research process.

Figure 4.8: Data gathering methods for each stage
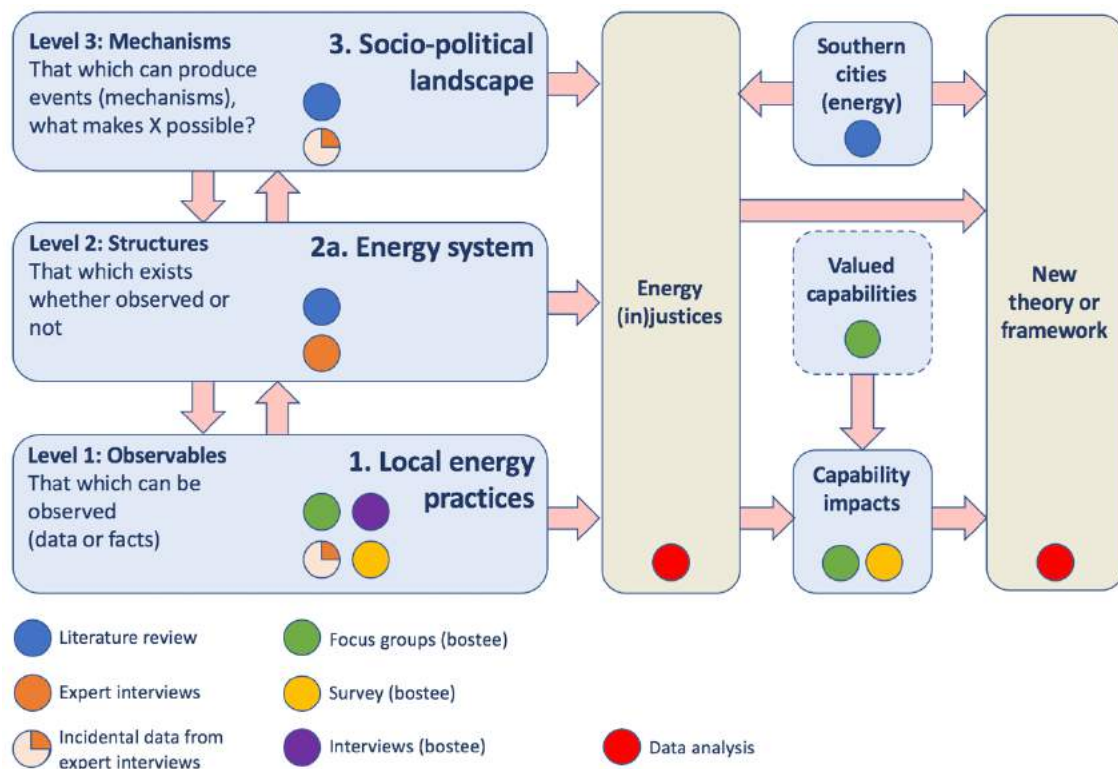
For level 1, the observable level of local energy practices, data were gathered in the bostee through focus group discussions (FGDs), household surveys and special topic interviews. For level 2, the energy system, information was sourced from the literature and from expert interviews. The level 3 information about the socio-political landscape and the Southern urban critique, was primarily gathered in the literature review, with some additional input from expert interviews. All of these data have aided in exposing

the energy injustices in the bostee, (shown at the centre of the diagram). Selection of valued capabilities was through targeted FGDs. The impacts of the energy injustices on the people was the subject of the bostee survey and also informed by the FGDs. All of the data described above have contributed to formulating the energy justice framework, represented on the right of the diagram.

This approach draws on not only critical realism but also on previous CA operational research including Frediani, (2019, p268) who seeks to capture not only the manifestation of the topic (housing deprivations in his study), but also the underlying dynamics *'including structural norms and power relations'*. My study follows this path.

4.5   Data Gathering: Method Details

4.5.1   Pilot Exercises

Pilot exercises were conducted for the bostee data gathering methods, to test their effectiveness prior to formal commencement of the data gathering. Pilots are widely recognised as an important part of the development of the research process (Laws et al., 2013, p169; Simon, 2006, p149). During my familiarisation visit to Dhaka in January 2019, three pilot FGDs were conducted: a leaders' group[60], a male group and a female group[61]. Prior to commencement of the bostee survey in June 2019, I conducted three trial surveys in the bostee with my translator. Research instruments for the FGDs were amended as a result of learnings from the pilot studies. No change was made to the bostee survey as a result of the pilot exercises, and the pilot survey data were incorporated into the dataset. In regard to the FGD pilots, a significant learning was the balance between the translator and myself in terms of the extent to which the conversations flowed without my involvement, and the amount of time spent in the translator explaining conversations to me. I came to trust in extended conversation[62], with myself excluded. I am confident that the transcript data were better for that approach.

---

[60] In Kalyanpur Pora Bostee.

[61] In a different slum prior to my site selection.

[62] Roughly 3 to 5 minutes without my involvement, then an update to me from the translator.

4.5.2   Expert interviews

Expert interviews have provided essential data for this thesis regarding the reality of the political situation of Bangladesh and factual information on the socio-technical energy regime of Dhaka. Information concerning the socio-political dynamics of Dhaka, including for the urban poor, was inaccessible to me in Bangladeshi language policy documentation and government reports. One-on-one expert interviews provided such information. Unsurprisingly, academics, NGO leaders and senior public officials are educated, understanding of research processes, and fluent in English. Rather unexpectedly, all were open to being critical of socio-political conditions in Bangladesh.

It is worth recording here that I experienced considerable difficulty in obtaining interviews in Dhaka. Emailed requests were almost all ignored. This was largely a function, I suspect, of my being a foreigner and was a frustration early in my research. It was only with the assistance of Professor Nazem and one or two other contacts, that interviews were enabled.

One hour was scheduled per interview but most were completed in a shorter time. Interviews were conducted at the office of the interviewee. They were in English, audio recorded[63] and transcribed by me. Information provided in advance to participants included a research description, the consent form, objective of the research and the research instrument, noting core questions. The initial research instrument (Appendix 4.1) comprised open questions about the energy system and matters relevant to each interviewee's expertise. For later interviews, the research instrument was tailored to the specific data being sought. My interviewing skills were quite sound following research experience during my recent Masters dissertation and training provided by the UCL Doctoral School[64]. Readings, including Brinkmann and Kvale, (2015) and Willis, (2006), also contributed to my interviewing skills.

---

[63] With approval by the participant.

[64] 'Introduction to qualitative research: in-depth interviewing', IOE Building, 19 June 2018.

Participant recruitment commenced with local scholars prominent in the literature and with advice from Professor Nazem. Initial criteria for selection of expert interviewees are listed below:

a. Practical or academic involvement in the energy system of Dhaka and/or energy practices in Dhaka's slums and/or slum improvement
b. Associated with a distinguished organisation/institution
c. Advanced tertiary qualifications in a relevant field

This initially yielded four interviews that produced data mostly consistent with the literature, though with some unexpected nuances. The modest number of initial interviews proved adequate for general information but a need for more specialist advice emerged as the research and analysis proceeded. These included the perspectives of the landowner, a local councillor, the electricity provider, and a land tenure expert, all of which were obtained, and all of which were fruitful. The interviews added significant value to the research, contributing both new information and triangulating information from the literature review and other data sources.

4.5.3   Bostee FGDs

Focus group discussions (FGDs) are an effective method for gathering rich qualitative data. This is largely due to the interactive dynamics generated in a group discussion. Different viewpoints play off each other, producing nuanced talking points, illuminating and validating socio-cultural patterns and norms (Bryman, 2016, p502). Strategies and mechanics for my FGDs were drawn from the development research literature including Hennink, (2017), Laws et al., (2013) and Lloyd-Evans, (2006). These scholars promote FGDs as an effective method for gaining an understanding of *'community dynamics'* (Lloyd-Evans, 2006, p153) and for understanding *'social sense-making'* (Laws et al., 2013, p204). Hennink, (2017, p61) reinforces both points, also noting the value of the *'collective narrative'*. Laws et al., (2013, p207) make a further significant argument about FGDs in a development context, identifying that the method is effective in drawing important information from an illiterate population.

An important point is advanced by all three authors mentioned above in relation to development research: the unequal power relationship between the privileged researcher and the participants; in this case, the urban poor. They assert that the FGD format provides participants with *'strength in numbers'* (Laws et al., 2013, p155; Lloyd-Evans, 2006, p207), helping to overcome that power imbalance to a large degree. I certainly felt that most FGD participants were empowered by each other and uninhibited in their contributions. Indeed, many discussions provoked emotional and even militant outbursts, some directed at me. Conducting FGDs at the commencement of my fieldwork delivered another advantage to my research. Through the FDGs, a healthy level of trust was established between many bostee residents and myself in a short period. Following the sessions, I felt that I was warmly welcome around the bostee by not only FDG participants but also other residents.

The FGD process involved four stages, the first being engagement with the bostee leaders. During my familiarisation visit in January 2019, an initial FGD was undertaken with community leaders to obtain general information on the history and operation of the bostee. That FGD provided the opportunity to gain the leaders' permission and support for my ongoing research. At the start of my main data gathering trip in June 2019, I conducted another leaders' FDG. In that discussion, I sought ideas about issues of major concern and was able to reconfirm the leaders' support for my research and their endorsement for my methods. The leaders also gave permission for me to use my photographs of people of the bostee in my thesis. The second stage of the FGD process involved a set of four FGDs, two for each gender, to determine the people's most valued capabilities. The four most valued energy-related capabilities were then carried forward into stage three. The stage three FDGs, totalling six sessions, three for each gender, discussed energy practices in the bostee and then covered the impacts of those practices on the four most valued capabilities. The fourth and final stage of the process was an extended FDG with the bostee leaders. In that session, I imparted my initial impressions of the issues of greatest concern to residents and my initial appreciation of injustices in the bostee and invited comments. The leaders endorsed my preliminary 'findings' and expressed appreciation for my efforts to understand their deprivations.

The ten core FGD sessions were allocated on the basis of one to each of the ten bostee sectors, meaning that no resident participated in more than one session. Recruitment within each sector involved inviting people from separate parts of the sector to join a session. FGDs for women were conducted in a home and for men either in a home or in a café, the settings being selected by participants. The sessions and their characteristics are listed in Table 4.1.

Table 4.1: Focus group discussion sessions

Session	Date	Topic	Gender	Number of participants	Age range	Location
A	23/01/19	Leaders – introduction and permissions	Mixed	Not recorded	Not recorded	School
B	07/06/19	Leaders – introduction, topics of concern and permissions	Mixed	14	Not recorded	School
1	08/06/19	Valued capabilities	Female	9	18-55	Sector 1
2	08/06/19	Valued capabilities	Female	6	25-63	Sector 2
3	08/06/19	Valued capabilities	Male	7	19-60	Sector 3
4	08/06/17	Valued capabilities	Male	5	19-48	Sector 4
5	09/06/19	Energy practices and capability impacts	Female	6	30-65	Sector 5
6	09/06/19	Energy practices and capability impacts	Female	7	18-40	Sector 6
7	09/06/19	Energy practices and capability impacts	Female	6	19-40	Sector 7
8	09/06/19	Energy practices and capability impacts	Male	7	25-42	Sector 8
9	09/06/19	Energy practices and capability impacts	Male	10	25-51	Sector 9
10	09/06/19	Energy practices and capability impacts	Male	5	20-68	Sector 10
C	18/06/19	Leaders – summary of findings, future work and thank you	Mixed	12	36-68	School

The core FDGs for the bostee residents were separated into male and female sessions, each with matching gender facilitators and translators. This gender separation proved to be of value as different outcomes arose from each, as will be noted in later chapters. In a mixed gender arrangement, male viewpoints might well dominate in Bangladeshi culture. Sessions were facilitated by myself for the male sessions and by my female colleague for the female sessions. The language of the sessions was Bengali with a bilingual translator/co-facilitator assisting each of us. The translators were briefed on *'the research questions and the process of research prior to data collection*

taking place' (Liamputtong, 2010, pp146-147). Sessions were audio recorded[65] and transcribed into English by an independent person, the senior research assistant, Monojit. The sessional translators, Sakura and Younus, then reviewed the transcripts for accuracy and veracity[66] and made a small number of corrections.

The size of groups ranged from five to ten participants[67] except for the leaders' sessions which were larger. Figure 4.9 shows groups of participants in a female and a male FGD respectively. Sessions lasted about 45 minutes, though the leaders' sessions were well over one hour. Information provided to participants at the start of each session included the consent process, objective of the research and the assurance of anonymity. Several FGD participants noted that the anonymity was important to them; however in the case of the leaders' sessions, participants were not concerned about anonymity. As outlined by Hennink, (2017), consent needs careful management in a cross-cultural FGD process, especially where participants are illiterate. The process engaged was for the participant information to be read and then for participants to tick a 'sign-in' form. Refer to Figure 4.10. Appendix 4.2 is a completed sign-in sheet for a leaders' FGD where people volunteered to sign their name and Appendix 4.3 is a completed sign-in sheet for a general FGD, participants having ticked the sheet.

Lloyd-Evans, (2006, p159) advocates a gift of food in a development research context, as do Laws et al., (2013), and this was employed, with each participant receiving a piece of fruit and a packet of biscuits valued at 20 taka (£0.17)[68]. This seemed to be accepted as reasonable compensation for people's time. Word must have spread about the sessions or the gifts, because in later sessions, we had many keen to participate.

---

[65] With participant permission.

[66] Dual verification transcription process drawn from Greco et al., (2015, p71) and Esposito, (2001, p577).

[67] As recommended by Lloyd-Evans, (2006, p153) and Bryman, (2016, p506) .

[68] Prior to these readings, I had considered paying cash to participants for their time and sought comment from Younus, my translator. He exclaimed that such an action *'would cause chaos'*.

Figure 4.9: Female and male FGD (W Truer, M Jones)

Figure 4.10: Execution of an FGD sign-in form (W Truer)

FGD research instruments[69] were developed to obtain suitable data to address the research questions and were improved through the experience of the pilot sessions. Discussion in the sessions was stimulated by visual aids (Laws et al., 2013, pp227-230; Lloyd-Evans, 2006, p159) consisting of illustrations of each type of capability:

---

[69] Appendix 4.4: Research instrument: Leaders FGD; Appendix 4.5: Research instrument: Valued capabilities FGD; Appendix 4.6: Research instrument: Energy practices and impacts FGD.

education, health, personal security etc (Figure 4.11)[70]. Participants were noticeably excited about engaging with the visual aids[71], thereby validating their value in the process. The FGDs proved to be effective in gathering the information required, partly due to the enthusiasm of participants to speak about their challenging circumstances. People communicated freely about many aspects of life in the bostee. I can confidently state that the sessions were positive experiences for both the participants and the facilitators.

Figure 4.11: FGD visual aids (W Truer)

4.5.4 Bostee Surveys 🟠

The FGDs gathered data mainly at the community level. In order to fully appreciate details at a household and individual scale, a substantial door-to-door survey was undertaken. This followed and was informed by the FGD process.

---

[70] There was an extensive process in the preparation of these illustrations, wherein my senior research assistant, Monojit provided continual feedback on the cultural appropriateness of illustrations I was selecting, until he was satisfied with their usability. Monojit completed the task of assembling the set including the Bangla language titles.

[71] One wide-eyed male participant proclaiming, '*those pictures are very happy!*'

Surveys are an effective method of data collection when the information needed is straightforward and is required in large volume (Laws et al., 2013, p208), for quantitative descriptions of a population's attitudes, thus allowing the researcher to draw generalisations from a representative sample (Creswell, 2014, p155). Guidelines for my survey were drawn from general research texts and from development research authors including Laws et al., (2013) and Simon, (2006). Important principles advanced by these development research authors included the need for simplicity and precision in the research design, and for local feedback on draft research instruments. Such feedback was obtained from my senior research team members prior to commencement.

The survey was conducted in the bostee to collect basic demographic data[72], confirmation of energy practices, and a Likert scale[73] format to measure capability impacts. The Likert scale approach facilitated systematic data collection and analysis. Questions on the capability impacts were followed by the question: 'why did you give that answer?'[74]. Additional qualitative data were obtained with a small number of open questions. The research instrument for the main bostee survey is included as Appendix 4.7.

My survey team comprised four pairs of researchers, a questioner, and a data recorder in each pair. Three of the four pairings were mixed gender. Data were recorded on mobile devices using the data collection App, Magpi[75]. The survey was conducted in Bengali, and data recording was in English. The team completed a total of 174 surveys in the bostee. Denscombe, (2014, p47) provides a statistical theory-based table of sample size for different populations and refers the reader (ibid, p48) to online 'sample size calculators'[76]. Both Denscombe's and the online facilities propose that for a population of 4,000-5,000 (households), with a confidence level of 95% and a

---

[72] Age, gender, marital status, household size etc.

[73] Very positive, positive, neutral, negative, very negative.

[74] I am indebted to Professor Anwar Hossain, University of Dhaka for this suggestion, as that question yielded valuable data.

[75] https://home.magpi.com – accessed 4 September2020.

[76] eg https://www.surveysystem.com/sscalc.htm - accessed 4 September 2020.

confidence interval of 5, a sample size of about 350-370 is recommended. That size exceeded my time and cost budgets but, in any case, the survey achieved reasonable consistency and data saturation on all questions at close to half that number.

Sampling for the survey involved using a detailed map of the bostee[77], which I commissioned from the University of Dhaka for this thesis[78]. The bostee comprises ten recognised sectors, each having a reasonably consistent population density[79]. On that basis, for sampling purposes, the total settlement was split proportionately by area as represented in Table 4.2. The number of surveys in each sector was then allocated in proportion to the sector area and applied in an even spread over the bostee map[80] with the correct numbers in each sector. Refer to Figure 4.12. The survey teams then went to each nominated point using GPS and surveyed the nearest occupied household. Teams were allocated specific bostee sectors on each morning of the survey, as is set out in Table 4.3. The complete process occupied three continuous days.

Surveys were conducted morning and afternoon, and on both weekdays and weekends[81]. The process represented a best possible effort at affording each individual an '*equal probability of being selected*' for the survey (Creswell, 2014, p158). The duration per contact averaged about 20 minutes per participant. Every survey was conducted in the privacy of the participant's own home[82]. As with the FGD exercises, participants were given a token gift of food items to the value of 20 taka (£0.17), which seemed to be welcomed. Information provided to participants at the start of each session included the consent process and the assurance of anonymity. Consent was formalised by the participant 'ticking' a sign-in form after the participant information was read. A typical 'signed' form is included as Appendix 4.8.

---

[77] by the Department of Geography and Environment at the University of Dhaka under direction of Professor Nurul Islam Nazem and Professor Anwar Hossain.

[78] At a cost of 12,000 taka (£107.60).

[79] Assertion based on my impression of reasonably uniform dwelling size, laneway width, household size, frequency of non-dwellings.

[80] Task undertaken by Monojit, my principal research assistant.

[81] Drawn from Parikh et al., (2012, p480).

[82] Frequently, we had to ask a curious onlooker to leave the dwelling doorway to maintain privacy.

Table 4.2: Sector sample allocation calculation

Sector	Area m2	% of total	Samples at n 174	Actual number
1	3,995	5.3%	9	10
2	8,370	11.1%	19	18
3	2,290	3.0%	5	6
4	13,565	17.9%	31	31
5	1,425	1.9%	3	3
6	2,420	3.2%	6	7
7	5,690	7.5%	14	15
8	17,050	22.5%	39	40
9	14,185	18.8%	33	30
10.1	5,595	7.4%	13	12
10.2	1,035	1.4%	2	2
Total	**75,620**	**100%**	**174**	**174**

Figure 4.12: Kalyanpur Pora Bostee map with survey points
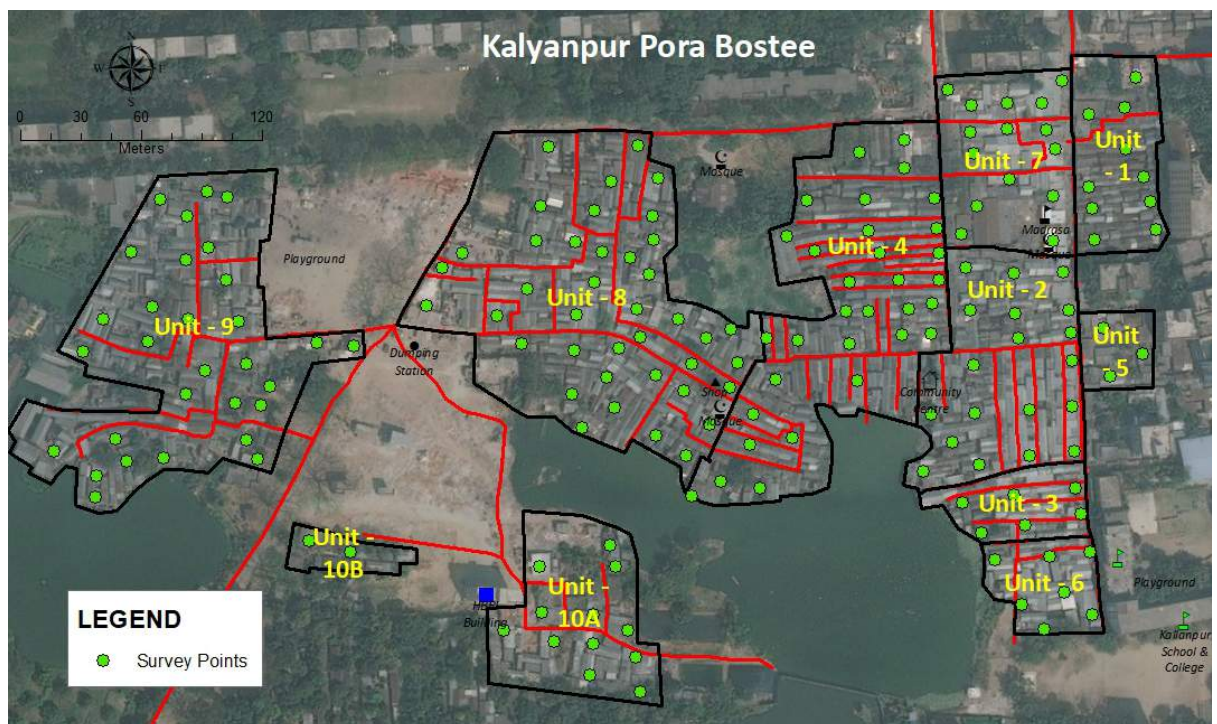
(M Jones commission of University of Dhaka, with development by Monojit Saha)

Table 4.3: Kalyanpur Pora Bostee survey organisation

Team	Leader	Assistant	Timing	Location
1	Monojit Saha (M)	Samsun Nahar Sakura (F)	Day 1 - weekday	Units 1 and 2
			Day 2 - weekend	Units 2 and 9
			Day 3 - weekend	Unit 9
2	Mark Jones (M)	Samrin Sauda (F)	Day 1 - weekday	Units 3 and 4
			Day 2 - weekend	Unit 4
			Day 3 - weekend	Units 4 and 10.1
3	S. M. Younus (M)	Royon Khan (M)	Day 1 - weekday	Units 5, 6, 7
			Day 2 - weekend	Units 7, 8
			Day 3 - weekend	Units 9 and 10.2
4	Wendy Truer (F)	Md. Abdullah al Mamun (M)	Day 1 - weekday	Unit 8
			Day 2 - weekend	Unit 8
			Day 3 - weekend	Unit 8

A second bostee survey was conducted in November 2019 by two research assistants (Figure 4.13). This survey comprised five questions to close out a gap that emerged in my data regarding housing habitability. That research instrument is included as Appendix 4.9, and Appendix 4.10 is the sign in sheet for that exercise. This small-scale survey, of just five simple questions, had 36 respondents, spread evenly across the bostee sectors. Answers were close to uniform, so the number was deemed adequate.

Figure 4.13: Second bostee survey by research assistants in November 2019 (M Saha)

To my knowledge, this was the first survey to capture demographic data for KPB and, possibly the first to focus on details of cooking practices in a Dhaka slum. The household survey exercises not only captured a broad data set, but also helped me to develop a strong connection with the residents. It was a privilege to be accepted into people's homes and to learn something about their lives. It was particularly gratifying that people spoke freely when surveyed in the privacy of their own dwelling.

4.5.5   Bostee Interviews

A set of interviews on a specific topic was undertaken at the end of my main fieldwork trip to Dhaka. This concerned the presence, behaviours, and influence of the mastaans[83]. The research instrument is included as Appendix 4.11. Appendix 4.12 is the sign-in sheet for the mastaan topic interviews. I had purposefully avoided this important but sensitive topic throughout all previous fieldwork in the knowledge that fear of the mastaans might disturb the quality of general data collected. Drawing on the ideas of M. E. Harrison, (2006, p3), my collection of contentious information was delayed until I had achieved a level of trust across the bostee. In all interactions, I relied on my translator to lead in terms of culturally sensitive exchanges.

Sampling for this survey commenced in the open at a random point in the centre of the slum, where we made our topic known. People who were willing to talk candidly about the mastaans soon volunteered themselves. We then took the conversations inside respondents' houses. Subsequent respondents were selected on a snowballing basis with us being taken to households known to have been directly affected by the mastaans. After some unproductive initial interviews, later interviews yielded valuable and consistent information, including disturbing visual evidence of violence at the hands of the mastaans[84]. As will be demonstrated in the next chapter, the mastaan phenomenon is a pervasive aspect of life in the slums. As such, these interviews were critical to my research.

---

[83] Mastaans are gangster type musclemen working for powerful external people. (Suykens, 2015, p487) defines mastaans as '*violence professionals.*'

[84] To both property and person.

4.5.6 Data Gathering Summary

Data gathering for this thesis engaged a number of traditional methods, each selected on the basis of the data required to address the research questions. The arrangement of (a) expert interviews, (b) bostee FGDs, (c) bostee surveys and (d) interviews with bostee residents, delivered a solid depth of data for analysis. Initial data gathering proved insufficient in various small areas as the thesis developed, necessitating additional interviews and surveys[85].

4.6 Data Analysis

This section explains the tools and analytical techniques employed for extracting concepts and conclusions from the collected data. My research deals predominantly with qualitative data though with a small element of simple quantitative data. Each is addressed in this section.

4.6.1 Qualitative Data Analysis

A data analysis process has been developed for this thesis drawing on ideas from various research methodology theorists. Figure 4.14 presents the research flow of my study including the data analysis phase. This process incorporates some data analysis concepts promoted in the grounded theory literature (Charmaz, 2014; Corbin and Strauss, 2015) and reinforced in general research literature (Babbie, 2016; Gray, 2014). Grounded theory is an inductive research mode of enquiry while my study is predominantly deductive. Consistent with a deductive approach, my initial research tasks (left of diagram) involved developing a theoretical framework and a conceptual structure from existing literatures. Research questions developed in that stage were informed by the literature. Fieldwork was then undertaken including data gathering.

---

[85] Additional theoretical based sampling (see Figure 4.14).

Figure 4.14: The research process including data analysis phase
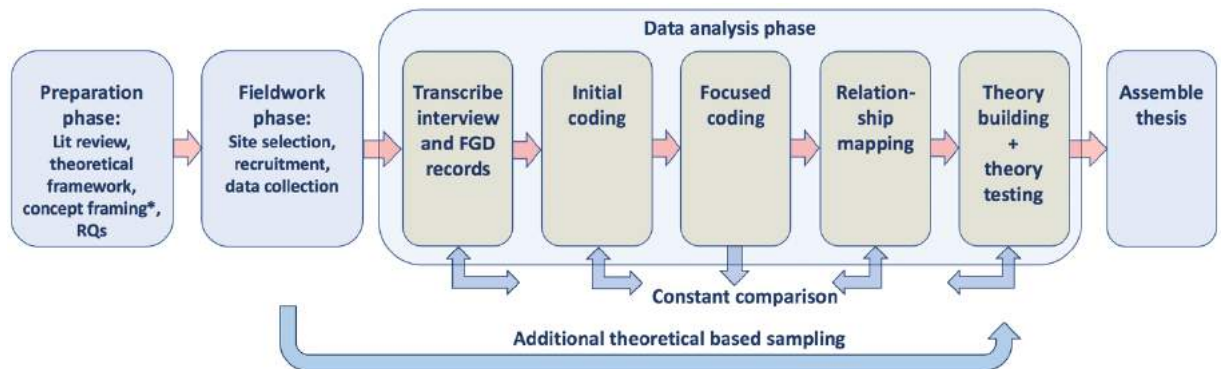
The data analysis process, indicated through the central zone of the diagram, commenced with transcription. For my data analysis, the concepts of *coding* and *concept mapping* from grounded theory have proven to be useful. A set of initial codes was developed based on the literature review, the research questions and an initial 'gut feel' for the collected data. Following transcription, a process of coding the data was then undertaken using these initial codes. This involved colour coding MS Word transcripts of expert interview and FGD transcripts (example included as Appendix 4.13). As that process proceeded, a number of additional recurring themes became evident, leading to a wider set of codes. The data analysis process involved maintaining a constant alertness for consistencies, frequencies, magnitudes, structures, processes, causes and consequences (Lofland, 2006)*.* The colour coding led to the development of a list of focussed codes. Subsequently, the concepts were examined to identify linkages, including likely causalities. It was possible then to map concepts and relationships based on clustering, networks and patterns repeated through the data. An interim relationship map, linking prominent focussed codes, is presented as Appendix 4.14. As indicated on Figure 4.14, the steps described above are undertaken concurrently. That is, they are under constant comparison. Theory was built and tested over a period and as that theory matured, the thesis was assembled, as indicated at the right of the diagram. The data analysis method developed for this thesis has facilitated a close engagement with the data and exposure of not only consistencies with the literature but also contradictions and unexpected findings.

4.6.2   Quantitative Data Analysis

The bostee surveys included questions using a Likert scale with five grades. Those data have been managed on a simple quantitative basis. Data were exported from the Magpi software to MS Excel. That data required some reformatting before statistics were compiled to suit the requirements of the research. Bar charts and pie charts were prepared to illustrate key points for this thesis. Outputs of these basic statistical processes include impact scales, which are presented in Chapter 9. Other statistical work was applied to demographic data and to energy use statistics.

4.7   Fieldwork

4.7.1   Site Selection Process

In 2005, the Centre for Urban Studies (CUS) of Dhaka[86], undertook the monumental[87] exercise of surveying all urban slums[88] in Bangladesh (Islam et al., 2006). The census and mapping were undertaken with considerable methodological rigour across the cities of Bangladesh, and such a task has not been undertaken since. This absence of current information is acknowledged by M. Rahman et al., (2018, pp223-4), who note that the *'latest data of informal settlements situation and distribution are very rare in Dhaka'*. As such, the CUS study remains highly referenced in academic work to this day. The CUS counted 4,966 slums in Dhaka. For my purposes, choosing one case study slum to research from among almost 5,000, demanded a set of tight selection criteria and consultation with local expertise. My selection criteria were developed with a view to identifying a case that would deliver data suitable for addressing the research questions. Table 4.4 lists my selection criteria and the rationale for each.

---

[86] With support from USAID and the University of North Carolina.

[87] I use this 'non-academic' superlative advisedly.

[88] Criteria for settlement classification as a slum in the CUS study (Islam et al., 2006, p11) were those with a minimum of ten households and twenty-five residents plus having at least four of the five following characteristics:
- Predominantly poor housing;
- Very high population density and room crowding;
- Very poor environmental services, particularly water and sanitation facilities;
- Very low socioeconomic status for the majority of residents;
- Lack of security of tenure

Table 4.4: Slum selection criteria

Item	Criterion	Reason for this criterion
1	Slum has an informal electricity supply system	To facilitate study of informal electricity practices.
2	Slum includes at least some cooking with firewood	To allow assessment of impacts of firewood use, which is widespread in Dhaka's slums.
3	Separate payment is made for energy, ie not included in house rent	To allow separable assessment of affordability-related issues.
4	Slum is built on public land without approval	To allow inclusion of impact of the tenure insecurity.
5	Settlement is of a minimum 1,000 dwellings	To allow a substantial sample size.
6	Slum has been in existence for minimum 20 years	For energy practices to have become 'normalised'.
8	Settlement has a community-based organisation or leadership group	To facilitate effective community engagement.
9	Lack of previous studies	To maximise the value of the contribution of this study.
10	Safe access for the researcher	Personal security.
11	Willingness of residents to participate	To enable the research.

My tertiary supervisor, Professor Nazem, was a lead author of the CUS census referenced above and was therefore uniquely qualified to guide my site selection process. He escorted me to a number of slums in northern Dhaka in January 2019. We discussed the relative merits of each as a case study and selected Kalyanpur Pora Bostee (KPB), which meets all of the above criteria. Other slums in Dhaka would also comply with the criteria but it was felt that KPB was eminently suitable, and that no further searching was necessary. KPB is introduced in detail in the next chapter.

4.7.2   Field Visits

I have travelled to Dhaka four times with a total duration of about three months. That includes two brief visits during my Masters dissertation. The Masters visits provided me with a level of familiarity with the city and left me with a number of supportive contacts for my ongoing PhD work, most significantly, Professor Nazem. The first visit of my PhD tenure was in January 2019. During that visit, the primary activities were

presentation at an international conference[89], the case study selection, familiarisation

discussions in the selected bostee (including bostee leaders' discussions and

permissions), initial expert interviews and discussions with my tertiary supervisor

regarding the research. My second visit was the main fieldwork trip through June and

some of July 2019. Much of that visit was spent in the bostee conducting fieldwork.

Other tasks during that visit included additional expert interviews and further

discussions with my tertiary supervisor.

4.7.3   Access to the Bostee

Dhaka is the most densely populated mega-city in the world and has an extreme traffic

congestion problem. Walking is notionally a faster alternative than car or bus for

anything up to ten kilometres (one hour), but the heat and footpath congestion

usually renders that option impractical. This means that travel to and from interviews

or other fieldwork is extraordinarily slow, resulting in a maximum of one activity[90] per

day. On my main visit, my colleague and I stayed at a hotel about one kilometre from

the bostee and commuted to the site each day by rickshaw. Physical discomforts in

Dhaka for my colleague and myself were principally the heat, air quality, congestion,

and local food practices. The food caused a period of illness for both of us, a reality of

fieldwork for Westerners in such a place. My visits to Dhaka were on a visa based on

my appointment as an Honorary Research Fellow at the University of Dhaka, organised

by Professor Nazem. This appointment provided further benefit in terms of access to

academics at the University.

As recommended by various development research authors including Liamputtong,

(2010, p64) and Rashid, (2007, p375), fieldwork in the bostee was sanctioned by

community leaders during my familiarisation trip to KPB in January 2019, and

reverified at the commencement of my main visit in June 2019. There was a level of

reluctance and some cynicism amongst the leaders about my research exercise

initially. It was made clear to me that researchers had visited the bostee previously

---

[89] *Gobeshona 5*, Independent University of Bangladesh, 8 January 2019.

[90] Expert interview, set of surveys, set of FGDs.

and that there was no tangible benefit arising from the research for the bostee residents. The leaders also felt initially that my research topic (energy) was not a high priority relative to their premier needs, they being tenure security and decent housing. A quote from the leaders' FGD in this regard is presented in Box 4.1.

Box 4.1: Bostee leader quote

'Through your research, we would not be benefited too much … Usually, people like you work with the lower income people and that's why you come to the slums to do the research. So, we also have some demand that you should portray that our basic demand is housing'.

(Leaders' FGD, male participant, 7 June 2019)

It was only following my undertaking to address the issues of major concern that the leaders sanctioned my research. After an hour or more of conversation, and with the agreement just mentioned, the leaders accepted my bona fide and veracity. This process was assisted in no small measure by the presence, initially of Professor Nazem, and subsequently of my translator Younus during all discussions.

Considerable effort was made to establish a rapport with the leaders of the bostee. This proved not only successful in terms of access, but also became one of the real joys of my PhD. Two of the leaders in particular, Eskander and Anwara (Figure 4.15) were always convivial towards my colleague and me. Many people in the bostee radiated a welcoming demeanour with frequent invitations to take tea in the cafes. The bostee was entirely accessible to us. Professor Nazem and Younus played critical gatekeeper roles in enabling such open access to the bostee.

Figure 4.15: Bostee leaders, Eskander and Anwara with myself (M Jones)

Bangladesh's political environment and the power relations within slums do carry some risk to participants and to both foreign and local researchers. Risk mitigation strategies for the various stakeholders in this study are discussed below.

For the experts being interviewed, risk of political repercussions seemed to not disturb any interviewee. Nevertheless, all participants were offered anonymity. Bostee residents risked reprisals from mastaans for communicating contentious stories. Again, participants were protected by anonymity and respondents seemed uninhibited. Personal safety for travellers in Bangladesh is stated as an area of concern by the UK and Australian government travel advisory websites. Although I did not have any sense of being in danger during my visits, precautions were observed. These included remaining in the hotel at night times, being always accompanied outdoors and carrying documentation establishing our identity as researchers. For the research assistants, risks seemed to be minimal, but I insisted that no one team member would ever be alone in the bostee.

4.7.4   Reflexivity and the Role of the Researcher

The concept of reflexivity addresses the researcher's role in the study and how their own life experience influences interpretation of the data (Creswell, 2014, p186). Laws

et al., (2013, p47) suggest that the researcher *'be open about where they are coming from to allow the reader to evaluate their work on this basis'*. I have undertaken my research in this spirit. Creswell and Miller, (2000, p127) call for *'researchers to self-disclose their assumptions, beliefs, and biases'.* Thornberg, (2012, p254) notes that a researcher cannot deny *'prior knowledge, perspectives and privileges,* (nor pretend) *to be without preconceptions and theoretical influences.'* These calls come with a view to exposing the influence of the researcher's positionality on the research process and outcomes. It must be acknowledged that my findings regarding injustices have been based on my education and life experience in the relatively developed democracies of Australia and the UK. I have noted my observations in this regard in Box 4.2.

Box 4.2: My assumptions, beliefs, and biases

My own life experience, indoctrination and consequential biases affect how I have viewed social issues such as justice and injustice in Dhaka. I come to the study with a Westernised view of how a democracy and justice system should operate, that is one affording all citizens equal opportunity to participate, and to share equitably in the burdens and benefits of social and technical infrastructure. My reporting inevitably has a Westernised bias in relation to what I perceive as social injustices.

Without question, no society approaches perfection in all aspects of social justice. However, certain ideals of justice and democracy espoused by leading scholars, NGOs and the UN provide a set of benchmarks[91]. Against these social practices may at least be considered, if not judged. It could be argued that these academic and institutional works represent what (Rawls, 1987) describes as 'overlapping consensus', conditions broadly agreed as fundamental to a just democracy. With a view to achieving some level of objectivity, I have attempted to use such standards as non-emotional and non-personal comparators in this study.

The concepts of 'insider' and 'outsider' are a useful reference at this point. Liamputtong, (2010, p110) expresses a concern about what she terms an 'external

---

[91] As set out in the following chapter.

outsider', in effect a wealthy foreigner, conducting research in the developing world, pointing to many past failures. Other authors take a more nuanced position. Crocker's (1991) influential work establishes the fluidity of these two conditions for development researchers[92]. He points out that an individual can have varying degrees of 'insiderness' in a foreign setting and conversely can be an outsider in his home environment. Insiders will have a high level of commonality with other members of their group in terms of shared beliefs, memories, desires and hopes, and the reverse holds for an outsider. The conditions are not exclusive. To some degree, one can become an insider in a new setting and subsequently return 'home' more of an outsider. Crocker, (1991, p157) states that the '*result is often an exotic collage of insiderness/outsiderness*'. This accords with my own experience. My intense (albeit relatively brief) engagement with the bostee people had a deep effect on me such that I came to identify with their hopes and fears to a degree that I feel may have been stronger than for many of the wealthy and ruling elite of Dhaka. Certainly, on my return to my home environment, I perceived a shift in my positionality in relation to my long-standing social groups.

It is important to understand that there exists advantages and disadvantages to the position of insider and outsider in a development research exercise. Crocker, (1991) observes that an outsider can be excluded from access to portions of group knowledge. That was largely my experience in relation to the governmental engagement for my research. While I felt that I enjoyed open communication with the bostee people, I acknowledge that some knowledge would likely have been withheld from me. The advantages of being an outsider concern the new perspective one can bring to entrenched social problems. Free from the insider's loyalties and experience, the outsider can '*inject new and sometimes needed ideas into an alien group's development deliberations*' (Crocker, 1991, p165). Further, and most importantly for my study, an outsider can elevate the voice of a repressed group. Giving voice to the marginalised and spotlighting the plight of the oppressed can serve as a dramatic positive aspect that an outsider can bring to development research. Some of the ideas

---

[92] Crocker uses the term 'ethicists'.

are well expressed by Crocker as presented in Box 4.3. These words reflect well my attitudinal aspirations for this research.

<div style="border: 1px solid black; background-color: #fdf2cc; padding: 10px;">

Box 4.3: Outsider engagement

'We should be sufficiently inside so as to immerse ourselves in this different form of life, to grasp some of what is going on, and to be accepted as dialogue partners. … We should retain and take advantage of our outsiderness so as to be able to reflect an "alien" culture back to its insiders, call attention to the omnipresent obvious by contrasting it with our different experience, bring in new ideas, mediate between various factions, help the vulnerable gain a voice, and speak the truth made elusive by group loyalties' (Crocker, 1991, p170).

</div>

This statement represents a set of compelling guidelines for a Northern researcher in a Southern setting. The issues of insider/outsider extend into the transactional processes involved in the data gathering in the bostee. Crocker, (1991) advocates that the researcher strives a dialogue of relative equality. Without that sense of equality, the communication is inevitably distorted.

At the personal interaction level, the unequal interpersonal situation between interviewer and interviewee of different cultures and economic status is a development research reality (Babbie, 2016; Hall, 2014; M. E. Harrison, 2006). The different culture and financial status of a foreign researcher and the local people has potential to create some anxiety or resentment for participants and needs to be managed carefully. Liamputtong, (2010) develops a compelling set of strategies to enhance such interactions. A number of her points proved useful for my fieldwork. Engagement of a local translator who had a good rapport with the study population was a significant first step (also Binns, 2006, p17). The most important strategy, however, was to maintain a humble and friendly manner, and to be obviously open and interested in the people. Spending adequate time with people and being unhurried were also important attributes in developing successful interactions. Both Liamputtong, (2010) in a cross cultural setting and Brinkmann and Kvale, (2015) in a general sense, advocate maintaining a sense of equality and respect in fieldwork

interactions. M. E. Harrison, (2006, p66) provides a compelling set of personal qualities that a development researcher requires: *'patience, persistence, tolerance, confidence, commitment, honesty, humility, trust, discernment, an open mind, diplomacy'*. I remain certain that I did not achieve excellence in all these respects, but I did maintain an awareness of such qualities during my data gathering processes. I can state that I hold the bostee people in high regard, that I had a genuine sense of equality with them[93], and that I enjoyed the people's company. Rapport is difficult across cultural and language barriers, but I do feel a solid level of trust was achieved in most or perhaps all of my bostee interactions.

4.8   Research Ethics

My research obtained formal approval through the UCL ethics and data protection processes and has complied with all approved procedures. Core issues in research ethics are the researcher's responsibilities to participants and to the academic community for research credibility. These are briefly discussed in this section.

4.8.1   Responsibility to Participants

The researcher's responsibilities to participants are built around respecting the dignity and sensitivities of those being researched. Many writers including Bryman, (2016, pp120-133) and Babbie, (2016, pp62-69) present sets of considered ethical principles in relation to participant involvement. Laws et al., (2013), Liamputtong, (2010) and Brydon, (2006) adapt the general principles to suit cross-cultural research. Four of the most significant principles derived from these authors are discussed below. These are preparation, avoiding harm to participants, obtaining informed consent, and the right to confidentiality and anonymity.

The ethical dimension of preparation in development research is discussed by Brydon, (2006). She asserts that the researcher needs to develop a solid understanding of the local politics, culture, history, religion, economy, and gender relations prior to entry to

---

[93] If anything, I felt a sense of inferiority by virtue of my Western fragility versus their resilience in far more testing conditions than I will ever experience.

the research site (ibid, p29). It could be argued that it is only polite to have prior knowledge of the social dimensions of the host country. To this end, I undertook extensive reading about the history and culture of Bangladesh early in my study. In the end, people were grateful for my prior knowledge of Bangladeshi issues. This response was particularly evident in expert interviews.

No harm to participants, or *primum non nocere* is probably the most important ethical principle in any research, and is particularly at the forefront in cross-cultural studies (Liamputtong, 2010, p37). This involves ensuring that no physical or psychological harm befalls any participant as a result of their contribution to the study. With that in mind, research instruments were designed to contain unthreatening queries, and questions that would generate simple factual answers, rather than politically charged responses. A core strategy to avoid harm is to guarantee that participation is voluntary. The right of participants to withdraw from the research interaction was offered to all participants in all bostee interactions[94].

Formalised informed consent supports the 'no harm' principle and has been followed in my research. Signed consent is a common challenge in cross-cultural research (Liamputtong, 2010, p44) and written consent can be intimidating (ibid, p45), especially challenging for the illiterate. For the bostee interactions in this study, consent was formalised through participants simply ticking a sign-in sheet to indicate acceptance of the information provided. I experienced no resistance to this process.

Protecting bostee participants' identity was a core mechanism of my data collection process. All bostee participants have been afforded anonymity with no names or individual identifying information being recorded in any data collection activity. For the expert interviewees, anonymity was offered, though no interviewees showed any concern about the issue.

---

[94] No participants chose to activate this option.

4.8.2   Responsibility to the Academic Community and Academic Credibility

Researchers have a responsibility to academia concerning the scholastic quality of their work (Babbie, 2016, pp69-70; Creswell, 2014, pp99-100). The scholar is to ensure that the research process has rigour, an identifiable chain of evidence, and research honesty (Blaikie, 2010, p31). Data are to be shared for others to build upon, and the work is to be published so that knowledge is widely disseminated (Laws et al., 2013, p175). My activities in that regard are listed in Appendix 4.15.

Research ethics is intertwined with the notion of trustworthiness (Marshall and Rossman, 2016, p43). This entails upholding exemplary standards of integrity in the research process and maintaining academic rigour with a view to strengthening the body of human knowledge. This study seeks to incorporate the widely cited list of principles first espoused by Lincoln and Guba, (1985) and extended by several authors including Creswell and Miller, (2000) and Marshall and Rossman, (2016, pp46-47). An amalgamation of these is set out with associated strategies for my study in Table 4.5. I have made my best effort to satisfy each of these principles.

Table 4.5: Trustworthiness procedures

Item	Principle	Strategies for this study
1	Prolonged engagement in the field	• Maximising time allocation for fieldwork within personal and financial constraints. • Maintaining a demeanour of being 'time-rich' rather than rushed when with participants.
2	Persistent observation	• Adequate quantity of sampling. • Maintaining vigilant inquisition of 'what is happening here?'.
3	Triangulation	• Multiple methods and literature reviews.
4	Peer-debriefing	• Engagement with Bangladeshi scholars. • Engagement with leading scholars in this sector.
5	Negative case analysis	• Exploring the circumstances where the existing situation is fair and just (ie absence of injustices) and presenting these examples. • Providing statements about limitations, problems, counter-findings, and obstacles in the research process.
6	Referential adequacy	• Building and retaining a 'chain of evidence' or 'audit trail' suitable for independent verification.
7	Member-checking	• Expert interviewees offered opportunity to review transcripts and the research findings.
8	Thick description	• Obtaining people's 'stories' to build detailed description of real experiences.

Item	Principle	Strategies for this study
9	Collaboration with participants	• Obtaining advice on the research including the research instruments from the tertiary supervisor, translator, and others.
10	Reflexivity	• Self-awareness (refer section 4.7.4).

4.9   Chapter Conclusion

This chapter has presented the research design and methodology for this thesis and the associated rationale. Particularities of the study include the cross-cultural setting, the cross-lingual challenges, and my Westernised positionality. The social science-based subject matter leads to a predominantly qualitative study with a constructivist epistemology. The complex and layered qualities of social justice theory align well with the selected critical realist ontology for this research and the case study methodology facilitates an in-depth study of a challenging social phenomenon. We move on in the next chapter to exploration of the case study site and its energy-related context.

5   The Case Study and its Context

5.1   Chapter Objective

We draw on the literature in this chapter to build a comprehensive picture of the environment being studied for this thesis. Discussion firstly introduces the case study, that is the city of Dhaka and the selected slum, Kalyanpur Pora Bostee (KPB). The case study site has been chosen on the basis of setting suitability for testing the core rationalisation of this thesis (Box 1.2) concerning the realities of urban poverty in the global South, and to answer the research questions. Following the case study discussion, this chapter explores previous research to provide an understanding of the context of energy injustices in Dhaka's slums. I also reference expert interviews. As was explained in the last chapter, a layered picture is built, revealing the depth of challenges in accessing energy for Dhaka's slum dwellers, through considering three nested levels of influence on energy provision and use in Dhaka's slums. It will be demonstrated that each level contributes to injustices in the energy experience for residents of Dhaka's slums. Stated another way, the national, city and local contexts affect the conversion of energy resources into human well-being. Figure 5.1 presents the theoretical framework of this thesis (Figure 4.2), with the focus of this chapter highlighted in red.

Figure 5.1: Theoretical framework: highlighting the (capability approach) conversion factors
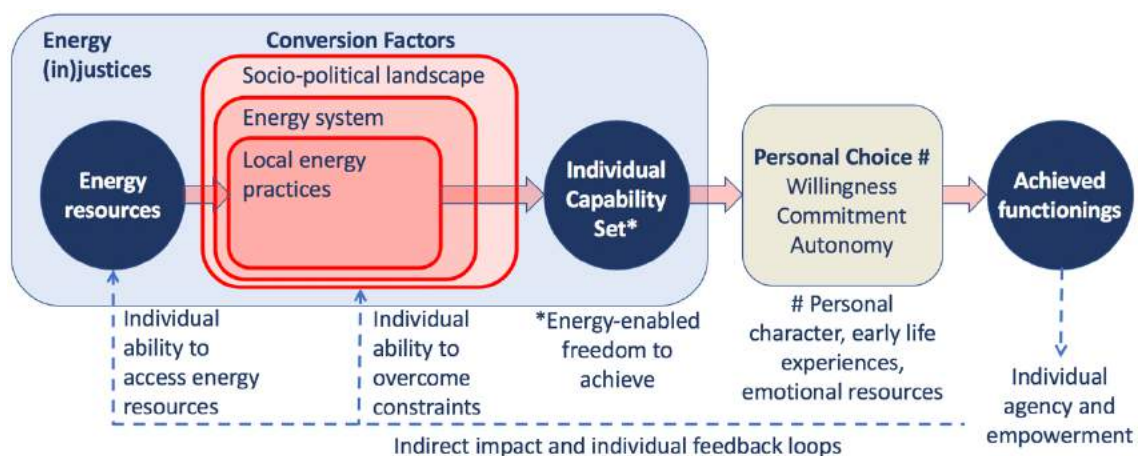
5.2   The Case Study

5.2.1   Dhaka

In Chapter 2, we gained an understanding of the distinctive characteristics of Southern cities. Cities of the global South face a myriad of challenges, as framed by Parnell, (2015). Articles on Dhaka reference the city as an intense example in relation to all of Parnell's eight criteria, including: limited infrastructure (Hossain, 2012; Lipu and Waliullah Bhuiyan, 2014), rapid urbanisation (Islam and Baten, 2016; Mao et al., 2014), extensive poverty and informality (Ahmed and Johnson, 2014; Lata et al., 2019), and challenged governance practices (Banks, 2016; H. Hossain, 2014). There is also considerable literature on the integral topics of informal settlements and slum housing in Dhaka (Jabeen, 2015; Morshed, 2014). Based on the extensive literature on the socio-economic and spatial challenges for Dhaka, the city presents as a site which cuts deeply into all themes relevant to this research.

It is worth noting a number of Dhaka's striking statistics. It is presently the ninth largest city in the world, at 19.5 million, and is the world's fastest growing mega-city, at 500,000 additional persons per annum, such that it is predicted to be the fourth largest global city by 2030 (United Nations Department of Economic and Social Affairs, 2016). More than 83% of Dhaka's population were born outside the city[95] (H. Rahman, 2014, p3), an astonishing statistic, reflecting the enormity of migration in recent decades.

Dhaka is the most densely populated mega-city in the world[96] at 44,000 people per square kilometre[97] (Demographia, 2019, p23). As an illustration, Figure 5.2 shows a pedestrian view of a commercial area of Dhaka. Some slums in Dhaka have a population density of more than 200,000 per square kilometre (Islam et al., 2006, p12), almost forty times the average density of London, particularly remarkable given

---

[95] This represents 16 million people or double the population of London who have moved to Dhaka in their lifetime.

[96] Various sources differ on actual figures, but most place Dhaka as the most dense megacity.

[97] As comparisons, Mumbai (second most dense megacity) is 26,900 p/km², Jakarta 10,200 p/km², and London 5,600 p/km² (Demographia, 2019, p23).

the predominance of single-storey structures in the slums. Dhaka has the world's third largest informal settlement population[98] at more than five million[99]. The Economist Intelligence Unit 'Liveable Cities' ranking, in 2018 places Dhaka as the second worst city of the 140 assessed, ahead only of war-torn Damascus, Syria[100].

The city presents stark evidence of spatial inequality. Dhaka has wealthy enclaves in areas such as Gulshan and Banani. The city has vast areas of middle-class high-rise apartments. Of course, Dhaka has extensive informal settlements ranging from small collections of shelters to Korail, the city's largest slum at over 100,000 people. Refer to Figure 5.3. Dhaka represents an unfortunate but fascinating convergence of socio-economic, technical, and political challenges. Undeniably, it is a rich site for academic research on critical issues for the global South.

Figure 5.2: Density in Dhaka: Mirpur Road, New Market (M Jones)

---

[98] After Mumbai and Mexico City (Ahmad, 2015).

[99] No reliable figures are available. The proportion of Dhaka's population living in slums is estimated by various authors as being from 35% to 50% of the city population (Ahmad, 2015). It is safe to state that over five million people live in slums in Dhaka; it is possibly over 8 million. That would be the population of London living in slums in one city.

[100] https://www.economist.com/graphic-detail/2019/09/04/vienna-remains-the-worlds-most-liveable-city - – accessed 7 September 2020.

Figure 5.3: View from BRAC University: middle class high rise in the foreground, Korail slum beyond and the wealthy Banani and Gulshan districts in the distance (M Jones)

5.2.2 Kallyanpur Pora Bostee

The case study slum for this thesis is Kallyanpur Pora Bostee (KPB). The case selection process was presented in the last chapter. KPB is located towards the western side of Dhaka City in the Mirpur district. Figure 5.4 locates KPB in Dhaka city. I also indicate the location of my 'home' university and Korail[101]. KPB is home to about 20,000 people[102] living in 4,000 to 5,000 households, occupying about 75,000m^2, (Figure 5.5). Based on these figures, the population density would exceed the 200,000 people per square kilometre mentioned above. The Bostee has ten distinct sectors. People identify themselves as residents of one of these sectors.

---

[101] Korail has been extensively researched by local and global scholars and is identified to help orientate readers who are familiar with Dhaka.

[102] I have not found any reliable population figures for the bostee. I use 20,000 partly on the basis of advice from the bostee leaders. Appendix 5.1 contains a rudimentary estimate based on area and density corroborating the population figure, with some inconsistent literature references listed.

Figure 5.4: Location of Kallyanpur Pora Bostee in Dhaka (base map: Google Maps)
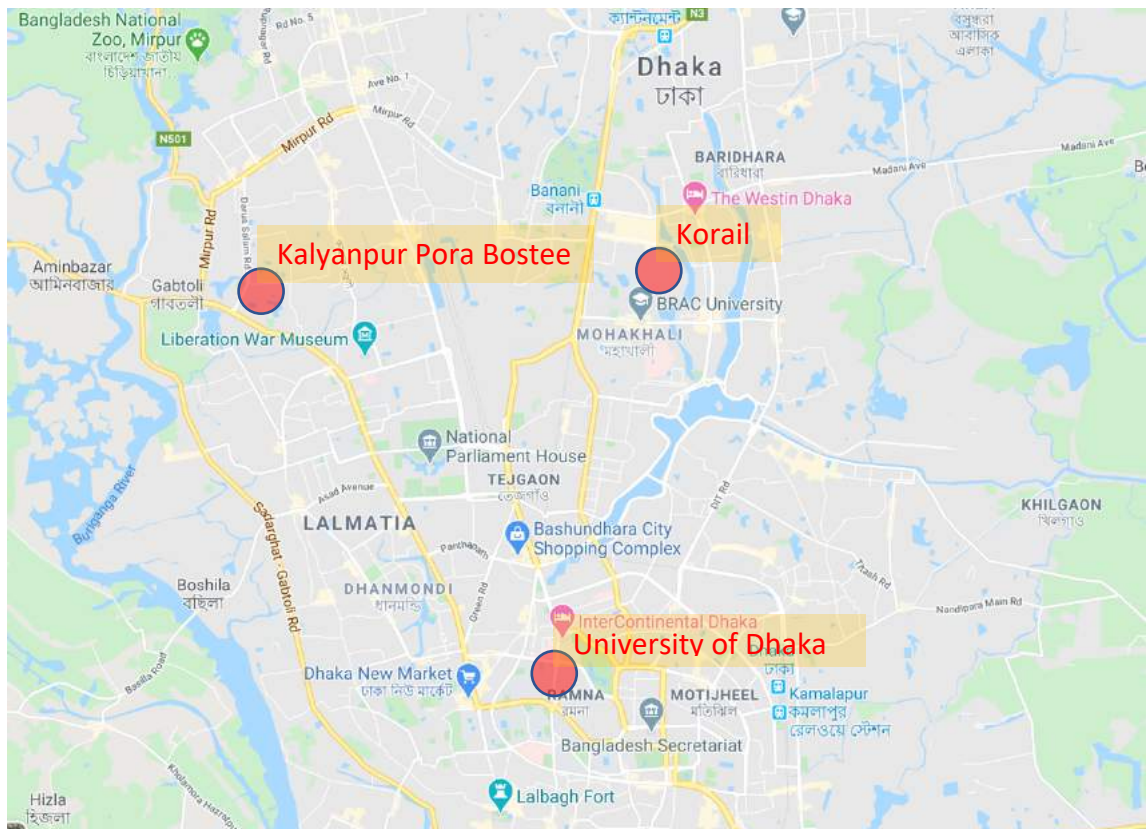
Figure 5.5: Map of Kalyanpur Pora Bostee[103] (© M Jones)

---
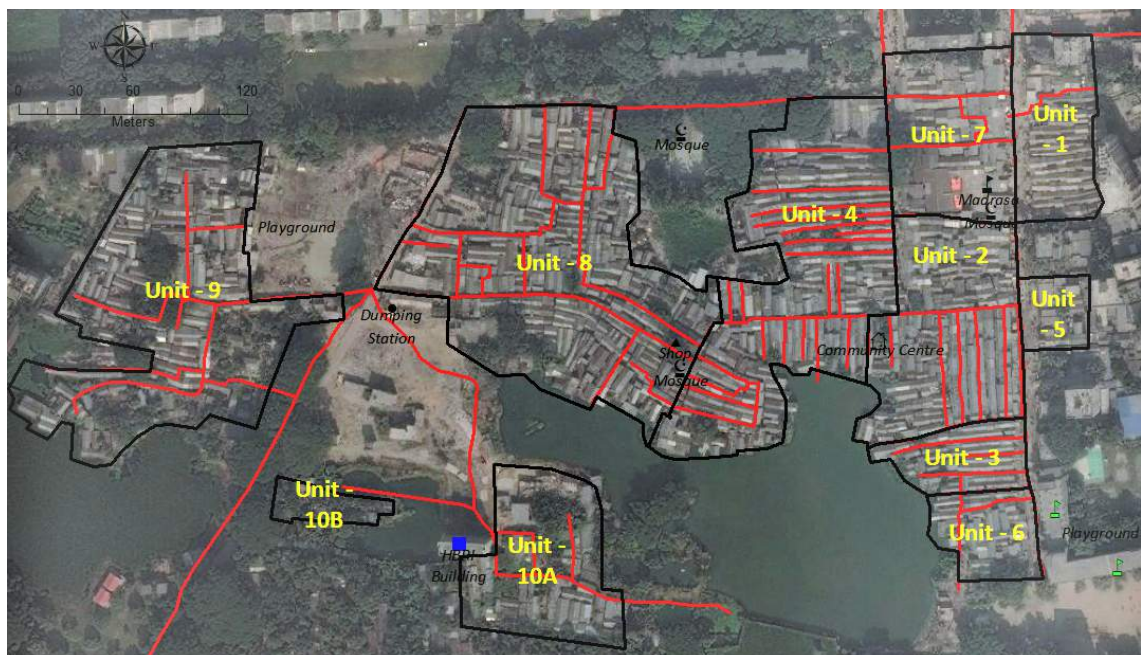
[103] I commissioned the University of Dhaka, Geography and Environment Department to prepare this map.

KPB is a settlement of squatters occupying public land. The KPB site is owned by a government body, the Housing and Building Research Institute (HBRI), the offices of which occupy the southern portion of the site. HBRI provides no services to the bostee. Indeed, the owner and the squatters are in dispute over the occupation. For the landowner, the occupation is a serious annoyance, preventing optimal use of the land[104]. For the residents, who have no viable alternative accommodation, KPB represents home and a valued community.

The majority of houses in KPB consist of a single room of about nine square metres. Dwellings are built from re-used corrugated iron on a bamboo frame. The average household size is close to four persons[105]. Figure 5.6 shows views within the bostee and Figure 5.7 is a view across the lake to Unit 8 of the bostee. Occupation of the land occurred from the late 1980s onwards.

Figure 5.6: Views within Kalyanpur Pora Bostee (M Jones)

---

[104] Interview with senior HBRI official – 25 June 2019.

[105] Demographic figures in this section were obtained in my bostee survey (June 2019).

Figure 5.7: Lake view inside Kalyanpur Pora Bostee (M Jones)

The average family income of surveyed households is 300 to 450 taka (£2.70 to £4.05) per day[106]. The most common vocations for men are rickshaw pullers (20%), construction labourers (15%) and drivers (13%). Many women describe themselves as housewives (36%), some with other vocations, including house servant in middle-class Dhaka (19%), and others as unemployed (16%). Low-cost healthy food is available at the local market (Figure 5.8) and hunger is not apparent. However, other deprivations are evident. Households have very few possessions. Essential utilities such as water points (Figure 5.9) and latrines are shared between many households[107]. Badhan et al., (2017, p57) report that 93% of KPB households dispose of solid waste in the pond (Figure 5.10). The electricity service is problematic, as will be described through this thesis. Cooking is mostly with firewood. There are no local health services. Most children finish schooling at year 5. Latif et al., (2016, p76) find a literacy rate of 50% in KPB, plus another 26% with no formal education. Badhan et al., (2017, p55) identifies 40% of KPB residents who are uneducated. This supports an assertion by Jahan et al., (2015, p12), who state that '*the institutional opportunities for education is* (sic) *almost*

---

[106] The average converts to a monthly income of 10,000 taka (£89.65).

[107] A survey by Badhan et al., (2017, p56) finds that 15 to 20 households share one toilet (latrine) in KPB. Ali et al., (2016, p14) find 10 families per latrine in KPB.

absent in the slums'. Dhaka's slum population suffers not only intense poverty and deprivation, but also a serious level of socio-political exclusion and oppression. KPB is a site which vividly presents these features. This settlement has proven eminently suitable to address my research objectives and research questions.

Figure 5.8: Kalyanpur food market (M Jones)

Figure 5.9: Kalyanpur Pora Bostee shared water point (M Jones)

Figure 5.10: Waste management at the pond (W Truer)

5.2.3   NGOs in Dhaka's Slums

NGOs hold an important place in the Bangladeshi psyche. I have held discussions in the Dhaka offices of a number of NGOs during both my Masters and PhD research regarding the scope of their works in Bangladesh. These have included Grameen Shakti[108], BRAC[109], Practical Action[110], ESDO[111], DSK[112], and Manusher Jonno Foundation[113], in addition to DfID and UNDP. The work of all these institutions is overwhelmingly rural based as evidenced on their websites. There is little reference in the literature to urban based project work by the NGOs. Bertuzzo, (2016, 2009) makes mention of specific examples of NGO interventions in some slums in relation to water, sanitation, and education. Banks, (2016) observes similarly and adds NGOs' urban involvement in microfinance. The success of NGO work is questioned by Banks, (2008, p368) who finds suspicion amongst the slum dwellers of NGOs who they feel expend much effort '*highlighting their misery in order to gain more funds*' for the NGO. I did not research this topic specifically in KPB, but the view expressed by FGD participants

---

[108] http://www.grameen.com/grameen-shakti/ - accessed 22 December 2020

[109] http://www.brac.net - accessed 22 December 2020

[110] https://practicalaction.org/where-we-work/bangladesh/ - accessed 22 December 2020

[111] https://esdo.org/about-us/mission/ - accessed 22 December 2020

[112] http://www.dskbangladesh.org - accessed 22 December 2020

[113] http://www.manusherjonno.org - accessed 22 December 2020

was that slum leaders take the benefits delivered to the bostee with little gain for the majority (Table 5.1). That view may be unfair as in so far as I was informed by the NGO DSK that they had facilitated two important interventions in KPB. Firstly, DSK established legal water points in the bostee (Figure 5.9) by agreement with the Dhaka water authority (WASA[114]) and secondly DSK was responsible for installation of toilets[115]. These facilities clearly benefit all residents. During my Masters research, BRAC escorted me on a tour of their works in Korail. This included water, sanitation, schools, and maternity clinics. I found no evidence of BRAC having had any involvement in my case study bostee. NGOs have not provided schooling in KPB.

Table 5.1: Statement on NGO reach in the bostee

Session	Question	Response	Speaker gender
8 June 2019 Female capabilities discussion 2	So, as you said before, NGOs and cooperatives used to come here	The leaders always get the benefit! The leaders even allocate the benefits to their relatives who are not even living in the bostee! But we who are the poorest, don't get anything!	Female
		People who give the aid are also to blame as they don't take the names going to each house! They rely on the leaders! And that's why we don't get anything!	Female

In discussions with all of the above-mentioned institutions, none have identified involvement in energy provision in urban slums. The reason for this appears to be a function of at least four factors. Firstly, and principally, the NGOs explain that their priority is delivering electricity (in the form of solar home systems) to communities that otherwise have no electricity. City slum dwellers do have an electricity service and therefore, despite the shortcomings in the informal service, are not considered a priority need. Secondly, insecure tenure in urban slums places energy installations (eg solar panels) at risk. That is investments may be extinguished by an eviction or demolition event. Thirdly, the NGOs do not have the technical expertise for connecting grid electricity. And fourthly, the existing corrupt profit streams in the urban slum electricity service mean that and disruption to the regime would be strongly resisted.

---

[114] Water and sanitation authority (Dhaka)

[115] Toilets use a septic tank system in KPB.

5.3 Levels of Analysis

We now visit the contextual levels of analysis[116] introduced in the last chapter (Section 4.2, Figure 4.1). Our analysis turns to interrogation of those three levels, which are broadly national, city and local scales. The discussion addresses barriers to reasonable energy access at these levels in terms of the definitions presented below. The general energy literature recognises that energy is a powerful tool for political control, Calvert, (2016, p111) noting that energy is an *'important physical medium through which to … exert social control'*. This is an important point in the Bangladeshi context, as the use of energy for social control occurs at all scales, as will be shown through this chapter.

The 'socio-political landscape' includes political institutions, cultural norms, and social structures in Bangladesh. This encompasses the arrangements under which society operates, including 'good' governance issues such as the rule of law, and governing for the public good. The nature of these arrangements defines the national political character and sets socio-cultural norms including power relationships between various social groupings.

The 'energy system' includes the actors, social institutions, political structures, and the technical infrastructure involved in the supply and consumption of energy in Dhaka. While several authors use the term 'energy system' (Baptista and Plananska, 2017; Castán Broto and Baker, 2018), others, including Bridge et al., (2018) and Geels, (2002) reference this space as 'the socio-technical regime' of energy. Bridge et al., (2018, p259) define this socio-technical regime as the *'arrangements of social and technical elements held in place by infrastructures, formal rules and informal conventions'*. They further establish that energy systems are shaped by socio-political and cultural processes, rejecting any conceptualisation of energy in purely technological or economic terms. Energy systems are now extensively accepted across energy studies as an amalgam of socio-economic and technical infrastructures.

---

[116] (a) the socio-political landscape of Bangladesh, (b) the energy system of Dhaka and (c) local energy practices in the slums.

'Local energy practices' refers to community and household scale energy-related processes, and the institutions and actors involved in the supply and consumption of energy in the slums. This includes financial, social, and physical processes, encompassing power relations between institutions, between social and political groups and between individuals. In regard to utilities in Southern cities, Jaglin, (2014, pp434-435) defines this as the '*delivery configuration*', which she describes as involving numerous collective initiatives with a diversity of actors operating under various arrangements. These are the features that we shall explore.

In terms of the capability approach (CA), the three levels reflect the scales of conversion factors presented by Biggeri and Ferrannini, (2014, p62). In those respects, this chapter is an investigation of conversion factors under the theoretical framework of this thesis (refer to Figure 5.1). In other words, this chapter speaks to socio-technical qualities that affect the energy experience of slum dwellers.

5.4   The Socio-political Landscape

The widest level of analysis in this discussion is the 'socio-political landscape': the national political institutions, cultural norms, and social structures, which affect the energy sector. The political history of Bangladesh is briefly described here, and conditions of governance are then analysed. A discussion of key socio-spatial dynamics completes this section. The aspects of life in Bangladesh presented in this section are the foundational conditions affecting energy access in Dhaka's slums.

5.4.1   Political History of Bangladesh

Modern Bangladesh is the product of an arduous history. The country came into being following a devastating war of independence with Pakistan through 1971. The new country was beset by political turmoil, extensive in-fighting and corruption, and a weak economy (Lewis, 2011). Bangladesh had a difficult birth.

In 1975, the first Prime Minister, Sheikh Mujibur Rahman was assassinated, and the military assumed power. At about this time, two political parties crystallised their ideological complexion. The Awami League (AL) assumed a progressive and secular

position and the Bangladeshi National Party (BNP) identified as Muslim and conservative on socio-economic issues. In 1979, the military ruler General Ziaur Rahman (Zia) was elected Prime Minister, also becoming leader of the BNP. Subsequently, in 1981, Zia was assassinated, and a new period of military rule followed from 1982. In 1991, democracy was restored (van Schendel, 2009). From 1991 to 2007, a reasonably functional series of elections resulted in an orderly alternation of power between the two major parties. Following a period of growing political mistrust and associated violence, in 2007, a military-backed caretaker government took power for eighteen months, after which an AL-led coalition won government in late 2008. For at least the last 20 years, the ruling parties have been ruthless in manipulating the constitution and electoral processes in order to retain power (Riaz, 2014, p129). The BNP refused to participate in the 2014 elections following disagreement around arrangements for that election. Not surprisingly, AL won government in its own right with a large majority, though more than 80% of eligible voters did not participate (Mollah and Jahan, 2018).

The BNP and other opposition parties have been in disarray in recent years, such that no effective opposition has been in place (Riaz, 2015b; Lewis and Hossain, 2017). In this absence of scrutiny, the AL has moved to consolidate its power at all levels of government and in public institutions (Lewis and Hossain, 2017). The AL again won power in the December 2018 election with a large majority, though the legitimacy election was widely criticised in the Western media[117]. A turbulent political history has established the unfortunate circumstances of governance in Bangladesh today.

5.4.2   Governance in Bangladesh Today

The broad literature on governance and the allied literature on democracy, present a number of common concepts regarding characteristics of a functioning democratic society. Prominent authors include Dahl, (2015), Held, (2006) and Tilly, (2007). The respected NGO, Freedom House, engages with a range of dimensions in assessing the

---

[117] eg https://www.bbc.co.uk/news/world-asia-46718393 - accessed 7 September 2020.

'good' governance of countries around the world[118]. Further, the UN Declaration of Human Rights (United Nations, 1948) advances measures which are consistent with those of the above sources. I have selected six dimensions, evident in all of the preceding references, in which to consider the state of governance in Bangladesh today, they being (a) the right to protest, (b) the rule of law applied equally, (c) separation of powers, (d) free and fair elections, (e) accountability and transparency, and (f) governing for the public good.

Interestingly, the Government of Bangladesh's (2015, p23) Seventh Five Year Plan presents twelve core targets, the first two of which are:

- *'building a secular tolerant liberal progressive democratic state*
- *promoting good governance and curbing corruption'.*

According to the academic literature and NGO reports, there is little genuine effort to realise these targets.

There is a considerable literature that bemoans the poor state of governance in Bangladesh. Professor Ali Riaz[119] is regarded as a preeminent scholar on Bangladeshi politics. This lament from Professor Riaz is emblematic of the view of many Bangladeshi authors:

> *'This is not the country that was promised in 1971. The high ideals of equality, human dignity and social justice that led to the founding of the country have been flouted by political leaders'* (Riaz, 2015, p11).

The right to protest is a fundamental condition for a free and fair society. Riaz, (2015) asserts that in Bangladesh the ruling class tramples on human rights at will, citing examples of supressed attempts at protest, and threats to organisers of political protests. Bedi, (2018) and Kotikalapudi, (2016) describe police killings of protesters against the government's decisions on utilities infrastructure. The use of fear and violence against dissenters is widespread, not only at the political leadership level, but

---

[118] https://freedomhouse.org/issues - accessed 7 September 2020.

[119] https://pol.illinoisstate.edu/faculty/profile.php?ulid=ariaz#fs-tabs-accord1 - accessed 7 September 2020.

also at the community level[120]. Most writers on Bangladeshi governance issues point to the government's poor record on political and human rights. NGO reports on Bangladesh concur. In its 2020 annual report on Bangladesh, Human Rights Watch states that the government *'continued to violate international standards on freedom of speech in its crackdown on government critics'.*[121] The Bangladeshi literature identifies political voicelessness as a typical condition of Dhaka's slum residents. Banks, (2016) observes that political oppression of slum dwellers is entrenched and systemic, constraining the people's ability to escape poverty. The political voicelessness of the poor is maintained by more powerful figures through *'the threat of violence or retribution from leaders and their enforcers'* (Banks, 2016, p279). The right to protest against authorities is suppressed in Bangladesh.

Criminal acts by any member of society should be dealt with under an equal justice system wherein guilt is tested in a fair hearing. Riaz, (2015) asserts that the rule of law has not been established in Bangladesh and that political power has been abused to strengthen the position of the Prime Minister and the ruling party. He points to the Special Powers Act 1974 (SPA), enacted by AL, but used frequently by both major parties, allowing arrest and indefinite detention without warrant. When in opposition both parties have promised to repeal the SPA but have not done so when in power. Reports of police corruption and of the prevalence of bribery are widespread in the literature (Ahmed and Johnson, 2014; Banks, 2008; Shafi, 2010). Mollah and Jahan, (2018, p750) find that law enforcement agencies are involved in torture and killings. It seems clear that there is an absence of the politically independent and effective justice institutions that are necessary to ensure an equitable rule of law in Bangladesh.

Separation of powers demands non-interference by government in the operations of the police forces or the judicial system. The literature presents allegations that government leaders engage the police to carry out unsavoury acts, including politically motivated violence and killings. Riaz, (2015, p42) notes that the ruling party governs with direct use of the police for political ends and *'virtually free of all constraints'* .

---

[120] Supported by many authors (Ahmed and Johnson, 2014; Degert et al., 2016; Suykens, 2015; Swapan, 2016).

[121] https://www.hrw.org/world-report/2020/country-chapters/bangladesh - accessed 7 September 2020.

Lewis, (2011, p198) supports these assertions in describing the politicisation of the bureaucracy and the judiciary. The NGO, Freedom House, states that in Bangladesh *'the Individuals' ability to access justice is compromised by endemic corruption within the court system'* [122]. Affiliation with the AL is a prerequisite for appointment to positions of influence across the public sector, police force and judiciary. In Bangladesh, an effective separation of powers is not evident.

In a functioning democracy, elections are free and fair, and are open for all citizens' participation. Electoral processes in Bangladesh are well short of exemplary. An extensive system of vote buying amongst the poor, widespread coercion of individuals for their votes and dubious counting processes contribute to what Riaz, (2015, p40) describes as a '*hybrid democracy'*, such being where there is a semblance of democracy but with systemic abuse of the electoral process. The Economist Intelligence Unit, (2019, p5) also finds Bangladesh to be a hybrid regime in which elections *'have substantial irregularities that often prevent them from being both free and fair'* (ibid, p53). Freedom House states that the 2018 election was '*marred by violence, intimidation against the opposition, allegations of fraud, and the obstruction of election monitoring missions'* [123]. Bangladesh has developed into what has been described as '*de facto one-party authoritarianism'* (Riaz, 2014, p119). Elections in Bangladesh are far from free and fair.

A government must be held to account for its actions in order for a democracy to function. Lewis, (2011) points to a lack of accountability and transparency in public administration in Bangladesh. Mollah and Jahan, (2018) and Riaz, (2015) add that the political class resists any efforts to hold it accountable, citing an absence of strong institutions to ensure transparency. Reporters Without Borders, assessing the 2018 election, identify violence *'against reporters in the field, the arbitrary blocking of news websites, and arbitrary arrests of journalists'* [124]. The ruling class of Bangladesh operates without effective scrutiny.

---

[122] https://freedomhouse.org/country/bangladesh/freedom-world/2020 - accessed 7 September 2020.

[123] https://freedomhouse.org/country/bangladesh/freedom-world/2020 - accessed 7 September 2020.

[124] https://rsf.org/en/bangladesh - accessed 7 September 2020.

A functioning and just democracy will prioritise public services for the greater good, with an emphasis on supporting the most disadvantaged. The Bangladeshi literature on many topics describes the ruling class in Bangladesh governing for private gain and consolidation of power rather than for the common good[125]. In a study on trust in governance in Bangladesh, Islam and Mahmud, (2015, p144) conclude that '*citizens feel as though government officials misuse their powers for their self-interest*'. A concerning manifestation of these misguided political priorities is neglect of the needs of the majority poor population. Ahmed, (2014, p751) observes a *'lack of real political commitment for pro-poor policies'* in Bangladesh. While millions in the country are in serious need of an improving quality of life, the focus of the ruling elite on self-interest is an unfortunate hindrance.

A nuanced academic perspective is evident is the writing of N. Hossain, (2017) who asserts that the majority of Bangladeshis tolerate a level of corruption because the nation as a whole is progressing well in socio-economic terms[126]. She cites World Bank statistics in relation to improvements in the national economy, employment, life-expectancy, education, family planning, gender equity and disaster management. These are verifiable improvements. However, national-average figures conceal the reality of growing inequality[127] and a growing population of urban poor[128].

The academic literature is overwhelmingly critical of the democratic quality of Bangladesh's governance systems. Monitoring by international NGOs reinforces these academic views. Transparency International ranks Bangladesh 146th out of 180 countries assessed in their highly referenced corruption perception index[129]. The Economist Intelligence Unit, (2019, p12) rates Bangladesh's status as weak on political participation and culture, electoral process, functioning of government, and civil

---

[125] (Khan, 2015; Lata et al., 2019; Lewis, 2011; Morshed and Asami, 2015; Shafi, 2010; Shafique et al., 2018).

[126] A view shared by an expert interviewee (Ashek Rahman, UNDP, 13 January 2019).

[127] Gini Index has risen from 1991 (at restoration of democracy) at 27.6 to 34.2 in 2016 (https://data.worldbank.org/indicator/SI.POV.GINI?locations=BD – accessed 7 September 2020.).

[128] 3.7 million urban Bangladesh residents living in extreme poverty in 2019, up from 3.0 million in 2010 (World Bank, 2019, p202).

[129] https://www.transparency.org/whatwedo/publication/corruption_perceptions_index_2019 – accessed 7 September 2020.

liberties. These findings are consistent with those of Freedom House which apportions a low grading to Bangladesh's government in many measures of a democracy[130]. The consistent message of the academic literature and NGO reports is that Bangladeshi society is dominated by a political elite that prioritises private gain and retention of power above genuine social justice and denies political voice to the poor majority. Recalling Amartya Sen's instrumental freedoms, Bangladesh's political complexion leave little space for the urban poor to achieve socio-political or economic empowerment or protection by the state. Freedom for these people is constrained.

5.4.3 Urbanisation and Land Administration

Economic globalisation over recent decades, which occurs as international corporations engage low-cost labour resources, has delivered a set of socio-political challenges in Bangladesh. One underlying impact of globalisation has been a reinforcement of both privilege and inequality. A prominent scholar on globalisation, Jan Aart Scholte, (1999, p236), states that globalisation *'has tended on the whole to widen resource gaps and reinforce social hierarchies'*[131]. Rana, (2010, p238) endorses this in the Bangladeshi context. Bangladesh has a growing wealthy class of factory and business owners spawned by globalisation. Meanwhile, globalisation in Bangladesh has fuelled a vast and rapid rural to urban migration, the great majority of immigrants being poor (Islam and Baten, 2016; Rahman et al., 2018). Large scale urban poverty combined with an absence of affordable housing has led to a substantial growth of informal settlements in Dhaka. As M. Rahman et al., (2018, p223) note, most of these migrants *'initially concentrate in slums or informal settlements, because of poverty and limited alternative options'*. Competition for living space leaves most of the poorest people with informal housing as their only option. This process is also subject to the pattern identified in Chapter 2, where cities of the global South discriminate against the poor in the quest for modernisation. Lata, (2020, p11) asserts that *'state actors consider poor people as a barrier against building a "world-class city"'*. Pressures to

---

[130] https://freedomhouse.org/country/bangladesh/freedom-world/2020 - accessed 7 September 2020.

[131] The growth in inequality resulting from globalisation is supported in seminal slum texts by Davis, (2006) and the United Nations Human Settlements Programme, (2003): *The Challenge of Slums.*

enhance the city economy and amenity for the wealthy and middle classes places undeserved eviction pressure on those living in squatter settlements.

Rapid urbanisation places substantial pressure on land administration. Various authorities have some level of responsibility for land management in Dhaka. These include national government departments[132], local authorities[133], utilities providers[134], and *Rajdhani Unnayan Kartipakkha* (RAJUK), the capital development authority. G. Rahman, (2008) has identified 42 public institutions involved in land development in Dhaka. Several scholars observe that the institutional landscape is cluttered, that boundaries of responsibility for land administration in Dhaka are unclear, and that all institutions are severely under-resourced (G. Rahman, 2008; te Lintelo et al., 2018). Shafi and Payne, (2007) note that in Dhaka *'anarchy prevails in the overall management of urban land'*. Not only is governance disordered, but there are also high levels of bribery and public corruption in land administration (Mohit, 2012; T. Rahman, 2011). Executors of planning and service provision in Dhaka thereby tend to neglect marginalised social groups. Consistent with other academic commentary on governance in Dhaka, land management is widely described as favouring the interests of the elite rather than serving the public good, with scant attention to improving conditions for the poor (Mohit, 2012; Shafi and Payne, 2007).

Extreme levels of contestation for housing in this challenged socio-political environment relegates the urban poor to residing in precarious informal settlements under informal governance structures, with informal delivery of services, and with housing that can only be described as inadequate.

5.4.4   Informality

Informality is *de rigueur*, permeating much of the metabolism of Dhaka. So great are the population pressures in Dhaka, and so rapid is the growth, that formal economic and urban systems are unable to fully service the city's inhabitants (Ahmed, 2014,

---

[132] Including the Ministry of Land and The Ministry of Housing and Public Works.

[133] Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC).

[134] eg Dhaka Electricity Supply Company (DESCO) and Water and Sanitation Authority (WASA).

p747). Informality dominates the economy in Bangladesh, with almost 90% of the population dependent on informal employment (Asian Development Bank, 2012, p10). K. Rahman, (2011, p72) identifies over twenty economic sectors dominated by informality including retail, transport, manufacturing, health and education. Financial transactions across all sectors are characterised by cash payments, such that the tax base is severely constrained, which in turn restricts public expenditure on services and infrastructure. The formal sector plays almost no role in transport in Dhaka. Barua et al., (2013a, p180) find that of non-walking journeys in Dhaka[135], 45% are by rickshaw, 35% by bus, and 20% are by auto-rickshaw. These modes are entirely delivered by informal providers. Refer to Figure 5.11. Informality prevails through the retail sector. As described by Lata et al., (2019), many streets of Dhaka are crowded with informal vendors[136]. Refer to Figure 5.12. Employment in the largely unregulated manufacturing environment of Bangladesh allows exploitation and unsafe workplace practices, as tragically demonstrated by the 2013 Rana Plaza factory fire disaster[137].

Figure 5.11: Transport sector informality (M Jones)

Figure 5.12: Retail sector informality (M Jones)

Discussion covering governance in Bangladesh in the previous section revealed a system that is deficient in capacity or willingness to attend to the needs of the poor. This services void is largely filled by informal political arrangements (K. Rahman, 2011, p71), which are characterised by the prevalence of patronage (Lewis, 2011, p23). Lata, (2020, p9) describes the political culture as '*democratic feudalism*', where patronage rather than social inclusion is promoted. Positions of influence in the informal hierarchy are 'earned' through party political allegiances and come with financial benefits. As observed by Banks et al., (2019, p13), '*powerful non-state actors position themselves to carve out or take advantage of informal spaces'.* A strict hierarchy endures, with powerful people directing privilege and benefits and aggressively, even violently, protecting their position. Informal governance systems, with all of their opportunities for exploitation and oppression, prevail in Bangladesh. To a substantial

degree, those with power in the Bangladeshi hierarchy view slum dwellers as a large captive source of income, in what Davis, (2006, p181) describes as *'myriad invisible networks of exploitation'.* Banks, (2016, p286) confirms this reality for the Bangladesh context, observing that slum dwellers lack the power to resist threats of violence and retribution from slum leaders and their patrons. People at the bottom of the informal governance pyramid are dependent on the benevolence of well-connected slum leaders for access to housing and basic services. The slum dweller majority has little or no political voice in these relationships. This is succinctly summed up by Banks, (2016) who observes that the ability of slum dwellers to *'resist leaders and other patrons is severely constrained by their ongoing dependence, their lack of social and economic power, and a threat of violence and retribution'.* Political informality, for a large part, oppresses the urban poor in Dhaka.

Land occupation by the poor in Dhaka is mostly controlled by informal patronage arrangements, as described above. Negotiation about the control of informally occupied land occurs between powerful identities including political figures and slum leaders. Land 'ownership' is relational rather than legal in Dhaka's slums (Suykens, 2015). Lata, (2020, p11) states that in slums, *'land ownership is determined by their* (landlords) *connections with the ruling political party'.* The arrangements are mostly based on cooperation and allegiances between members of the political elite, including local Ward Commissioners[138], senior police, land owners[139], and slum leaders (S. Hossain, 2013). Studies in the broad literature note that informal settlements mostly occur on land that is not desirable to the wealthy citizenry (Varley, 2017). That is certainly the case in Dhaka, with extensive slums built on floodplains and tracts adjacent to railways. However, there are many exceptions where well-located government land has been occupied by squatter settlements. Both Korail and KPB are examples of that pattern.

---

[138] Elected local authority councillors.

[139] Often government officials.

5.4.5   Socio-political Landscape Conclusion

It is clear from the literature that the socio-political landscape of Bangladesh has inherent barriers to poverty alleviation and to the provision of reasonable energy services for all. Governance in Bangladesh is plainly lacking in aspiration for the common good, and the country is beset by a deficiency of public resources. Further, economic globalisation and other demographic forces have generated a rate of urbanisation in Dhaka unmatched by that of any other of the world's megacities and Bangladesh has one of the highest rates of urban poverty in the world. These cross-reinforcing conditions co-exist with urban informality in the political, economic, and spatial dimensions. The outcome of these dynamics for many of the urban poor is a precarious life in informal settlements. This socio-political landscape forms the basis of urban life in Dhaka and sets the tone for the operation of the energy system in this city. That system represents the next level of analysis.

5.5   The Energy System

The energy system to be reviewed here includes the institutions, political structures, and the technical infrastructure involved in the supply and consumption of energy in Dhaka.

The Cabinet of the Government of Bangladesh includes the Minister for Power, Energy and Mineral Resources. At present, that Ministry is held by the Prime Minister, a reflection of the high political importance given to energy supply by the Bangladeshi government[140]. Newspaper reports verify that the energy sector has an elevated priority with government[141]. The Ministry of Power, Energy and Mineral Resources includes the Power Division. Under that Division falls the Bangladesh Power Development Board (BPDB), responsible for national power generation. Also lying within the Division, are government owned companies responsible for the distribution

---

[140] Confirmed in an interview (for my Masters degree) with the Deputy Australian High Commissioner to Bangladesh – 30 March 2017.

[141] https://www.dhakatribune.com/business/economy/2018/06/07/budget-fy19-roopur-nuclear-plant-receives-highest-allocation-among-mega-projects - accessed 7 September 2020.

of electricity to customers in Dhaka, the Dhaka Power Distribution Company (DPDC)[142] and the Dhaka Electric Supply Company (DESCO)[143].

Electricity use per capita in Bangladesh is one of the lowest in the world. Refer to Figure 5.13. The low levels of energy use in Bangladesh is a function of poverty and of supply constraints (Khan, 2015). Since independence in 1971, Bangladesh has struggled to meet growing energy demands (Islam and Khan, 2017; Mujeri et al., 2014). Bangladesh's persistent economic growth is predicted to continue at over 7% pa[144], and population growth is forecast at over 3% pa[145]. If maintained, these factors would combine to double energy demand nationally from 2020 to 2030[146], representing an enormous challenge.

Figure 5.13: National electricity consumption in 2014 in kWh per annum per capita (latest figures available)
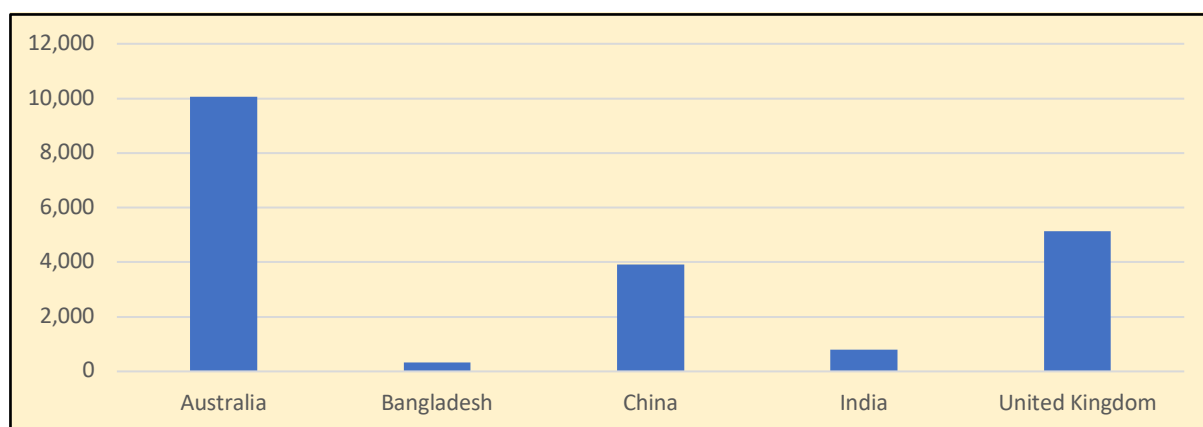
Source: https://data.worldbank.org/indicator/eg.use.elec.kh.pc - accessed 8 September 2020.

Bangladesh operates on a single national electricity grid with generation dominated by locally sourced gas. However, at forecasted usage rates, gas reserves are predicted to expire sometime before 2030 (Mollik et al., 2016, p544). The Government of

---

[142] Responsible for central and southern Dhaka.

[143] Responsible for northern Dhaka, which includes KPB.

[144] (from 2021 post Covid) https://www.adb.org/countries/bangladesh/economy - accessed 7 September 2020.

[145] http://worldpopulationreview.com/world-cities/dhaka-population/ - accessed 7 September 2020.

[146] https://www.worldbank.org/en/news/feature/2019/11/21/bangladesh-meets-clean-energy-demands-with-new-power-plant - accessed 7 September 2020.

Bangladesh is addressing the increasing demand for electricity and the disappearing local gas reserves by importing electricity from India and by building coal and nuclear power plants (Bedi, 2018; Kotikalapudi, 2016), although use of coal power is likely to be limited to existing plants and those currently under construction[147]. These plants are financed by foreign business interests, mainly Indian[148] and Russian[149]. There is commentary in the literature claiming that power generation projects are beset by corruption and substantial bribery payments (Bedi, 2018; Kotikalapudi, 2016). The existence of corruption in governance of the energy system has been verified in expert interviews[150].

The academic literature of the mid-2010s speaks of a serious shortfall in electricity supply to Dhaka and of frequent extended blackouts (Islam and Khan, 2017; Kotikalapudi, 2016). Current government information points to large increases in supply in recent years, such that the city now has a reasonable quantum of supply in relation to demand (Figure 5.14) [151]. This has been verified in expert interviews[152]. Indeed, according to the government, electrification has increased from 31.2% in 2000 to 92.2% in 2019 (Government of Bangladesh, 2020, p108). Especially given Bangladesh's lack of wealth, the government has done well to substantially increase the total electricity supply.

---

[147] https://www.world-energy.org/article/10685.html - accessed 7 September 2020.

[148] https://www.thedailystar.net/rampal-power-plant-bangladesh - accessed 7 September 2020.

[149] https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/bangladesh.aspx - accessed 7 September 2020.

[150] Ashek Rahman, UNDP, 13 January 2019; Professor Ijaz Hossain, Bangladesh University of Engineering and Technology, 6 August 2019.

[151] Anecdotally, my own experience of visiting Dhaka across 2016 to 2019 was that there were frequent (at least daily) blackouts in 2016 and few (less than weekly) in 2019.

[152] Ashek Rahman, UNDP, 13 January 2019; Professor Ijaz Hossain, Bangladesh University of Engineering and Technology, 6 August 2019; Sarder Shafiqul Alam, ICCCAD, 20 June 2019.

Figure 5.14: Total annual electricity generation (GWh) in Bangladesh (shown at decadal intervals)
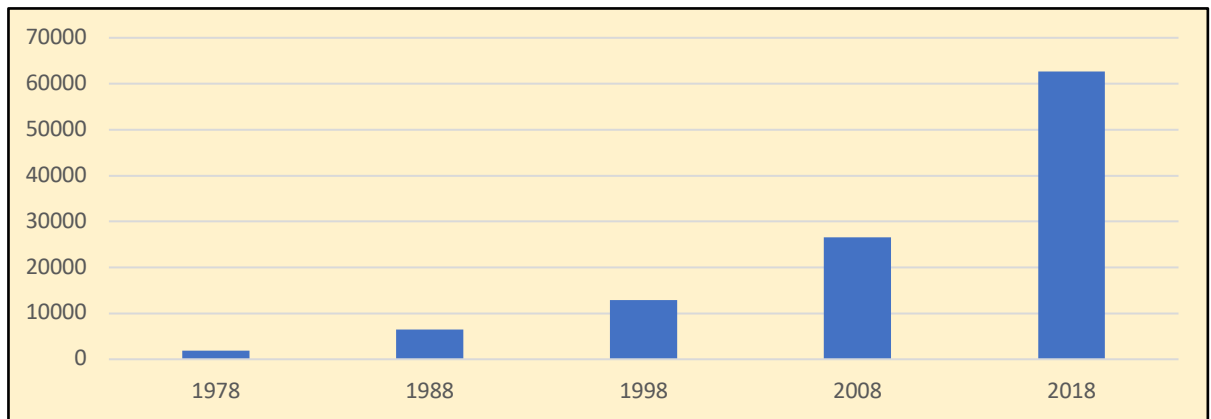
Source data: (Bangladesh Power Development Board, 2019, p53)

Observation of street cabling and transformers in Dhaka suggests that the infrastructure is unregulated and unmaintained relative to that in Western cities (Figure 5.15). The issue of installation quality seems to have no coverage in the literature, nor are there apparent reports in the press of accidents resulting from poor cabling practices. It can only be deduced that this installation quality is not considered problematic in Dhaka.

Figure 5.15: Street cabling in Dhaka (M Jones)

In terms of electricity supply to Dhaka's residents, government policy is that only those with registered residency are eligible for formal connections from DPDC and DESCO. Residents of informal settlements are thereby unrecognised and officially excluded from participation in the formal market. Cooking practices in Dhaka are something of a mystery with little data or literature available in relation to cooking beyond incidental references in the broader literature. Consequently, I refer here to expert interviews[153] and conversations with middle class Dhaka residents. Dhaka has a small residential gas reticulation system that is being phased out as the government has decided to actively encourage residents to use bottled gas for cooking. Almost all wealthy and middle-class households of Dhaka cook with gas. The bottled gas market appears to be non-discriminatory, apart from economic exclusion. All residents, including slum dwellers who can afford legal bottled gas, have access to that market, and all at the same pricing. Nevertheless, national statistics are distressing, with just 19.0% of the country's population using clean fuel in 2019 (Government of Bangladesh, 2020, p108). This is astonishingly low in the modern age.

The energy system of Dhaka has prominence in Dhaka society and politics. As a totality, the city in 2020 is reasonably well-serviced for electricity, a condition greatly improved over the last five to ten years. In terms of energy access, wealthier residents enjoy the benefits of formal electricity connections and of gas cooking. The situation for the urban poor and for those in informal settlements is more challenged, as will be described in the next section.

5.6   Local Energy Practices in Dhaka's Slums

'Local energy practices' refers to the infrastructures, processes, institutions and actors involved in the supply and consumption of energy in the slums. It encompasses power relations and financial arrangements between social and political groups and between individuals. There has been extensive research on the patterns of life for Dhaka's slum dwellers and several articles concerning the social and technical dimensions of utilities in the slums. For the most part, the literature on slum life paints a picture of

---

[153] Mostly from Ashek Rahman, UNDP, 13 January 2019.

deprivation of liberties (Khan, 2015; Lewis and Hossain, 2017), lack of recognition and political voice (Banks, 2016; Bertuzzo, 2016), inadequate shelter (Jabeen, 2015; Zanuzdana et al., 2013), insecure land tenure (Morshed, 2014; T. Rahman, 2011) and discriminatory services provision (Lipu and Waliullah Bhuiyan, 2014; M. Rahman et al., 2018).

Energy practices in Dhaka's slums are largely a function of the complex and challenged socio-spatial conditions of the settlements. We revisit here some of the concepts explored in Chapter 2 concerning informal settlements. Of particular importance is the influence of the three core conditions of informal settlements identified in that chapter, each of which appears on the UN Habitat, (2009, p4) criteria for adequate housing. These are (a) tenure security, (b) housing habitability, and (c) access to utilities. Further, (d) the social structure in Dhaka slums is a significant determinant of the delivery of energy services. Accordingly, this section examines the literature on informal settlements in Dhaka across the four dimensions just mentioned. Discussion on the technicalities of electricity and cooking is presented at the end of this section.

5.6.1   Tenure Security

As a consequence of the socio-economic forces described earlier, for at least one third of Dhaka's residents, low-cost housing in various forms of slums is the only accommodation option. While Islam et al., (2006) find that more than half of the slums in Dhaka are privately owned, M. Rahman, (2009) determines that a majority of those slums in Dhaka are on land for which the ownership is disputed between government and the private claimant[154]. Reliable figures are not available but a majority of slum dwellers in Dhaka are likely to be either illegal squatters or residents of unauthorised residential developments.

The widely discussed consequence of life in informal settlements in Dhaka is the prevalence of tenure insecurity and the associated threat of evictions. Banks, (2016, p273) notes '*that the day-to-day lives of Dhaka's urban poor are characterised by endemic insecurity'*. Slum residents are vulnerable to the ever-present threat of

---

[154] I acknowledge Nahiduzzaman, (2012, p58) – PhD thesis at KTH University – for identifying this tension.

demolition by bulldozing or arson (Nawaz, 2004; M. Rahman, 2009). Major arson events in Dhaka's slums occur at least every year. Figure 5.16 shows a report in the Western media of one such event in August 2019, while Figure 5.17 is a horrific view of another slum fire that occurred in March 2020. Both fires are a short distance from my case study slum, KPB. A major fire event with multiple fatalities in 1990 in KPB is reported by M. Rahman, (2009, p150). Ahmed, (2014, p749) suggests that *'such fires are intentionally lit to evict slum residents.'* Most slum dwellers in Dhaka are vulnerable to violent acts of eviction with little or no forewarning. Strikingly, Jabeen et al., (2010, p422) find that 90% of Korail residents have *'had some experience of eviction in the past'*. Many researchers have noted the impacts of this life of fear on people's mental well-being and their ability to operate effectively within their household and in the broader economy (Mohit, 2012; Shafi and Payne, 2007). Life under such circumstances is a living embodiment of Sen's, (1999) fifth instrumental freedom: protective security. The other of Sen's dimensions concerning political, economic, and social opportunities are also severely compromised for those living without secure tenure.

Figure 5.16: Slum fire event report in the Guardian newspaper UK

https://www.theguardian.com/world/2019/aug/18/bangladesh-fire-leaves-10000-homeless-after-blaze-razes-slum - accessed 7 September 2020

Figure 5.17: Shialbari Jheelpar slum fire event in March 2020 (Dhaka Tribune)

https://www.dhakatribune.com/bangladesh/dhaka/2020/03/11/fire-breaks-out-at-rupnagar-slum-in-mirpur - accessed 7 September 2020

It is important to note the positive role of slum communities in the economy of Dhaka. For the urban poor, slums represent the most affordable form of housing (Ahmad, 2015), while for businesses, slums provide a proximate low-cost source of labour (Alam and Matsuyuki, 2017). Most middle-class Dhaka residents engage slum dwellers in some form of employment ranging from use of rickshaws to employment of home servants and private drivers[155]. According to M. Rahman, (2009), slums and their residents are an important part of the socio-economic system of Dhaka, and therefore forced slum evictions damage the broad city population.

Dhaka suffers a high level of politico-legal tension on the issue of slum evictions. Activist lawyers take action through the courts to obtain stays of eviction for squatter communities, while government institutions and their unscrupulous agents attempt violent eviction practices. These evictions can occur regardless of whether courts have ordered against eviction or not. There appear to be no winners in this unfortunate

---

[155] I met an architect in Dhaka (27 June 2019) with a wife and young son, a family of three. They employ three house servants plus a driver. He states that this is not an unusual arrangement.

state of affairs, not even the illegal shack 'owners', who lose an income stream. Ironically perhaps, these are often government officials[156].

Scholars who address the practicalities of allocating secure tenure to slum dwellers in Dhaka point to the extremely large slum population, rapid growth, the over-complex institutional network, endemic corruption in government, and the severely limited resources of government institutions (G. Rahman, 2008; T. Rahman 2011; Shafi and Payne, 2007). This over-whelming concoction of factors multiplies into a virtually impossible mission to achieve formalised registered tenure for the roughly one million slum households of Dhaka. Nevertheless, the Bangladeshi scholars support the call in the global literature for incremental, holistic and community-based allocation of land tenure (Degert et al., 2016; M. Rahman, 2009). This approach is explored in practical terms by several authors, who offer models which merit consideration.

Shafi and Payne, (2007) present a three-stage process for allocating community tenure to Dhaka's slums[157]. Firstly, evictions would be banned, and settlements surveyed to identify those not at risk of flooding. Secondly, tenable settlements on public land would be given secure community land rights. Finally, communities showing good governance would be awarded Community Land Title at a minimum cost. Nahiduzzaman, (2012)[158] develops a model for secure slum land tenure, where RAJUK[159] assumes control of slums as landlord. Residents enter a five-year agreement to pay rent at current levels and subsequently may stay longer on the basis of a satisfactory payment record. RAJUK would steadily develop high-density housing, and people would be shifted into decent quality housing units over time. Alam and Matsuyuki, (2017) offer a land-sharing model for Korail. Under this scenario, existing slum housing would be gradually replaced by six-storey low-cost housing giving the landowner a better return than provided by the current use and providing residents better quality housing with secure tenure. Each proposal appears feasible, and in the

---

[156] Shafi, (2005) finds that another bostee (illegal settlement), Sattala Mohakhali, has 667 defacto owners, of whom 347 are government officials.

[157] Consistent with earlier work by Payne, (2004, p175).

[158] PhD thesis as noted previously.

[159] The capital development authority.

best public interest. All three sets of authors concede in private communications with me[160] that their concepts have not been tested or even acknowledged by authorities.

Rapid urbanisation and the unaffordability of existing formal housing stock, forces millions of the urban poor in Dhaka into circumstances of precarious housing. The government has limited potential to establish conditions to overcome the extreme housing crisis in Dhaka. Indeed, housing accommodation is claimed to be the *'major infrastructural problem in Bangladesh'* by M. Rahman et al., (2018, p236)*.* This opinion has been corroborated in an expert interview[161].

5.6.2   Housing Habitability

We shall examine the quality of housing in KPB in detail in Chapter 8. For the moment, we draw on the literature to describe housing in Dhaka's slums. The quality of housing in Dhaka's squatter settlements is makeshift and fragile (Ahmad, 2015, p741; Islam et al., 2006, p41). Most houses in the slums are clad in reused corrugated steel, often rusty and pitted with holes. Frames are discarded timber or bamboo. The shacks are structurally fragile, prone to damage by wind and offering poor protection against the rain. They are also vulnerable in a fire event. Dwellings often have no windows[162], the front door being the only opening, and are uninsulated. Houses are seriously uncomfortable in the tropical heat, omnipresent even in the Dhaka winter[163]. Jabeen and Guy, (2015, p310-311) observe in Korail that unventilated houses of corrugated steel leave residents exposed to extreme temperatures. In an earlier study, (Jabeen et al., 2010) find that some Korail residents improve thermal conditions by inserting a window opening in their dwelling wall. I have found little evidence of such practices in my visits to Korail and other slums in Dhaka. Indeed, Bertuzzo, (2016, p157) observes that the windowless feature of Korail houses is not suitable for the climate. She goes on to note the need for *'artificial lighting at daytime … causing higher energy*

---

[160] Email exchanges with S. A. Shafi (19/09/2019); K. H. Md. Nahiduzzaman (28/09/2019). Interview with S. S. B. Alam (26/06/2019).

[161] Salma A. Shafi, Centre for Urban Studies, Dhaka, 14 November 2019.

[162] The makeshift houses are built at minimal cost, clearly with little or no consideration of amenity.

[163] December average maximum 26°C.

consumption'. Jabeen, (2015, p81) notes the health risks and serious discomfort that arise from internal heat, and records *'the increased cost for electricity usage during hot days'* (ibid, p82). In other words, poor habitability demands unreasonable extra energy use. Housing in Dhaka's slums is a source of discomfort and a cause of poor health for residents.

The Bangladeshi literature supports the findings of the global research linking tenure security with housing quality. Lack of secure tenure is noted by researchers in Dhaka as a disincentive for slum dwellers to invest in improving their home (Shafi and Payne, 2007). M. Rahman, (2009, p158) states that '*without secure tenure … no bosteebashee*[164] *will want to improve their housing situation*'. And Jabeen et al., (2010, p420), examining Korail, make the same determination. In parallel with the poverty levels, insecure tenure in Dhaka's slums inhibits housing quality. This exclusion is a concrete manifestation of non-recognition and restricts slum residents' ability to achieve the fair socio-economic and political freedoms advocated by Sen and other capability approach authors.

5.6.3   Access to Utilities

An inability for Dhaka's slum dwellers to access reasonable services and utilities is widely discussed in the literature. This is a direct and harmful consequence of living in Dhaka's squatter settlements (Choudhoury et al., 2016; te Lintelo et al., 2018; Zanuzdana et al., 2013). Authorities such as DESCO, quite logically, reference likely eviction of slum dwellers as a reason for not installing infrastructure (Nahiduzzaman, 2012). Secure tenure is a precondition of legal utility connection in Dhaka (te Lintelo et al., 2018, p398). This was confirmed in an interview with a senior DESCO official[165], as recorded in Box 5.1.

---

[164] Bangla term for resident of a squatter settlement.

[165] Yasir Arafat, Executive Engineer DESCO, 11 November 2019.

Insecure land tenure consequently forces squatter households in Dhaka into informal utility markets. This has profound ramifications for the quality of electricity supply. For cooking, slum households have no opportunity to connect to town gas, while bottled gas systems are beyond the financial reach of most households. For the majority, electricity services for squatter households in Dhaka are illegal and cooking fuel is mostly non-modern. For legal utility customers in Dhaka, neither of these attributes apply. This clearly represents an unjust distribution of energy services. Another impact of informal utilities is public revenue loss. Money charged in the slums does not reach the public purse, impacting on providers and on legitimate middle-class Dhaka residents (Banks 2008, p372). This is a manifestly unjust ecosystem for all residents of the city. Arrangements between informal energy providers and slum dwellers under the informal energy systems are part of the exploitive and oppressive social structure in Dhaka's slums.

5.6.4   Social Structures in Dhaka's Slums

The social structure in Dhaka's slums is firmly hierarchical, enriching those well-connected to external ruling elites. Banks, (2016) undertakes a detailed study of the social arrangement in Dhaka's slums[166], identifying three socio-economic tiers. Externally connected leaders have opportunity through those connections to sustain income from various sources in addition to having unchallenged authority over the settlement. Their connections are based on allegiance to the ruling political party. Residents who are well-connected internally cannot access the same external resources, but they still derive benefits through their connections with the first group. For the poorest majority, between 70% and 80% of households, subservient

---

[166] Banks examines four slums in Dhaka.

relationships with the upper tiers are the only path to facilitate access to services, notably housing and utilities. Powerful external people do not engage directly with most slum dwellers, rather *'using politically-affiliated local leaders to manage these relationships'* (Banks, 2016, p278). Bertuzzo, (2016) defines these bostee structures as a community of reciprocal reliance. She identifies the people's survival dependency on primary and secondary relationships with political leaders. For example, houses can only be built with the support of those leaders and electricity connections must be arranged through slum leaders.

The question arises as to who are the slum leaders and who are the mastaans? The literature is not clear on these points. It seems likely that slum leaders are people who have been in the community for a long time and who have worked hard to be on good terms with powerful external people, including politicians. Party political alignment would be essential in that quest. The mastaans are likely to be ambitious (and confident) young men who enjoy the life of an enforcer. I was advised in an expert interview[167] that slum leaders are not necessarily always driven by bad intentions. In some cases, such identities seek to improve conditions for the poor, though usually within the parameters of their own enrichment. In an informative set of studies, S. Hossain, (2013, 2012) examines the informal markets of water and electricity in Dhaka's slums, finding a complex and dynamic set of relationships, built on constant negotiation and contestation. He confirms that politically empowered slum leaders use these services to dominate the life of slum residents. They engage the mastaans to reinforce the dependency relationships through threats and intimidation. The close relationship between the slum leaders, the mastaans, the police, public officials and political leaders is the fundamental institutional network affecting Dhaka's slum dwellers. It is evident from the literature that residents commonly suffer extortion, oppression, and threats of violence at the hands of the mastaans on behalf of political leaders, with little or no police protection (Shafi, 2010) [168]. Box 5.2 presents two

---

[167] Ashek Rahman, UNDP, 13 January 2019.

[168] These assertions are supported by many scholars (Ahmed and Johnson, 2014; Bertuzzo, 2016; Khan, 2015; Lewis and Hossain, 2017).

enlightening quotes from Bangladeshi academics describing the gangster type attributes of the mastaan role.

<div style="border:1px solid black; background-color:#fdeec9; padding:10px">

Box 5.2: The Mastaans

'these settlements (the slums) *are managed by local 'mafia' thugs (mastaans)*[169]*. These mastaans act as informal landlords – collecting rents and exorbitant fees for basic services ... the mastaans rely on political patronage and camaraderie with police, often through bribes, to protect their 'business' of exacting 'rents' and 'fees' for basic services and pocketing the proceeds.'* (Ahmed, 2014 p747).

'The mastan[170] *or local enforcer is a well-known figure among the poor in Bangladesh … Mastans act on behalf of the powerful and politically connected, as the human face of extortion, collecting bribes, fees and other commissions from the poor on behalf of local powerbrokers. In return, the poor are provided with services such as access to pirated electricity …. Mastans are patronised and protected by political masters and the police.'* (Lata et al., 2019, p145).

</div>

Banks, (2008) conducts focus group discussions regarding the role of mastaans in the slums. She finds that residents accept that the role is needed to arrange services such as electricity (also Banks, 2016, p282). However, the threats and fear described above are a source of constant dread. Having little or no police protection or access to legal processes is a significant issue for Dhaka's slum dwellers, preventing them from seeking redress for injustices. As Banks, (2008, p371) states, the police *'offer no help or protection to the poor, while protecting the rich and powerful'*[171]. Lewis and Hossain, (2017, p32) note that relationships between unequal individuals makes it difficult for the poor majority to organise collective complaints. These findings are reinforced by S. Hossain, (2012, p76) who observes a *'controlled social order'* in Dhaka's slums, and Bertuzzo, (2016, p164) who notes that the ability of the people to organise collectives is *'retarded by the eviction risk'.* The absence of political voice for Dhaka's slum dwellers is widely recognised in the literature.

---

[169] Brackets in original.

[170] Mastaan is spelt in several ways through the Bangladeshi literature.

[171] This is supported by others (Shafi, 2010; Suykens, 2015).

It is clear that powerful entities with entrenched vested interests are profiting from current socio-economic arrangements in informal settlements, and further that they resist change. Shafi and Payne, (2007, p16) observe *'a political system in which rent-seeking is invidious and the incentive for change is low'*. Supporting this notion, I have been informed in an expert interview[172] that public officials and other powerful people have financial interests in current informal and illegal arrangements in Dhaka's slums. The interviewee asserts that rent-taking and patronage arrangements established over decades serve those in power, and that as a consequence, those people resist or sabotage pro-poor change. Banks et al., (2019, p14) support that view, asserting that powerful actors *'broker to instil processes of accumulation* (and) *simultaneously prevent more just (or less exploitative)*[173] *alternatives from being found for more disadvantaged groups.'*. Evidence in the literature supports the notion that the ruling class is more concerned about self-serving personal gain than elevating the disadvantaged. The lived reality for millions of slum dwellers in Dhaka is one of deprivation and domination under an entrenched hierarchy of unequal power relations. To draw again from Sen, in these circumstances, there is little prospect of residents achieving political freedom, economic empowerment, or social opportunities.

5.6.5   Electricity Practices in Dhaka's Slums

A 2017 Dhaka newspaper article[174] alleges that corrupt business interests in the city exploit Dhaka's slum dwellers by charging extortionate rates for illegal electrical services, and that the system involves illicit payments to police and electricity authority officials. It further alleges that gangster type feuds over 'ownership' of zones has resulted in violence and deaths. Although this may be judged as sensationalist reporting, the academic literature largely concurs, as will be described in this section.

---

[172] Salma A. Shafi, Centre for Urban Studies, Dhaka, 14 November 2019.

[173] Brackets in original.

[174] https://www.thedailystar.net/frontpage/dhaka-korail-slum-goons-eating-public-resources-1430713 - accessed 7 September 2020.

Dhaka's slums have a high level of electrification, possibly at a rate of 95% (CUS 2006, p44)[175]. Electricity arrangements in Dhaka's slums differ significantly between legal[176] and illegal or squatter settlements. In legal slums, the most common practice is for owners to arrange a legal connection to their household cluster and to include electricity in the home rental price[177]. On the other hand, residents with insecure tenure are prevented from accessing state-controlled utilities, which has created a business opportunity for informal utility providers (Bertuzzo, 2016, p165). Problems arise for residents who are beholden to informal electricity providers.

The management arrangement of electricity supply to Dhaka's illegal slums or bostees is well-documented in the literature (S. Hossain, 2012; Lipu et al., 2016). Slum leaders or mastaans make financial arrangements with public officials to allow them a quasi-lawful grid connection to a central pole in the slum. They then sell electricity to slum residents at a high cost. Rashid, (2009, p579) describes utilities arrangements in Dhaka's slums as an arrangement between slum leaders, mastaans and low-level state employees, who arrange illegal connections and charge slum dwellers exorbitant prices. Profits are shared between the mastaans and government officers. Lipu and Waliullah Bhuiyan, (2014, p4) observe that as the electricity services *are only delivered by "Maastan" in the slum areas, they take this opportunity by charging slum dwellers an exorbitant price'*. Indeed, the authors find that for Korail residents, the rate can be triple per kWh compared to what the middle-class customers pay in the formal economy[178]. Jabeen et al., (2010, p420) and Rashid, (2009, p579) deliver similar findings. In a study of four slums in Dhaka, including KPB, Ali et al., (2016, pp17-19) observe illegality and overpricing in all cases. Banks, (2016) finds that informal service provision to slums is a highly contested space as providers gain *'significant financial*

---

[175] Lipu and Waliullah Bhuiyan, (2014) report that over 90% of Dhaka's slum dwellers have electricity. In reality, there are unlikely to be any reliable figures. Certainly, all six slums that I have visited appeared to have comprehensive electricity services.

[176] Where dwelling owners have some form of title to the property.

[177] Expert interview: Ashek Rahman, UNDP, 13 January 2019, and observed in two legal slum visits (January 2019).

[178] This structure is replicated in water supply where the cost multiplier for supply to slum dwellers has been measured at ten times the rate for legal customers in Dhaka (S. Hossain, 2012).

returns' (ibid, p284). The cost of electricity is a serious burden for Dhaka's slum dwellers.

Reliability of supply has been identified as a problem in Dhaka's slums, with blackouts being frequent and often prolonged (Lipu and Waliullah Bhuiyan, 2014). In safety terms, electricity supply installations in slums are carried out in an unregulated environment, such that hazardous connections are common (Ali et al., 2016, p19). Fires and electric shocks can result from these unsafe installations (Lipu and Waliullah Bhuiyan, 2014, p6). For Dhaka's informal settlements, this is a significant issue with accidents a common occurrence.

Sufficiency is an important consideration in assessing fair allocation of electricity. Lipu and Waliullah Bhuiyan, (2014) determine that almost all slum dwellings have a single electric light and 77% have a single fan. About one third have a television and only 3% have a refrigerator. My 2017 Masters study in Korail found almost all houses have one fan and one light with 60% owning a television and 20% having a refrigerator. The conspicuous deficiency in both these sets of these figures is the low ownership of refrigerators, a handicap for slum dwellers' quality of life [179], as it impacts on food practices and therefore health. The single light and the single fan allocation need to be considered in relation to the configuration of the people's housing. Most houses have no windows, necessitating full time use of the light to address the lack of natural light. Fans also require full time use due to the unventilated and uninsulated dwellings. As discussed earlier, this unfair level of energy usage is a function of poor-quality housing.

Local electricity practices in Dhaka's slums deliver a set of problematic outcomes for residents through reliance on informal electricity markets. Based on the preceding discussion, these issues are around unaffordability, insufficiency, unreliability, unsafe installations, and threats of intimidation. Given that such problems do not apply in wealthy households, this represents conspicuous evidence of injustice in the energy system.

---

[179] A problematic deprivation noted by many authors in the general literature eg Niu et al., (2013, p338) and Nussbaumer et al., (2012, p235)

5.6.6   Cooking Practices in Dhaka's Slums

Cooking practices in Dhaka's slums are not widely discussed in the literature, with only fleeting and inconsistent mentions in wider research. There seem to be no specific studies on the issue. A Government of Bangladesh, (2020) SDG progress report measures national use of solid fuel for cooking at over 80% of the population (ibid, p108), which would logically comprise most of the country's rural and urban poor. Further, the Government of Bangladesh's, (2015) Seventh Five Year plan, finds that most slum households in Dhaka have no access to gas, and so cook with firewood. The Centre for Urban Studies census of 2005 noted that 57% of slum households in Dhaka are connected to gas for cooking and the remainder cook with biomass fuels (Islam et al., 2006, p44). Lipu et al., (2016, p279) find that 68% of slum households use firewood and that the remainder use gas. Gruebner et al., (2012, p5) present similar figures. Kabir and Maitrot, (2017, p9) determine that most slum households have access to gas cooking but that there are gas shortages, causing households to either minimise cooking or to resort to firewood. All of the above studies note that the cost of cooking fuel creates difficulty for the slum dwellers.

Wherever the reality sits amongst these conflicting findings on fuel mix, it is clear that for most slum households, biomass fuels are the main or only cooking fuel. As discussed in Chapter 1, biomass cooking fuel is widely recognised in the literature as problematic for human health, possibly the most fundamental of human capabilities. Even the Government of Bangladesh's own master plan report (2015, p430) states that poor households in Bangladesh *'depend heavily on wood, dung and other traditional fuels for cooking. As a result, the health impacts of IAP*[180] *are significant'.* Where gas cooking occurs in slums, it is unclear in the literature whether that is bottled or piped town gas and whether the supply is formal or informal. There is no exploration in the literature on socio-economic arrangements in relation to cooking fuel supply. I did obtain conflicting advice in expert interviews about gas supply for cooking. One interviewee[181] felt that there was a negligible amount of illegal activity in gas supply to

---

[180] IAP: indoor air pollution.

[181] Ashek Rahman, UNDP, 13 January 2019.

slums. Another interviewee[182] was of the view that gas lines are pilfered to supply illegal connections in some slums. If the latter is correct, it represents a frightening prospect in terms of safety. Cooking in Dhaka's slums is patently an under-researched area; however, it is clear that the use of non-modern fuels is extensive and most certainly problematic.

One important point to record is that in most slums in Dhaka, cooking is shared. Several stoves are co-located in a courtyard space in most cases. Women, who do all of the cooking, share stoves and fires. The cooking shared space is a valued social setting[183].

5.6.7   Local Energy Practices Conclusion

As presented in Chapter 1, energy systems are essentially socio-technical entities. This section on local energy practices in Dhaka's slums has verified that notion. The energy experience of Dhaka's slum dwellers is unfavourable partly due to poor technical infrastructure and inadequate housing. However, the suffering is largely a result of the oppressive local socio-political structures. These structures include exploitive arrangements in the informal supply of electricity that arise as slum dwellers are excluded from formal connections. Indeed, the people are criminalised through reliance on informal networks. Tenure insecurity sits at the heart of this issue. Non-modern cooking fuel adds substantially to the difficulties of life for slum dwellers.

5.7   Chapter Conclusion

This chapter has introduced the case study city and slum and detailed the broad energy context of the slum in terms of the socio-political landscape, energy system, and local energy practices. A dense constellation of unfair practices and uneven power structures has been revealed through this literature review chapter. The deficient socio-political landscape and the inequitable energy system of Dhaka underpin the

---

[182] Professor Ijaz Hossain, Bangladesh University of Engineering and Technology, 6 August 2019.

[183] From an interview with Ashek Rahman, UNDP, 13 January 2019, and from my personal observations in several slums.

oppressive nature of local energy practices in the slums. An intense contestation in the energy space of Dhaka's slums results from substantial macro-factors, including urban poverty, rapid urbanisation, widespread informality, and deficient governance, all common characteristics of Southern cities. The voiceless urban poor meet powerful supply-chain actors in an energy space charged with these colliding forces. Within a system of governance that does not protect the disadvantaged, the seemingly inevitable result is exploitation of many in order to maintain benefit for the few, the ruling classes, and their acolytes. Well might be asked, 'what could possibly go right?'.

A deficient governance zone includes land administration, housing provision and urban services provision. Discussion in this chapter has demonstrated that the urban poor of Dhaka are politically subjugated and that the slum dwellers' struggle for improvement is supressed by the political elite. The literature reveals that slum dwellers conceive that existing social power structures are unshakeable, and that protest about access and affordability would both risk retribution and be ineffective. Change in these circumstances is difficult. As Sovacool, (2013, p218) points out, where powerful people have a substantial economic stake in an existing energy system, *'no matter how immoral it may be, they will tend to support it'*. This applies to the entrenched power structures affecting Dhaka's slums.

A dynamic set of issues and linkages emerges from the literature between several concepts which are represented in Figure 5.18. Urbanisation and urban poverty in Dhaka combine to create vast informal settlements. Housing in those settlements is characterised by poor habitability, tenure insecurity, and an inability to access legal utilities. Political voicelessness and acts of intimidation are unfortunate attributes in this system. Consequences of poverty and the precarious residential circumstances include non-modern cooking fuel and illegal electricity services. The end result for Dhaka's slum dwellers is electricity and cooking fuel which are unaffordable, insufficient, unreliable, and unsafe; in other words: the SDG7 (unfulfilled) targets. As SDG7 represents attributes of a just energy system, these deficiencies signify energy injustices.

Figure 5.18 is a representation of characteristics within the socio-technical energy space of Dhaka's slums across the scales that have been examined in this discussion. Recalling the theoretical framework of this thesis (Figure 4.2), these domains have been established as conversion factors under the CA. Thereby, at this stage, it is reasonable to state that Figure 5.18 maps detailed conversion factors that affect transference of energy resources in Dhaka's slums into human capabilities. Further, it is evident that each of the elements (conversion factors) represented in the diagram is substantially unjust. These concepts shall be revisited and tested through subsequent chapters.

We are now in a position to reflect on some of the research questions presented at the start of the last chapter. Research question 1a[184] has been addressed in this chapter, as we have gained a detailed appreciation of what constitutes the socio-political landscape, energy system and local energy practices for Dhaka's slums. We have also built substantively towards answering research question 1b[185] in identifying injustices across the three domains, as represented by the elements in Figure 5.18. The answer to research question 1b will be supplemented later in this thesis. We move on in the next chapter to another part of the theoretical framework and the topic of research question 1c: developing a valued capability set for residents of the case study bostee.

---

[184] RQ1a: What constitutes the socio-political landscape, energy system, and local energy practices for Dhaka's slums?

[185] RQ1b: What are the energy injustices in the socio-political landscape, energy system, and local energy practices of Dhaka's slums and what are their causes?

Figure 5.18: The energy context for Dhaka's slum dwellers
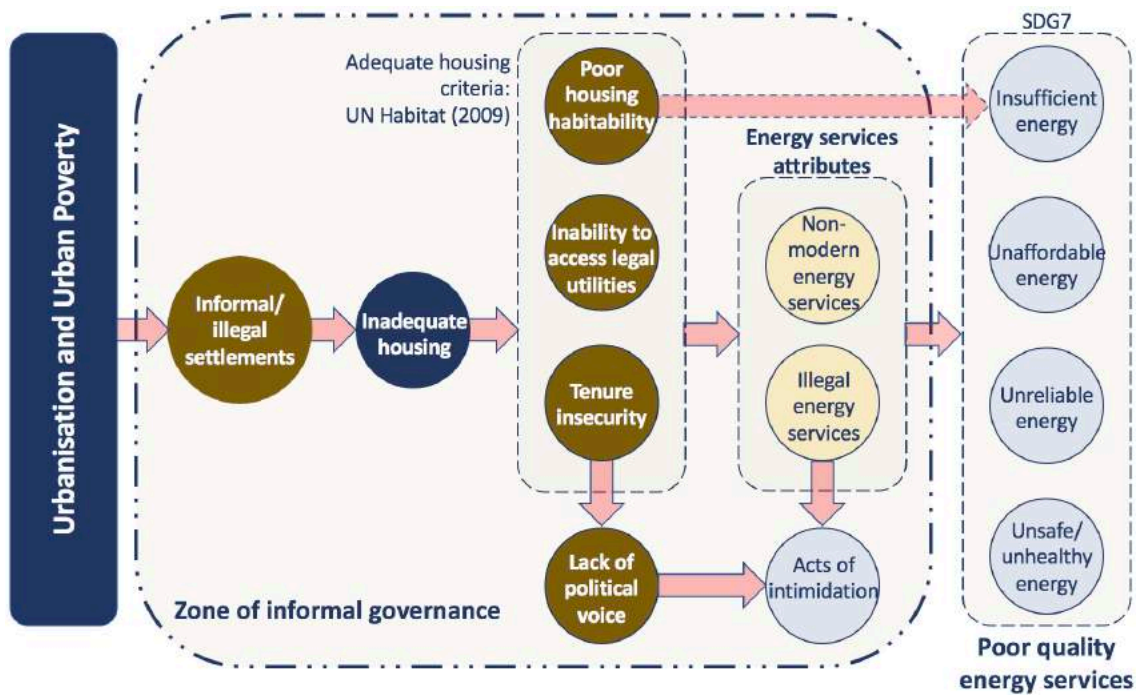
6 Valued Capabilities in Kalyanpur Pora Bostee

6.1 Chapter Objective

A central part of the research process for this thesis is the examination of the relationships between energy injustices and capabilities which are valued by the residents of the case study bostee. As explained in Chapter 3, this examination is adopted to answer part of my primary research question, namely, to identify the effects of energy injustices on the bostee dwellers[186]. This exercise adds value by virtue of its illumination of the actual human experience of energy injustices. It is now necessary to formulate a small set of highly valued capabilities on which to conduct focussed research regarding these energy justice impacts. These are the subjective prioritised aspirations of the people in the case study bostee.

This analytical chapter builds on the work that was presented in Chapter 3 regarding the assembly of context-specific capability lists under the capability approach (CA). In that discussion, a draft capability list for this study was built from the foundation of the CA literature (Table 3.3 and Appendix 3.1). Inclusions in, and exclusions from that list were explained and justified in Chapter 3. Armed with the fifteen selected draft capabilities, the residents of KPB have been consulted about which of those capabilities they feel are most important in the life of their family members. The method for determining the most valued capabilities has been a set of focus group discussions (FGDs). These were conducted firstly with the bostee leaders and then with separate groups of male and female residents. In terms of the theoretical framework of this thesis, this chapter establishes the capability set to be interrogated in the forthcoming capability impact analysis (Chapter 9). Figure 6.1 re-presents the theoretical framework (Figure 4.2) with the focus of this chapter highlighted in red. We firstly review the empirical outcomes of this fieldwork, before discussing the issues which arise therefrom.

---

[186] Recalling the primary research question: *What are the causes of energy injustices in Dhaka's Slums and **what are the effects on people's capabilities**?*

Figure 6.1: Theoretical framework: highlighting the capability set
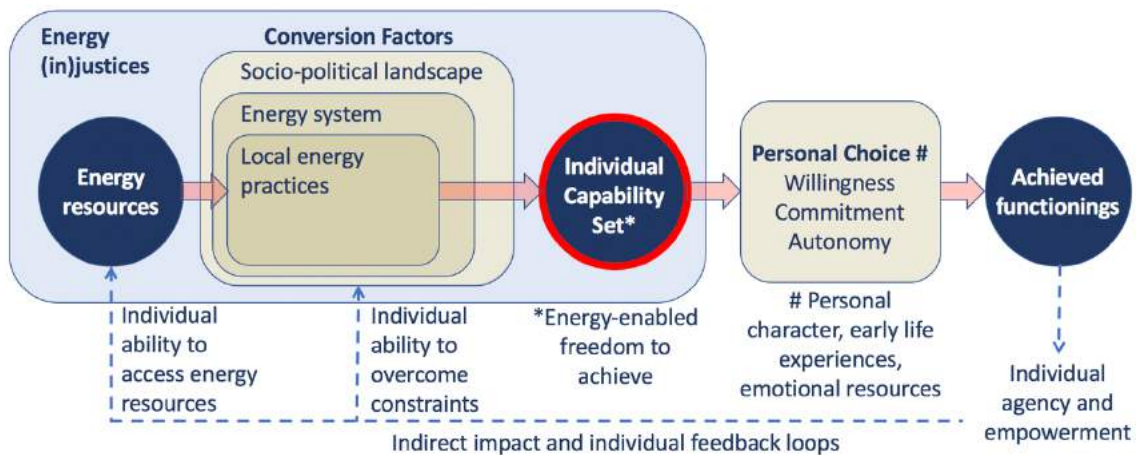
6.2   Focus Group Discussions

In the first instance, my fieldwork team conducted two focus group discussions (FGDs) with the leaders of Kalyanpur Pora Bostee (KPB), which included asking them what issues are important to the people of their community. The response was emphatically around security of tenure and the quality of housing. The bostee leaders made clear that these are the central concerns of the people, ranking above anxieties about all other social and physical deprivations. A selection of comments on tenure security and housing habitability from the leaders' sessions is presented in Table 6.1. This resounding message about the people's residential circumstances verifies what emerged from the literature review of Chapter 3 around the importance of these issues to people in informal settlements.

Table 6.1: Leaders' FGD quotes relating to tenure and housing quality

Session	Question	Response	Speaker gender
23 January 2019 Leaders' discussion	What are the bad sides of living here?	*Our biggest problem is that we are landless.*	Female
	So, among these, which one do you fear the most?	*Within last one month, we were evicted twice! Sometimes, we run out of the house because they just spread rumours in the slum about fire!*	Female
7 June 2019 Leaders' discussion	So, what do you think?	*Our basic demand is housing.*	Male
		About 12-14 times, this bostee has been tried to be evicted since 1988 to 2019. They set fire it was pre-planned. We are constantly in a state of war! And hence, no one has a good mental state, we are not happy.	Male

My research team next conducted a set of four FGDs comprising two male and two female sessions, specifically on the topic of valued capabilities. The research instrument for the sessions is included as Appendix 4.5. These FGDs firstly involved a general discussion on the question of 'what constitutes a good life?'. That question led to many emotional and heated responses about the difficulties of life for the residents. This initial part of the sessions was designed to obtain unprompted ideas from participants about the most significant issues for the people. Participants were highly animated in this discussion, with some respondents even affronted by the question itself. One such exchange is presented in Box 6.1. Responses in this part of the FGDs included grievances about many issues including the lack of social services and decent utilities, employment injustices, lack of dignity and the bostee dwellers' deprived position in Bangladeshi society. A selection of illustrative comments is presented in Table 6.2.

Box 6.1: Female FGD exchange 8 June 2019

Question: *What does 'to have a good life' mean to you?*

Response: *As we are forced to live in this bostee, we don't have any idea what it is like to have a 'good life'. How can we know about good living if we never have experienced that?*

Table 6.2: Capabilities FGD quotes relating to inability to lead a good life in the bostee

Session	Question	Response	Speaker gender
8 June 2019 Female capabilities discussion 1	What does it mean to have a good life?	*In the garments, we have to work from 8am to 10pm! But the wage that they pay us, it's not enough for us to run our families! In garments, there is no certainty about how much they will pay me. They make us work overtime and pay less. If we protest, they simply just fire us!*	Female
		I have failed to send of my children to school, I can't give them proper meals, can't even give them good clothes!	Female
8 June 2019 Female capabilities discussion 2	What does it mean to have a good life?	*We often don't have water, current* (electricity), *and we don't have gas supply at all.*	Female
		We are not respected anywhere because we are living in the bostee!	Female
8 June 2019 Male capabilities discussion 2	With respect to living a good life, what is most important to you?	*There are many young people like at my age, uneducated unemployed, and need a job.*	Male
		We also need a doctor who can give us treatment inside the slum at low costs.	Male

The people have an acute awareness of their deprivations relative to middle class Dhaka, and of the lack of governmental and institutional support for bostee dwellers in Dhaka. An absence of hope for improving their social and physical conditions was evident throughout all discussions. Above all however, it became clear during the initial discussion that the principal condition of concern for the people is insecurity of tenure. This induces a constant dread of forced eviction. So prevalent is this issue that general discussion in the FGDs frequently returned to expressions of anxiety about secure tenure and eviction, despite my efforts to cover other topics. The other prominent, related issue raised was the concept of having decent housing. The poor quality of the bostee housing is a source of both shame and serious discomfort for the people. Further, the fragile shacks are vulnerable to fire and weather events, each being a severe and constant concern for residents. Comments from the FGDs about the issues of tenure security and housing habitability are presented in Table 6.3. The sentiments expressed by participants on these topics in this general discussion are consistent with those of the earlier leaders' group sessions.

Table 6.3: Capabilities FGD quotes relating to tenure security and housing habitability

Session	Question	Response	Speaker gender
8 June 2019 Female capabilities discussion 1	What does it mean to have a good life?	*And they make one eviction attempt after another! Without any hope for our rehabilitation! Then how do you think we will live a good life?*	Female
	What do you mean by a good home?	*We demand that the government makes better houses for us.*	Female
	Which … things are most important to you among the issues?	*We want a permanent settlement!*	Female
8 June 2019 Female capabilities discussion 2	What do you mean by a good life?	*A good life means we have to have a good house.*	Female
8 June 2019 Male capabilities discussion 1	So, name one thing that should be provided here to improve living.	*In order to live peacefully, we want a permanent place for settlement.*	Male

The subsequent conversation in this set of FGDs involved participants discussing the draft list of fifteen capabilities developed in Chapter 3 (Table 3.3). This part of the sessions was formulated to elicit qualitative responses on each capability. The discussion was stimulated by a poster of each capability pinned to the wall (Figure 4.11 and Figure 6.2). Participant discussion was guided one-by-one through each of the fifteen draft capabilities. Some capabilities prompted little comment, while others generated animated and emotive responses. Participants seemed to have common views on most issues. Table 6.4 presents a typical response in the sessions in relation to each capability on the draft list.

Table 6.4: Typical FGD quotes relating to deprivations in the listed capabilities

Item	Capability	Quote	Session	Speaker gender
a	Having good health	*We are almost always ill! We don't have a good environment and so we are unhealthy! It's so hot here!*	8 June 2019 Female capabilities discussion 2	Female
b	Having physical security	*We are often harassed. It happens a lot in the slum! Everything from rape to teasing, everything happens here! There is no security for women here!*[187]	8 June 2019 Female capabilities discussion 1	Female
c	Having legal protection	*We will never get legal protection. Legal protection is only for the rich and powerful! Not for poor people like us. If you have power, you have legal protection.*	8 June 2019 Male capabilities discussion 2	Male
d	Having an education	*It is because we are not educated that we have to work in other people's homes! If we were educated, we could do something better!*	8 June 2019 Female capabilities discussion 2	Male
e	Having dignity and self-respect	*If we go for working in other people's homes, they ask where we live, if we say from bostee, they don't want to take us! No one respects us!*	8 June 2019 Female capabilities discussion 1	Female
f	Having a job and fair pay for work	*The work that is worth 10 taka, they only give us 5 taka or 3 taka! If we got 10 taka we would be able to support our family better.*	8 June 2019 Male capabilities discussion 2	Male
g	Having secure occupation of your house	*Why the slum dwellers have to always live under fear? Either of slum fires or local goons* (mastaans). *We can never stay in relief. Hence in order to live peacefully, we want a permanent place for settlement.*	8 June 2019 Male capabilities discussion 1	Male
h	Having opportunity for activities you value and enjoy	*We hardly survive, how can you expect us to sing and dance?*	8 June 2019 Female capabilities discussion 1	Female
i	Having freedom for religious observation	*It* (religion) *is the most important thing in our life and is above shelter-food-clothes.*	8 June 2019 Male capabilities discussion 1	Male
j	Having decent housing	*A good life means we have to have a good house. A house with the basic necessities…. But see our condition now!*	8 June 2019 Female capabilities discussion 2	Female
k	Having decent clothing	*We don't understand good or bad clothing. Anything that we can wear is fine for us.*	8 June 2019 Female capabilities discussion 1	Female
l	Having a political voice	*We go to many protests demanding our right to live and also human rights! But we are not getting anything!*	8 June 2019 Female capabilities discussion 2	Female

---

[187] Assertions later contradicted in interviews.

Item	Capability	Quote	Session	Speaker gender
m	Having a family life and a social life	*We usually just get together about 4 to 5 of us and chat together in front of someone's house. We don't have much space so we can't do anything else.*	8 June 2019 Female capabilities discussion 2	Female
n	Having freedom to be with anyone you choose	This topic did not generate meaningful discussion. In retrospect, I don't feel that the translator or I communicated this concept of affiliation well.	8 June 2019 Female capabilities discussion 2	Female
o	Having control over your assets	*Mobile Phones are regularly stolen! For example, I go to the washroom, I come and see that my phone isn't there! We also fear that all our belongings may be burnt down due to fire!*	8 June 2019 Female capabilities discussion 1	Male

Some inclusions in my draft capability list generated disparaging comments. Concepts such as 'fun activities' and 'decent clothing' were scorned by some in these discussions as frivolous non-essentials in a life of struggle to survive. It is clear from the comments presented above that the people see little that is positive about their lives as bostee dwellers. That seems to be a reality across almost all fifteen capabilities. There is a level of positivity in relation to their faith (item i), but otherwise the people's opportunity to lead a life that they value is perceived to be severely limited across the capability spectrum.

These FGD sessions closed with voting on the most valued capabilities from the prepared list. This was undertaken by each participant selecting their three most-valued capabilities and applying a blue sticker to the relevant poster. A red sticker was applied to the poster of the next most-valued three capabilities. Participants were asked to make their own selections, uninfluenced by others, and all appeared to undertake this exercise thoughtfully, giving serious consideration to their selections. Indeed, some participants took quite some time to complete the task. Figure 6.2 shows votes being cast and the posters with voting stickers in place after one of the FGDs. Allocating a value of 2 to the blue votes and a value of 1 to the red votes across the four FGDs produces the results shown in Table 6.5 and illustrated graphically in Figure 6.3.

Figure 6.2: FGD capabilities voting and posters with voting stickers (W Truer)

The FGD voting determines that eight capabilities are clearly more valued than the remaining seven. The capabilities of having decent housing, secure tenure, legal protection, and an education are the standout preferences of participants. Capabilities of having good health, a decent job, dignity, and religious observation filled the next four preferences. Significantly fewer votes were allocated to the remaining seven capabilities. This voting process triggers a number of issues in relation to the research questions. The following sections draw some learnings from the data collected in these FGDs.

Table 6.5: FGD Valued capabilities: voting results chart

	Male 1 session		Male 2 session		Score Male	Female 1 session		Female 2 session		Score Female	Total
	Blue	Red	Blue	Red		Blue	Red	Blue	Red		
a. Having good health	1	3	0	3	8	1	3	1	2	9	17
b. Having physical security	1	0	0	0	2	0	1	0	1	2	4
c. Having legal protection	4	0	0	2	10	4	0	5	1	19	29
d. Having an education	3	1	4	0	15	1	2	4	0	12	27
e. Having dignity and self-respect	0	0	0	1	1	2	2	2	1	11	12
f. Having a job and fair pay for work	2	0	1	1	7	0	3	0	4	7	14
g. Having secure occupation of your house (land tenure)	1	1	2	1	8	3	0	8	0	22	30
h. Having opportunity for activities you value and enjoy	0	2	1	0	4	0	0	0	0	0	4
i. Having freedom for religious observation	3	1	0	1	8	0	2	0	2	4	12
j. Having decent housing	4	1	4	0	17	6	0	1	6	20	37
k. Having decent clothing	0	3	0	2	5	1	0	0	0	2	7
l. Having a political voice	0	3	0	0	3	0	1	0	0	1	4
m. Having a family life and a social life	0	2	0	2	4	0	2	0	0	2	6
n. Having freedom to be with anyone you choose	0	0	1	0	2	0	1	0	1	2	4
o. Having control over your assets	1	1	1	1	6	0	1	0	0	1	7
Total votes placed	20	18	14	14		18	18	21	18		
	8 most valued in each gender										
	3 most valued overall										
	Next 5 most valued overall										

Figure 6.3: FGD Valued capabilities: voting results graph
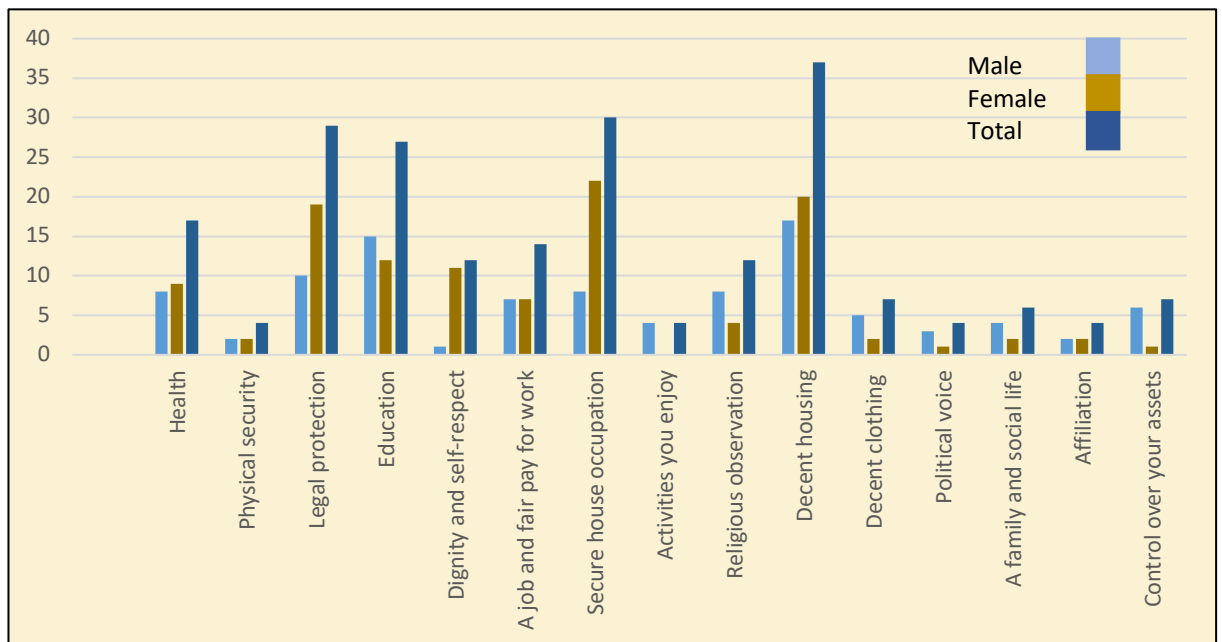
6.3   Political and Tenure-related Issues

A number of capabilities on the draft list may be defined as 'political' in the sense of being reflective of the local and national political system. Each of these concepts has an important place in this research. The three capabilities most highly ranked by FDG participants demand focussed discussion. These are the capabilities of having decent housing, secure tenure, and legal protection. All three relate to the precarious and challenging circumstances of the people's residency in the bostee. The literature reviews of Chapters 2 and 5 examined the topics of housing habitability and tenure security in some detail, finding them to be core issues of concern to residents in squatter settlements generally, and certainly so in Dhaka's slums. The importance of these elements to bostee residents has been verified empirically in these voting results. The place of these important concepts within the theoretical framework of this study needs some deliberation. This section will also address a fourth, and closely related condition, it being the notion of 'political voice'.

Chapter 2 referenced the influential UN Habitat, (2009) report on adequate housing, which defines a number of criteria for assessing housing adequacy, which include

tenure security and habitability[188]. As established in Chapter 2, on the basis on the UN Habitat definition, this thesis groups these two conditions under 'adequate housing'. I argue that the concept of 'legal protection' in the FGDs represents the people's desired shield against eviction[189]. The quote in Box 6.2 highlights this connection. 'Legal protection' in this context is dominated by the residents' perception about their tenure insecurity. Within the report on adequate housing, the UN Habitat, (2009, p4) definition of 'security of tenure' includes the guarantee of '*legal protection against forced evictions'*. Based on both the people's view and the UN Habitat definition, legal protection is subsumed within the tenure insecurity condition for the purposes of this analysis. The conclusion of this line of argument is that the three conditions most valued by the bostee residents all fall within the concept of adequate housing.

Box 6.2: Female FGD exchange 8 June 2019

Question: *What about the cases of eviction, can you get help?*

Response: *Yes! Dr. Kamal Hossain*[190] *has helped us with legal aid! If he didn't fight for us in court, we couldn't stay here!*

It has been demonstrated in earlier chapters that access to adequate housing is a significant influence on various freedoms and opportunities for slum dwellers, including access to reasonable and sufficient energy services. On the basis of those discussions, it is logical to observe that the condition of having adequate housing is not an outcome of energy injustices, but rather that it is part of the cause. Stated another way, inability to access adequate housing restricts conversion of energy resources into

---

[188] The UN description of habitability includes fragility and shelter from the elements. I thereby treat 'housing quality', 'decent housing', and 'habitability' as synonymous.

[189] The KPB residents are well aware of the successful action by activist lawyers in the High Court to obtain a stay of eviction for their bostee (https://www.thedailystar.net/city/hc-orders-stop-kalyanpur-slum-eviction-205072 – accessed 7 September 2020).

[190] Dr Kamal Hossain (born 1937) is a significant figure in Bangladesh. He was Law Minister and the Foreign Minister in the first government of Bangladesh (1971-1975). He has undertaken much work in Bangladesh in protecting the rights of the poor and has been dubbed '*the conscience of the nation'* (https://en.prothomalo.com/opinion/'Conscience-of-the-nation-turns-80 – accessed 7 September 2020).

human capabilities. As such, it can be argued that the condition of having adequate housing represents a conversion factor under the theoretical framework of this thesis (Figure 6.1). Another related condition forms a significant part of this picture.

A fundamental issue that cuts across many living conditions, including housing, for slum dwellers, is that of 'political voice'. Although the FGD voting process did not show great awareness of political voice as an aspirational capability, comments in general discussions in the FGDs highlighted the significance of voicelessness for residents of KPB. The people feel that they suffer both neglect and exploitation at the hands of the ruling classes. At election times, their votes are 'bought', partly through empty promises and partly by threats of violence by the mastaans. Undemocratic election practices in the bostee were revealed in the FGDs. One woman stated that '*we are told that if we don't vote for Sheikh Hasina*[191]*, we can't even stay in the bostee!*'. People express their frustration at their inability to be heard and at the neglect of their basic needs by political leaders. A range of quotes in these respects are presented in Table 6.6. The quotes demonstrate that KPB's residents perceive that they have little political voice and that their participation in the democratic process is obstructed by powerful entities.

Table 6.6: FGD quotes relating to political voice

Session	Question	Response	Speaker gender
23 January 2019 Leaders	General discussion	*We have voted for the government, but nothing is done for us.*	Male
		The local Member of the Parliament had given us many promises … but nothing has been executed.	Female
		No government has ever helped us!	Female
7 June 2019 Leaders	General discussion	*You see, we are citizens of Bangladesh, we are voters. So why the government doesn't listen to us.*	Female
	Can you choose your own vote?	*No, we can't always vote according to our will. Sometimes when we go to the polling centre, they say that our vote has already been given.*	Male
	Who are the ones that help you?	*The local ward commissioners and politicians only come when they need our vote.*	Male

---

[191] The current Prime Minister (Awami League party).

Session	Question	Response	Speaker gender
8 June 2019 Female capabilities discussion 1	What are the things that you don't have in your life?	*They forget that we are the ones who have voted them to power.*	Female
	Are you being able to live your life with dignity?	*See, the government doesn't value us.*	Female
	Do you have any problems voting?	*No, no! During the vote, they give us all the love in the world!* (giggling by group).	Female

Political voicelessness is an element of Satterthwaite's, (2001) 'aspects of urban poverty', which has been referenced earlier. Voicelessness is certainly an unfortunate reality for Dhaka's slum dwellers. Further, political voicelessness affects all elements of adequate housing. The condition of political voice is unquestionably a conversion factor in the realisation of people's capabilities.

The preceding discussion on adequate housing and political voice adds some detail to the theoretical framework for this thesis. Figure 6.4 presents an updated theoretical framework diagram, situating the condition of having adequate housing and political voice as conversion factors. Earlier literature review discussion established that adequate housing is a significant part of the socio-political landscape. It is shown in the new diagram accordingly. Political voice works across all scales of influence and interacts with housing outcomes, as shown in the diagram. Subsequent chapters will engage with this revision of the theoretical framework.

Figure 6.4: Update of the theoretical framework (from Figure 4.2)
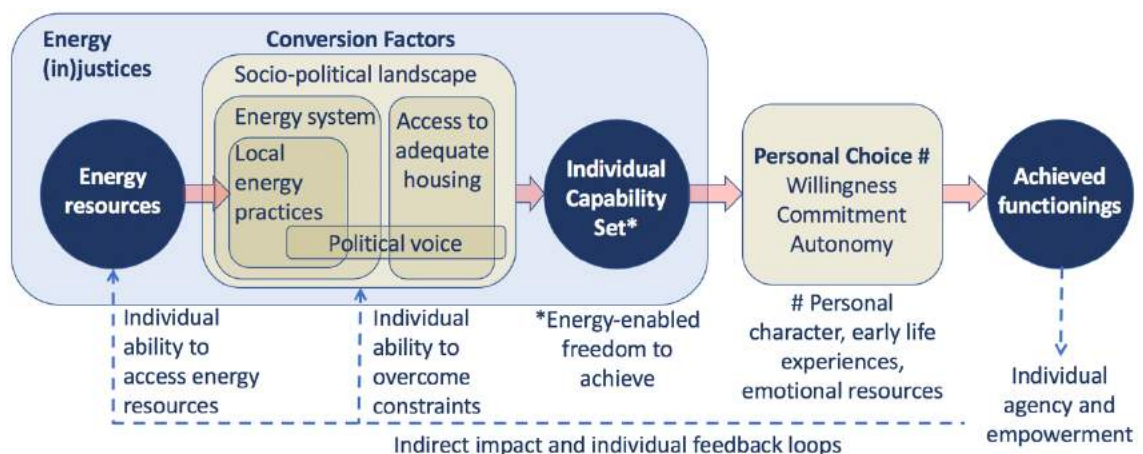
6.4 Valued Capabilities

The following discussion addresses capabilities that the people of KPB have identified as being most important in their lives. Through the FGD voting process, the most valued remaining[192] capabilities in the voting results are (i) health, (ii) education, (iii) livelihood, (iv) dignity and (v) religious observation. After these five, there is a substantial drop in value to the residual seven capabilities. I contend that the last of the five valued capabilities, religious observation, cannot be linked in any meaningful way to energy practices or to energy justice. Therefore, the capability of having religious observation has been dismissed from further consideration in this energy-focussed thesis. Four remaining valued capabilities remain in consideration.

The development literature emphatically supports inclusion of the first three of the above conditions. Kumar, (2018, p3) references several other authors in stating that *'[m]uch of the academic and policy literature on energy access gives importance to three specific development outcomes: education, livelihoods and health'*. Adding further weight to adopting these three as valued capabilities, is the fact that they are also the core topic of three UN SDGs, as presented in Table 6.7. The 1948 UN Declaration of Human Rights also references health (Article 25), livelihood (Article 23), and education (Article 26), further validating this selection.

Table 6.7: SDGs relevant to selected capabilities

Capability of having:	SDG	Description
Good health	3 Good health and well-being	Ensure healthy lives and promote well-being for all at all ages.
An education	4 Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
A decent livelihood	8 Decent work and economic growth	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

---

[192] After positioning legal protection, tenure security and decent housing within 'access to adequate housing' and situating 'access to adequate housing' as a conversion factor.

Given their coverage in development literature, selection by the bostee people of these capabilities as being of significant value is an unsurprising research outcome. People value these capabilities, which are each widely acknowledged as key paths out of poverty to a better life. The fourth remaining valued capability from the fieldwork outcome is the capability of having dignity and self-respect, perhaps a less predictable outcome. Interestingly, this was ranked highly for women and less so for men. Dignity stands an important inclusion for this research on the basis of the female perception alone. Beyond these fieldwork outcomes, Chapter 3 presented collective support for inclusion of 'dignity and self-respect' on capability lists of prominent CA authors (Alkire et al., 2009; Nussbaum, 2000; Robeyns, 2003). Thus, the capability of having dignity and self-respect is retained for ongoing fieldwork. On the basis of manageability, my original intention was to select four to five capabilities for the impact analysis. In the end, four have been chosen.

We complete this discussion on the capability selection process by briefly reviewing the remaining capabilities from the draft list which received substantially fewer votes in the FGD process. These are physical security, entertainment, decent clothing, social life, affiliation, and secure assets. It is easy to accept that entertainment, decent clothing, and a social life would be less valued by the participants as they are relatively inconsequential in a life of hardship and deprivation of basic services. Indeed, these were expressly dismissed as such by some participants. Physical security was questioned separately in later interviews and I was informed that residents, including women, mostly feel reasonably safe in this bostee, possibly because it is quite a well-established and strong community. It is noteworthy that this assertion in the interviews differs from some statements in the FGDs. In any case, the ability to have physical security was not a popular choice in the FGD voting process. The issues of secure assets and affiliation[193] were not supported in the voting, outweighed by the more basic needs discussed above.

---

[193] Affiliation as a concept did not seem to resonate with the bostee dwellers.

6.5   Chapter Conclusion

This chapter has described the process adopted in my study to determine a tight set of capabilities valued by the residents of KPB, in other words, their prioritised subjective aspirations. A set of FGDs in the bostee has verified which capabilities are most important to the residents, and which capabilities they most aspire to fulfill. As such, we have achieved a response to the research question number 1c[194] about the most valued capabilities for the bostee dwellers. These have been determined as the capabilities of having: (a) good health, (b) a decent education, (c) a fair livelihood, and (d) dignity and self-respect. This determination has been initiated by community consultation and triangulated with the literature. It should be noted that capabilities are cross-reinforcing. That is, one capability can be instrumental in improving others. For instance, it is easy to appreciate that elevating any of the first three capabilities (health, education, livelihood) will lead to improvements in dignity. Improved health outcomes will enable elevated educational and livelihood outcomes. Many such links exist. What has been identified here is an ecosystem of interconnected capabilities. The four valued capabilities are adopted for further analysis in Chapter 9 in terms of how they are impacted by energy practices and energy injustices.

The progression from determining a draft long list of fifteen capabilities for use in the field (Chapter 3) to selecting a most valued set of four capabilities (this chapter), has been an illuminating research journey. Elements of adequate housing firstly emerged in the contextual literature review as significant issues in informal settlements. Secondly, they were the paramount topics in general FGD discussions. And thirdly, they dominated the capability voting process. This cascading series of spotlights has placed an emphasis on adequate housing in this thesis. Following findings from both the literature review and from the primary data, adequate housing (which includes sub-conditions of tenure security and habitability) has been recognised in this chapter as an important conversion factor within the CA-based theoretical framework. This outcome is a validation of combining top-down (a wide literature review) and bottom-

---

[194] RQ1c: *What are the most-valued (energy-related) capabilities of Dhaka's slum dwellers?*

up (bostee FGD data) research methods to achieve a comprehensive outcome, as advocated by several prominent CA authors (refer to Section 3.8). Another validation of this dual approach concerns the notion of political voice. The people have been consulted about their aspirations, but an item outside their experience base (political voice) has been included in the conversation on the basis of the broad literature.

A key finding of this thesis to note at this stage is the place of adequate housing in access to energy. To date, this seems to be under-explored in the energy justice literature and indeed in general energy poverty studies in the global South. In those terms, this finding may be claimed as a notable contribution of this thesis. In Chapter 8, we return to an exploration of housing-related issues in KPB in detail. The next chapter undertakes a comprehensive examination of energy practices in KPB.

7 Energy Practices in Kalyanpur Pora Bostee

7.1 Chapter Objective

We now turn to defining the local energy practices in Kalyanpur Pora Bostee (KPB), through drawing on primary data collected on site. Both electricity and cooking fuels are examined. The literature review of Chapter 5 determined how earlier researchers have described energy practices in Dhaka's informal settlements (Section 5.6). My fieldwork triangulates and deepens that understanding with data from the case study bostee. It is also worth recalling the empirical research gap, this being an absence of studies of cooking practices in Dhaka's slums, which this research helps to address. This chapter is a detailed exploration of the everyday practices through which residents access energy services. Insights from the people about how they understand their social position and their ability to access energy informs the discussion. In terms of the theoretical framework of this thesis, this discussion addresses local energy practices, one level of the conversion factors. Figure 7.1 highlights the focus of this chapter in red within the theoretical framework of this thesis (Figure 6.4). Descriptions of the broader levels of conversion factors, drawn from the literature and expert interviews, have been presented in Chapter 5. Chapter 8 will examine another part of the conversion factor zone, access to adequate housing.

Figure 7.1: Theoretical framework: highlighting local energy practices as a conversion factor
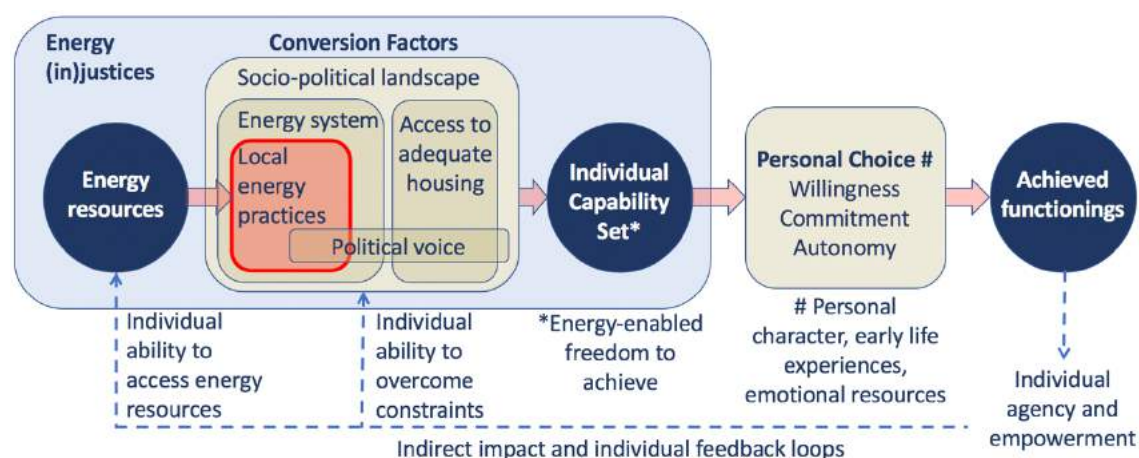
Before we examine local practices for accessing electricity and cooking fuel, we firstly address the foundational issue of social structures in KPB, upon which energy practices are founded. Social structures in KPB and the consequential energy practices will be shown to be significant influences in the conversion of energy resources into human capabilities.

7.2   Social Structures in KPB

As was demonstrated through the literature review chapters, energy practices in any society are inextricably linked with social and political structures. Data collected in KPB support the literature findings of Chapter 5 (Section 5.6.4) in relation to Dhaka's slums generally. In the interest of avoiding repetition from that review, I briefly note here that the KPB findings reveal a hierarchical social structure, with the majority poor dependent on patronage arrangements with more powerful people for survival. An extortionate system of protection rackets and rent taking is evident. Access to housing, electricity and other services falls under these types of arrangements. These realities are consistent with findings in the literature on Dhaka's slums. Residents feel powerless to improve circumstances for their families and have no sense of available protection by police or elected politicians. Lata, (2020, p11) finds that slum dwellers *'cannot complain to police about mastans for fear of retribution'*. This awareness of unprotected subjugation is a manifestation of the condition of political voicelessness as discussed in the previous chapter. People clearly live in fear of repercussions for noncompliance with the demands of powerful internal and external people, and their mastaan enforcers. The threat of violence to person and property causes considerable anxiety. Quotes supporting these notions are presented in Table 7.1.

Table 7.1: FDG and interview quotes relating to social structures (including mastaans, leaders, police)

Date	Question	Response	Speaker gender
8 June 2019 Female capabilities FGD 1	Who are the ones that set this fire?	*Some mastaans … with support from the local Member of Parliament does this.*	Female
8 June 2019 Female capabilities FGD 2	Are you safe in your homes?	*See, everything runs with muscle here! Who has 5 male and 5 sticks is the one is most powerful here!*	Female
22 June 2019 interview	Do they (bostee leaders) do any good work?	*No, they just sit around and exercise their power and leadership! See, we are so poor, but we have to work so hard to earn a meal, but these people don't do anything but still have all the good food!*	Female
22 June 2019 interview	Do the bostee leaders help?	*No. They don't help us! Whenever some aid comes to the bostee, they take it away and we don't get it.*	Male
22 June 2019 interview	Are the police on your side or the mastaans?	*Police are always on their side. Often, they want money like 5 thousand or 10 thousand otherwise they won't do any judgment. Police don't take the right side. They don't arrest the people who are selling Yaba or other drugs. They arrest innocent people and claim money.*	Female
22 June 2019 interview	When something like this (violence) happens, do the police help?	*When we go to the police, they don't want to take our case. They have a lot of money to influence the police, we are poor, we don't. Police listen to them.*	Female

On the other hand, and in the face of these difficulties, answers to some FGD and interview questions demonstrated a sense of social cohesion amongst the people. These include reports about sharing of firewood and food for families in need. Interview and FGD quotes relating to these positive qualities are presented in Table 7.2. The value of community is evident.

Table 7.2: FDG and interview quotes relating to the positive value of community in KPB

Date	Question	Response	Speaker gender
8 June 2019 Female capabilities FGD 2	How do you spend your leisure time?	*We usually just get together about 4 to 5 of us and chat together in front of someone's house.*	Female
9 June 2019 Male energy FGD 1	So, if you are out of firewood and there is no firewood for you to buy what would you do?	*We would go to the house next door and tell them to give two or three firewood and they would give and help us.*	Male
9 June 2019 Male energy FGD 1	So, are there any days where you can't afford to buy firewood and you have to starve?	*No! We just share among ourselves.*	Male

In essence, apart from the positive community spirit, social structures in KPB are consistent with unfavourable findings in the literature around oppressive political arrangements in Dhaka's slums generally. Referencing foundational concepts from Amartya Sen (1999), the claim is that the bostee dwellers plainly have little political freedom (ibid, p5) and suffer restricted social opportunity (ibid, p111). These local arrangements are structured to favour powerful people over the poor, an unjust condition consistent with the national political complexion, as was described in Chapter 5.

7.3   Energy Practices in KPB

This section describes electricity practices and cooking practices in the bostee. Firstly, it is worth recalling the aspirations of SDG7, which calls for *'universal access to affordable, reliable and modern energy services'*[195]. As discussed in Chapter 1, the target helps to establish a definition of a reasonable quality energy service, one which provides access to energy that is: (a) affordable, (b) sufficient, (c) reliable, (d) healthy and safe. Two further variables are discussed in this section, (e) and (f), which follow. Certain gender inequities (e) in the energy experience have been identified in the bostee and these are recorded in this discussion. It was demonstrated in Chapter 5

---

[195] UN Sustainable Development Goal no 7, Target 7.1 (https://sustainabledevelopment.un.org/sdg7 - accessed 7 September 2020).

that the informal operating environment of electricity in Dhaka's slums leads to service provision by gangster figures and acts of intimidation (f) against the customers. Electricity and cooking practices are reviewed in relation to the six above-mentioned socio-technical variables. It is not too difficult to understand that these features of energy services affect people's energy experience. In fact, it is the contention of this thesis that effectively, the variables are measures of energy justice for slum households. That is, a deficiency in any of the dimensions for some households, but not others, is evidence of an injustice.

My research team conducted a set of six FGDs, three female and three male sessions, to uncover a detailed representation of energy practices in the bostee. This topic was also addressed in FGDs with the bostee leaders prior to commencement of the main fieldwork and in the household-survey and interviews. Further, observations from a number of walk-around visits, and observations during the household survey were recorded. Findings have proven to be largely consistent with what was drawn from the literature in Chapter 5, though with some nuances. The compilation of data from various methods has delivered a comprehensive picture of energy practices in the bostee.

7.3.1 Electricity Practices in KPB

7.3.1.1 Electricity: technical arrangements

Electricity supply to KPB is a reflection of the social structures discussed in the previous section. The history of the electricity supply originates with a now deceased bostee leader. An illegal connection to the slum operated for about 15 years, under which the collective amassed a substantial debt, whereupon the DESCO officials providing the service disconnected electricity to the bostee. The late bostee leader subsequently collected moneys across the bostee and made a substantial contribution himself[196] to settle the debt. The service was then reinstated and administered under his leadership. After his death, responsibility for the service passed to a committee of

---

[196] According to his daughter (18 June 2019).

bostee leaders, with his wife and daughter assuming leadership roles. Connection of electricity to the bostee is managed by the committee, which deals with officers of the electricity provider, DESCO. The arrangement, both before and after the termination and reinstatement events, was and is outside the formal electricity supply system of the city. As previously described, the arrangement contravenes official DESCO policy of supplying electricity only to formal residents of the city. Questions asked in the bostee about details of the agreement between the bostee committee and the DESCO officers were evaded by committee members. As explanations are not forthcoming, it is reasonable to suggest that the system involves some form of corruption and bribery. If that is the case, it would be consistent with descriptions of such arrangements in the academic literature.

An interview[197] with a senior official of HBRI[198], the landowner, presented a second arrangement for electricity supply to a part of the bostee. It is likely that this connection for a few dwellings coexists with the main arrangement described above. The official described low-ranking HBRI employees stealing electricity from HBRI, establishing illegal connections to bostee dwellings, and obtaining payment from bostee residents for that electricity. One other expert interviewee[199] described exactly that form of arrangement in other slums.

It can be seen that powerful people, both inside and outside the bostee, have control over the conditions of electricity supply to the general population. The system enriches these privileged individuals and their supporters. Prioritisation of private profit over the provision of decent electricity for bostee households results in a service with severe limitations for the quality-of-life for residents. As such, these arrangements represent a significant part of the conversion factor network of the theoretical framework (Figure 7.1). The technical arrangements for electricity service maintain exploitive arrangements and certainly inhibit people's freedom to achieve.

---

[197] Senior HBRI official 25 June 2019 at HBRI offices.

[198] The Housing and Building Research Institute.

[199] Ashek Rahman, UNDP, 13 January 2019.

In technical terms, the bostee has two electricity entry points that are metered, and for which the committee pays a monthly bill to DESCO officials. Figure 7.2 shows the supply entry points with meter boxes. Figure 7.3 shows a community DESCO bill. Connection from the central meter points to individual households and businesses in the bostee is arranged by the committee. All dwellings and businesses in the bostee appear to be connected to the electricity supply.

Figure 7.2: Electricity supply entry points and meters: sector 3 (left) and sector 9 (right) (M Jones)

Figure 7.3: Electricity bill for the bostee committee from DESCO (M Jones)

7.3.1.2 Electricity: financial arrangements and affordability

In terms of transactions for electricity, agents appointed by the committee collect a monthly payment for electricity from each household. Mostly, this is undertaken door to door, but some households deliver their payment to the two women mentioned earlier. A receipt for payment as shown to me is presented in Figure 7.4[200]. The household connection and the invoicing arrangement are each an internal bostee affair, outside the formal electricity system of Dhaka. It is unclear what money returns through the system to the public purse, but it is probable that would be zero. It is likely that all money collected in the bostee is shared between the slum leaders, mastaans and public officials. An expert interviewee[201] suggests that some funds are likely to percolate up to higher bureaucratic and political levels. If true, such arrangements would serve to ensure continuance of the whole system.

Figure 7.4: Electricity receipt for a bostee household (M Jones)

The cost of electricity is highly problematic for the people of KPB. The average cost of electricity per household across the bostee is 465 taka (£4.15) per month. Households

---

[200] Admittedly, not a convincing looking document.

[201] Salma A. Shafi, Centre for Urban Studies, Dhaka, 14 November 2019.

with one light, one fan and no refrigerator have an average monthly bill of 340 taka (£3.05). For households with two or more lights and fans and no refrigerator, it is 620 taka (£5.55) per month, and for those with a refrigerator, the average monthly bill is 780 taka (£7.00). A simple calculation on cost[202] determines the price to be about 6.2 taka per kWh. This compares to the price paid by legal consumers in middle class Dhaka of 3.5 taka per kWh[203]. Thus, KPB dwellers pay about 1.8 times the rate of legal consumers. This multiplier is substantial but is lesser than that determined by researchers mentioned in Chapter 5[204]. Of interest to later discussion is the average percentage of the household budget allocated to energy. For electricity, the average monthly bill of 465 taka mentioned above equates to almost 5% of the median monthly income of bostee households at 10,000 taka (£89.65). We shall return to this point. There is considerable complaint in the bostee about the cost of the electricity. Apart from the amount paid, people resent the fact that the fee is fixed per month, regardless of usage. They believe that individual (legal) meters would result in lower price bills. Relevant quotes are presented in Table 7.3.

Table 7.3: FGD quotes relating to the affordability dimension of electricity services

Session	Question	Response	Speaker gender
9 June 2019 Feale energy discussion 2	How could the electric lines be made better?	*If we could get* (electricity) *… at the half price we give now, it would be better for us … If there was meter system, it would be better for us … They don't consider that we are poor, they just want the bill on time every month!*	Female
9 June 2019 Feale energy discussion 3	So, if there was a meter connection in each house would that be better?	*If we had legal connections, with meters in each house, it would be better.*	Female
9 June 2019 Male energy discussion 2	Do you have anything else to say about electricity?	*I think the bill for electricity is too much.*	Male

[202] Monthly cost of 340 taka for one light (60W) running 16 hours, plus one fan (60W) running 20 hours for 30 days (total 55 kWh) = 6.2 taka/kWh.

[203] https://dpdc.org.bd/article/view/52/Tariff%20Rates – accessed 15 January 2020; also determined from DESCO bills of four legal DESCO customers provided.

[204] Lipu et al., (2016) determine that slum dwellers in Korail pay triple the legal customer cost per kWh.

Pricing of electricity is clearly unfair in that bostee residents pay far more per kWh than do legal customers. To some degree, pricing must be sufficient for corrupt payments up through the political power structure. In cost terms, the end result of the informal arrangements is inflated electricity prices for people who can least afford to pay. Excessive pricing limits households' quantum of household electricity. People's ability to convert electricity resources into enhanced well-being is restricted by the high costs. Economic empowerment and social opportunities of the bostee dwellers are certainly constrained by the imposition of the excessive cost of electricity.

7.3.1.3 Electricity: sufficiency

The notion of sufficiency is key in considering energy justice. Islar et al., (2017, p671) observe that *'every person has a right to the level of energy required to attain a minimum level of well-being'*. This concerns the fair distribution of services such that everybody has sufficient energy to lead a reasonable life. Barnes et al., (2011, p894) define energy sufficiency as *'the point at which people use the bare minimum of energy … needed to sustain life'*. Above that level, energy contributes to greater quality-of-life and economic wellbeing. Sufficiency of electricity supply and of electrical appliances are important influences on people's quality-of-life.

Households in KPB have an average of 1.01 lights and 1.22 fans per room. In fact, most households are one room and have one light and one fan. It is important to understand the adequacy of each of these for the occupants. A single light, when operating fully, with no voltage drops, appears to be sufficient for multiple occupant activity inside a dwelling, though anyone reading would need to be positioned close to the light source. Undoubtably, families would benefit by having additional light sources to better illuminate various concurrent activities. External household lights would also be useful, as at present there is no street or laneway lighting, so a torch or candle is necessary for visiting the communal toilets at night. The design of houses is a factor in relation to adequate illumination. As there are no windows, the only source of natural light is through the door, meaning that the dwellings are dark even in the daytime. As a function of this design defect, households have lights turned on when

occupied through the day. Internals walls, blackened by cooking fires, heighten the need for artificial lighting.

The single fan per household is unquestionably inadequate, a function of the tropical climate combined with the inappropriate configuration of the dwellings. Houses are uninsulated corrugated steel with no windows, such that natural ventilation is close to non-existent inside the houses. Consequently, fans run at all times of occupancy, every day of the year. A single fan is not nearly adequate to deliver comfort conditions in these circumstances, especially for more than one person. A second fan would certainly help the situation[205]. Insufficient lights and fans (combined with the poor housing quality) certainly have a substantial negative impact on people's quality-of-life, which in itself could be claimed as an injustice.

Possession of other appliances was also measured in the bostee survey[206]. Household ownership of mobile phones, remarkably, is 94%[207]. For televisions, it is 68%[208]. About 25% of households own a sound system. Probably the most serious deficiency is the low level of refrigerator ownership. Just 19% have a refrigerator, many of which are shared with extended family members. FGD sessions included a question about what change would most benefit the family with extra supply or appliances. The most desired outcome is acquisition of a refrigerator, allowing safer food practices and reduced food wastage. Quotes from the FGDs in relation to this point are presented in Table 7.4.

---

[205] A more effective solution would be housing design improvements including roof and wall insulation and installation of windows and roof ventilation.

[206] Household average figures for all appliances almost replicate my Masters study findings in Korail.

[207] I saw no usage of mobile phones in the bostee, suggesting that the cost of data exceeds family budgets. Low rates of literacy may also be a factor.

[208] We return to this particular statistic later in the chapter in relation to gas stove ownership, to highlight male-dominated spending decisions in energy.

Table 7.4: FGD quotes relating to the aspiration for a refrigerator (insufficiency of appliances)

Session	Question	Response	Speaker gender
9 June 2019 Male energy discussion 1	If you had a fridge, what benefits would you get?	*There is a lot of benefit with fridge. See, now we buy 1 kg fish and we have to eat it within 1 day or it will rot. But, if we had fridge/refrigerator, we could eat it little by little for about 4 days… We could get some cold water… We could save our rice and vegetables for later.*	Male
9 June 2019 Male energy discussion 3	How does it help if you had fridge?	*Let's say if I make 500 taka today and could buy some fish and vegetables or fruits and then store them in the fridge, we could ensure that we have good food every day little by little. In that way, we don't have to eat stale food.*	Male

Residents of KPB have insufficient electricity and insufficient electrical appliances to adequately meet basic modern human needs. In addition to the wellbeing benefits that would arise with supplementary lights and fans, the addition of a refrigerator to households would substantially elevate the standard of living for the people. Sufficiency of electricity and of appliances clearly presents as a conversion factor under the theoretical framework of this thesis. For instance, it is not difficult to appreciate the negative health and education impacts of insufficient lights, fans, and the absence of refrigeration.

7.3.1.4 Electricity: reliability

The concept of reliability addresses the constancy of electricity supply adequate to maintaining normal appliance operation. Stepping outside the bostee for a moment, expert interviewees[209] state that electricity supply in Dhaka has been steadily improving over the last 10 years in terms of reliability, with marked improvement in supply constancy. Similarly, participants in the bostee state that blackouts were frequent in the past but are less frequent now. On the other hand, voltage drops in household supply in KPB are commonplace and cause considerable discontent. Lights dim and fans slow down at times of peak usage, a result of too many appliances drawing on an insufficient supply. During the bostee survey, I visited many dwellings

---

[209] Interviews with Ashek Rahman, UNDP, 13 January 2019; Professor Ijaz Hossain, Bangladesh University of Engineering and Technology, 6 August 2019.

where the level of lighting was inadequate for reading. And slowing fans obviously cause reduced thermal comfort for occupants of the tin shacks. Voltage drops are a legitimate cause of complaint. Unreliability in the quality and constancy of electrical supply represents a serious frustration for the bostee residents. FGD quotes regarding blackouts are shown in Table 7.5. Unreliability in the electricity supply clearly affects people's ability to achieve in various areas such as education, health, and livelihood.

Table 7.5: FGD quotes relating to the reliability dimension of electricity services

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 1	Is there load shedding?	*Yes, there is load shedding. But now it is less.*	Female
9 June 2019 Female energy discussion 3	So, is there load shedding?	*Yes. The current stays for few hours, and then it is not there for 2 hours or so.*	Female
9 June 2019 Male energy discussion 3	Is there load shedding? And for how long doesn't it go?	*Yes! It comes back in half an hour or an hour or so.*	Male

7.3.1.5 Electricity: health and safety

Health and safety outcomes of poor-quality electricity services appear to be an underexposed issue in the energy poverty and energy justice literature. In the case of Dhaka's slums, this is a substantial problem area and one which affects the wellbeing of slum dwellers significantly. Electrical cables from the central meters to households are installed by non-qualified personnel and the installation is of a poor standard of workmanship[210]. There are many uninsulated or inadequately insulated junctions, cables mostly hooked from steel buildings[211] and many loose cables (Figure 7.5). Where electricity poles are in place, they are fragile bamboo poles, vulnerable to failure during storm events (Figure 7.6).

---

[210] Personal observation (as an architect).

[211] Good practice would demand a system of poles, minimising risk of electrical shocks.

Figure 7.5: Unsafe electrical cabling (M Jones and S. M. Younus)

Figure 7.6: Bamboo electrical poles (S. M. Younus)

According to the survey participants, the poor quality of the installations leads to electric shocks for residents. Such events are said to be frequent in the bostee. The people state that during rain events, there is audible 'crackling' and visible sparks in the cabling. It was claimed in FGDs that there have been occurrences of bostee dwellings becoming 'live' during rain events and that occupants have suffered electrical shocks. Typical quotes from the FDGs are presented in Table 7.6. One bereft

female FDG participant reported on the recent death of her husband by electrocution in the bostee (Figure 7.7). Another fear for residents arising from the poor quality of the installations, concerns fire accidents. As has been mentioned earlier, the threat of fire represents a constant source of anxiety for the bostee residents. Fires result from arson, from cooking fire accidents and, according to FGD participants, also from electrical cable sparking. Clearly, the electricity cabling installation represents a serious health and safety risk to the bostee residents and is a significant handicap in respect to their ability to achieve positive life outcomes. Injurious conditions of the electrical service certainly impact on people's ability to achieve in various important areas.

Table 7.6: FGD quotes relating to the health and safety dimension of electricity services

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 3	Do you think the electricity line in your bostee is safe?	*No. Our lines often catch fire. … It might happen a few times in a week. Only yesterday, one of our neighbour's lines became earthed and it was sparking. … As the wires are in contact with the tin roofs, there is more possibility of (electrical) leaks!*	Female
9 June 2019 Female energy discussion 2	Have there been any incidents of electric shock?	*Yes! Even a few days back, … whoever touched the walls of the houses got electric shock!*	Female
9 June 2019 Male energy discussion 2	The electricity line that is connected here, do you think it is safe for you?	*The way that it is currently being distributed is not safe for us … the lines have been taken on top of tin roofs and they also may have several (electrical) leaks. Some wires are just manually joined together without any proper protection. The poles are also not safe always.*	Male

Figure 7.7: Female FGD with a woman widowed by an electrical fault (second from right) (W Truer)

7.3.1.6 Electricity: gender differences

The electricity service in KPB affects the genders differently, mainly due to different time spent in the home. Men spend more time elsewhere, principally at work or at the local café. Women are at home most of the time. In that respect, women benefit more from lighting and fans but suffer more from the heat and darkness in the houses and other deficiencies in the electrical service. The absence of refrigeration impacts all family members, but women have the greater burden, as that deficiency adds to the cooking workload. Survey participants were asked, '*are any of the electricity experiences different for men, women*?'. A majority of respondents, 53% of women and 63% of men, felt that women benefit more from the household electricity than do men, on the basis of their being home more. About 30% of women and 19% of men believe that there is either an equal benefit or different benefits from electricity between the genders. A few respondents noted that women feel unsafe outside their home at night due to the absence of street lighting. Moniruzzaman and Day, (2020, p5) make the important point that in Bangladeshi culture, household energy decision-making rests firmly with the male head. The high television ownership (68%) versus the low refrigerator ownership (19%) is likely to be a reflection of male-centric decision making and of a male disregard for the needs of the female. To myself as an

outsider, the gender difference in experience of electricity certainly represents an inequity. However, there appears to be little or no resentment in that regard in KPB, rather an acceptance of the situation as normality. Nevertheless, the reality is that electrical service improvements in sufficiency, reliability, and safety would especially contribute to improved capability outcomes for women and would promote gender equity. This is plainly a crucial dimension in energy justice considerations.

7.3.1.7 Electricity: intimidation in the system

A critical fairness measure advanced in the energy justice literature is that all people *'must be free from physical threats'* (Jenkins et al., 2016, p177) in respect to energy payments. KPB residents report that failure to meet payments for electricity results in immediate disconnection of the service or eviction. Both disconnection and eviction are usually preceded by threats of violence at the hands of the dreaded mastaans who are employed by the electricity providers. Similar patterns are in place for late payment of accommodation rent. Intimidation from powerful people within and outside the slum, expressed through their agents, the mastaans, is an ever-present part of life for KPB residents.

As an example of intimidation in the bostee, one family I interviewed sought a direct arrangement with the Dhaka water supply authority. As this was outside the established set of bostee arrangements, ie through the mastaans, they were then subjected to violence of person and property at the hands of the mastaans for that action. The victims showed me evidence of violence in the form of bodily bruises and smashed household goods (Figure 7.8).

Figure 7.8: Household goods allegedly smashed by mastaans (M Jones)

The people of KPB are understandably reluctant to discuss the details of the gangster culture. One interview conversation, shown in Box 7.1, illustrates the fearful practices of the mastaans in the bostee in relation to utility services. Intimidation is a real issue in the electricity system of KPB. The hierarchical power imbalances are a source of anxiety for the bostee dwellers and represent an unjust element of energy practices in the bostee. The people have little or no protection by the police in this structure. FGD participants expressed the view that the police are primarily motivated by personal profit, acting in the interests of those who pay bribes, as demonstrated in the exchange presented in Box 7.2. The impoverished bostee dwellers are unable to pay the bribes and are thereby not protected by the police.

Box 7.1: Interview exchange regarding mastaan presence in service provision

Question: *Do mastaans beat people?*

Response: *Yes! Just a few days back they were trying to put connection illegally from my sister's water pipeline so that we protested. Thus, they beat me, my sister, and her husband! We went to the commissioner, but he didn't help us. The commissioner also took their side!*

Bostee interview: Female, 12:20am 22 June 2019

Intimidatory practices in the bostee relating to electricity supply must surely impede people's ability to achieve personal wellbeing and peace-of-mind. This aspect of the electricity service restricts the bostee dwellers' freedom to lead a life that they value.

7.3.1.8 Summary of electricity practices

Questions asked towards the end of the bostee survey are informative in relation to the specific conversion factors discussed in this section. Respondents were asked 'is the electricity arrangement fair to your family?'. About 70% stated that the system is unfair. Those negative answers were followed by the interviewer's question 'Why do you say that it is unfair?'. Selected responses to that question are presented in Table 7.7, grouped into the variables examined in this section.

Table 7.7: Selected survey responses on 'why do you say it (the electricity arrangement) is unfair?'

Conversion Factor	Participant comment	Likely effect as a conversion factor
Affordability	*Bill is not fair.* *Cost is problem.* *The bill is too much in comparison to the residential area nearby.* *Not equitable arrangements.* *Rate too high.*	Limits on economic empowerment.
Sufficiency	*More light more fan needed.* *Cannot afford a refrigerator.*	Impacts on health, education, livelihood.
Reliability	*Voltage problem weak line.* *Blackouts are a problem. Voltage changes affect us.* *Wires cannot cope with load.* *And it's not reliable.*	Impacts on health, education, livelihood.

Conversion Factor	Participant comment	Likely effect as a conversion factor
Health and safety	*Don't feel secure because it can burn anytime.* *Not safe line. Wires can cause fires.* *Can leak water into cables. There are sparks. Incident fire broke out at night.* *There are safety issues. Transformers often burst.* *There are no fixed poles, children may be electrocuted.* *One of our rooms were electrocuted.*	Impacts on health and on anxiety levels. Unsafe conditions risking injury and death.
Gender equity	*Women are benefitted more* (from electricity) *because man doesn't stay* (at home). *Female feels insecure outside at night.*	Differential in capability outcomes between genders.
Intimidation	*They extract as much as possible.* *We have to pay what they ask for.*	Maintains political unfreedoms and limits social opportunity.

Another question posed in the bostee survey proved informative. Participants were asked, 'What changes to the electricity practices in the bostee would make life better for people like you?', without any prompted answers. Figure 7.9 presents a summary graph of the responses to that question. The issues of affordability and reliability dominate the discussion, with safety also featuring.

Figure 7.9: What changes to the electricity practices in the bostee would make life better for people like you?
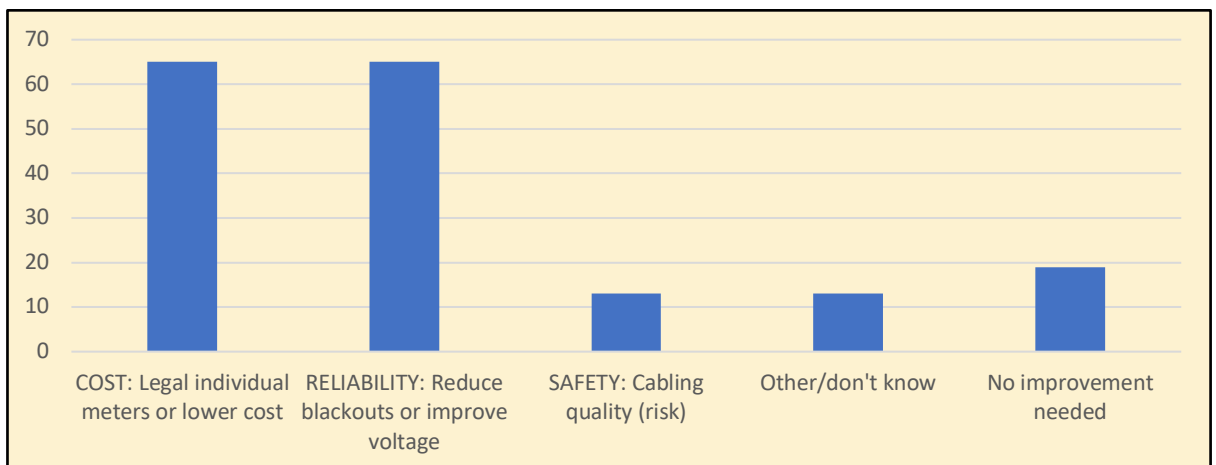
There is value in taking pause here to assess energy practices in KPB against the framework prepared by Fortier et al., (2019, p213) and reviewed in Chapter 3. Table 7.8 presents the Fortier et al., (2019) indicators for consumers with a comment on the

status of KPB households based upon the primary data. Energy practices in KPB fail on every energy justice indicator under this framework.

Table 7.8: Energy (electricity) justice indicators (Fortier et al., 2019, p213) and KPB circumstances

Energy Justice Indicator	Y/N	KPB Circumstances
Do electricity consumers have a choice in the utility company or in generation methods used by their utility?	N	Bostee dwellers have no choice but to use the system provided by the slum leaders and the mastaans.
Do consumers have a mechanism to provide feedback to their utility?	N	Bostee dwellers are fearful of making complaints.
Do electricity consumers have free access to objective information about energy use and sources of electricity?	N	Zero information provided to consumers.
Does the electric utility act to address consumer feedback or complaints?	N	Bostee dwellers are fearful of making complaints. They state that no action would be forthcoming in any case.
Are all charges and possible penalties transparently described as part of a consumer's electric bill?	N	Not investigated. (but unlikely).
What is the relative burden of penalties associated with late or missing payments?	na	Bostee dwellers are threatened with violence and eviction, which does not apply in middle class Dhaka.
Does the burden of penalties significantly differ across populations served by the utility?	Y	Ditto.
Does the cost of electricity relative to household income significantly differ across populations served by the utility?	Y	KPB residents pay almost double the kWh rate of middle-class consumers.
Does the number of brownouts over time differ across populations served by the utility?	Y	Extended brownouts in the bostee due to overloaded system.
Are the capital costs prohibitive for different populations to gain access to lower operational costs for electricity provision?	Y	There is no available access to lower electricity costs for bostee dwellers.

Data gathered in the bostee have revealed that electricity practices are challenged in respect to not only all variables examined, but also to all indicators on the above framework. These findings are consistent with what was revealed in the literature review across the SDG7-related dimensions of (a) affordability, (b) sufficiency, (c) reliability, and (d) health and safety. For residents of KPB, the experience of electricity is unfavourable on every measure. Gender differences in the experience of electricity are evident but do not greatly concern the bostee residents. The primary data also verify the unfortunate reality of intimidatory practices and violence at the hands of the mastaans in relation to electricity access.

Revisiting the essential dimensions of development established by Sen, (1999, p10) provides an informative perspective. Political freedoms, economic facility, social opportunity, and effective governance are all inhibited by the electricity arrangements in KPB. The electricity service in the bostee constrains all of these freedoms and therefore impedes the people's ability to elevate their circumstances in many respects.

7.3.2 Cooking Practices

7.3.2.1 Cooking fuel: technical arrangements

Of principal importance in this discussion is the fact that all cooking in the bostee is by women, without exception. The obvious consequence is that women are far more affected by cooking practices than are men. This social reality in Dhaka's slums needs to be considered through the entirety of the following discussion.

Cooking fuel in the bostee households is about 50% firewood, 33% gas and 15% of households use both fuels. In total, 65% of KPB residents rely to some degree on firewood for cooking. A small number of households, all single males, undertake zero cooking, eating elsewhere. The allocation of fuel usage is shown in Figure 7.10. For the households using both fuels, gas is favoured until the bottle expires. Firewood is then used until the household can afford another full gas bottle. Gas bottles are supplied by a small number of general shops in the bostee (Figure 7.11) on a 'full-for-empty' exchange basis. The shops obtain their supply from large gas companies. The same shops sell the full system consisting of stove, hose, regulator, and bottle.

Figure 7.10: Allocation of household cooking fuel in KPB

Legend: ■ Firewood ■ Gas ■ Both ■ No cooking
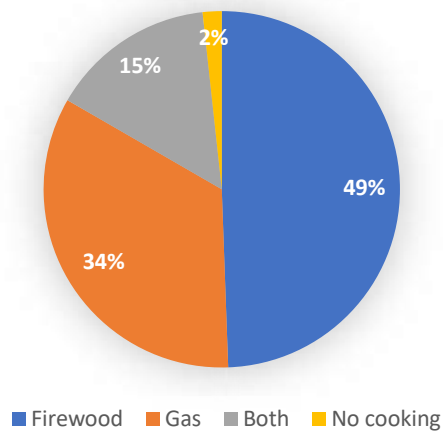
Figure 7.11: General shop with gas bottle sale and exchange (S. M. Younus)

Firewood is almost entirely obtained by residents from a number of firewood shops within the bostee (Figure 7.12). The fuel is sourced by the shopkeepers mostly from construction sites. Much of the firewood is bamboo (Figure 7.13 - left), most likely previously used as building scaffolding. A small number of residents advise that they scrounge for firewood and other combustible material themselves, but that is a rarity, presumably due to the dearth of available material in the urban setting. People report using various alternatives when desperate, including clothing and other waste. I did witness one woman cooking by burning clothes (Figure 7.13 - right).

Figure 7.12: Firewood shop (M Jones)

Figure 7.13: Cooking by burning bamboo (left) and burning clothes (right) (W Truer, M Jones)

7.3.2.2   Cooking fuel: Financial arrangements and affordability

The cost of firewood is 10 taka (£0.09) per kilogram, with average monthly expenditure on firewood-exclusive households being 970 taka (£8.70). For gas exclusive households, the average monthly expenditure on fuel is 955 taka (£8.55).

Expenditure on the two fuels is virtually equal. Given that all firewood users aspire to gas, it follows that it is the capital cost of the cylinder and stove[212] that prevents the upgrade. Users of both gas and firewood spend an average of 1,350 taka (£12.10) per month on cooking fuel. Across all households, the average cooking fuel expenditure is close to 1,000 taka (£8.95) per month. This compares to a similar figure of 975 taka (£8.75) for households in middle class Dhaka[213], that figure covering a two-burner stove. Therefore, it may be concluded that in absolute terms, the cooking fuel cost for bostee dwellers is consistent with that of the broader community, albeit with a single rather than double stove. Obviously, the percentage share of the household budget is far greater for the poor. The average cooking fuel bill across the bostee represents close to 10% of the median household income of 10,000 taka (£89.65) per month. A common complaint in the FGDs and surveys was that the cost of cooking fuel is excessive, as shown by the quotes in Table 7.9. When the cooking fuel cost is combined with the cost of electricity, acceptable thresholds for energy poverty are exceeded. This will be discussed shortly.

Table 7.9: FGD quotes relating to cost of cooking fuel

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 2	Where do you buy your firewood from?	*See, firewood costs 10 taka per kg! That is so expensive, so we can't afford.*	Female
9 June 2019 Male energy discussion 1	Do you use firewood or cylinders more?	*See, today maybe I can't afford gas cylinder but if one day I make good income, I will also cook with gas cylinder.*	Male

7.3.2.3 Cooking fuel: Sufficiency and reliability

Few participants in the FGDs report problems with sufficiency of fuel. Three participants in the bostee survey state that they cannot afford to buy firewood and

---

[212] 3,000 taka (£26.90) for the full system.

[213] Information gathered by asking (middle class) members of the research team for their home gas bill. All pay the same 975 taka amount.

therefore self-collect. A woman who has a stockpile of self-collected firewood[214] is shown in Figure 7.14. No participants in FGDs, surveys or interviews report shortages in the availability of either firewood or gas. Sellers of both cooking fuels were well-stocked during all of my visits to the bostee.

Figure 7.14: Woman with stockpile of self-collected firewood inside her dwelling (M Jones)

7.3.2.4 Cooking fuel: health and safety

Gas cooking is on a single burner stove with a single gas bottle (Figure 7.15). Gas stoves are located inside dwellings. The gas cooking arrangements appear to be safe, with a robust gas bottle, hose, and regulator. When questioned, no participants report any accidents (fires or explosions) resulting from gas use. Despite this apparent safe history, many residents express a fear about such accidents in relation to gas cooking[215]. Lack of familiarity with the technology may contribute to that anxiety.

---

[214] She is unwilling to reveal how this is achieved.

[215] An email exchange (20 January 2020) with a Bangladeshi expert Dr Ijaz Hossain (BUET) confirms that the gas cylinders are safe: 'I do not see why they will have any fear (of) accidents due to LPG use'.

Figure 7.15: Gas cooking arrangement (M Jones)

Firewood cooking in the bostee is undertaken on individual mud stoves, almost all located adjacent to the door of the house, as shown in Figure 7.16. Stoves are user-made from local clay or mud. Figure 7.17 shows a woman building a stove. The individual stove arrangement is inconsistent with all other slums I have visited in Dhaka, which have communal cooking areas[216]. No one has been able to explain this difference to me, but it is evident in KPB that open space, which might serve as communal cooking space, is extremely limited. The adjacency of the stove to the door of the house is a curiosity as it maximises ingress of smoke to the house interior, a widely reported displeasure. Another inconsistency with other slums is that most stove locations in KPB have no roof, meaning that the woman cooking is exposed to the sun in fine weather and to the rain during the frequent storms. Attending to a fire during rain events was described as problematic, as demonstrated in the conversation shown in Box 7.3. Again, I was offered no explanation for these deficiencies.

---

[216] Reported to me in other slums as a place of valued social interaction for women. Jabeen and Guy, (2015) observe this arrangement in Korail.

Box 7.3: Conversation regarding cooking in the open

Question: *So, are there any impacts on your health due to the firewood that you use?*

Response: *Yes of course. See, it's raining now, my stove is outside my house. So, I have to cook by getting wet in the rain. This makes me ill. Often, we have fever and headache.*

Female FGD 1 on energy, 9 June 2019

Figure 7.16: Firewood cooking (M Jones)

Figure 7.17: Woman building a mud stove (M Jones)

As referenced in earlier chapters, smoke from firewood cooking has severe impact on human health, and the technology represents a substantial risk to person and property in terms of accidents. Indeed, poor household ventilation combined with firewood cooking has been shown to increase the risk of acute respiratory illness in urban Bangladeshi children (Murray et al., 2012). Women are particularly vulnerable to the impacts of the smoke and heat of cooking fires. This issue is explored in detail in Chapter 9. The health impact of firewood cooking is possibly the most impactful energy injustice identified in this thesis: a potent barrier against people's aspiration to lead a decent life.

7.3.2.5 Cooking fuel: gender differences

As mentioned earlier, cooking is undertaken in all households by the women. There are no exceptions in KPB. Even in the few households surveyed in which no females lived, the males do not cook, eating at the café or at the home of a female relative. The exchange presented in Box 7.4 from a female FGD is both informative and amusing (given that the final comment was made in jest).

Box 7.4: Female FGD exchange on gender allocation of cooking

Question: *Do the women always do the cooking?*

Response 1: *Yes, women always have to cook! Even if we are ill, we have to cook!*

Response 2: *It's like even if we are dying, we have to cook first and then die!*

(general laughter)

Female FGD 3 on energy, 9 June 2019

The bostee survey included a question about the perceived different impacts of cooking between the genders. There is widespread appreciation that women suffer more than men. Strikingly, 93% of women hold that view while 76% of men feel that women suffer more. In itself, these different perceptions between the genders speak to a lower awareness amongst men about cooking impacts.

Returning to the earlier point made by Moniruzzaman and Day, (2020, p5) regarding male-dominated energy decision-making, ownership rates for televisions (68%) and for gas stoves (33%) is illustrative. These two appliances are similar in capital cost. A television is a source of pleasure mainly for the male[217], while a gas stove delivers life-changing benefits to the female. This prevalent household appliance choice, founded in intra-household power relations, is a clear injustice. In contrast to the ambivalence on gender inequity in electricity, there is strong awareness and resentment about cooking differences between the genders in KPB. The women are acutely aware that firewood cooking is detrimental to their health and that it affects men to a far lesser degree. Impacts of radiant heat and of the time commitment for firewood cooking are also 'front-of-mind' for many women. Equally, the advantages to women of a change to gas cooking are well-understood by women of KPB.

An important point is the time commitment of firewood cooking. Practical Action, (2019, p19) find that rural Bangladeshi women spend between 4.5 and 5 hours a day on cooking and fire attendance, which is likely to be similar in KPB[218]. This represents a severe constraint on the economic empowerment and social opportunity of women, in stark contrast to the freedom for males in this respect. Firewood cooking is clearly an indignity for women in the bostee, with many expressions of disgust in FGDs regarding the effects of smoke on women's bodies, clothes, and their houses. This indignity leads to a level of resentment. It is reasonable to conclude that energy justice in this setting is unachievable in gender equity terms as long as non-modern cooking fuel has any presence whatsoever.

7.3.2.6 Cooking fuel: Legality, informality, intimidation

Local practices in relation to gas supply seem to be legal. They also appear to be a part of the formal economy of the city[219], including the local suppliers' relationships with gas corporations. Firewood transactions are clearly a part of the informal cash

---

[217] Survey respondents state that men watch more television.

[218] Indeed, the cook stoves of most dwellings seemed to be active with a woman in attendance at most times of the day when I was present in the bostee.

[219] Though regulation and taxation in the Western sense might be absent.

economy, unregulated by governmental agencies. Nevertheless, the system supporting the supply of firewood appears to be legitimate in that there are no obvious signs of corruption[220]. Unlike the situation for electricity, there has been no suggestion of acts of intimidation associated with cooking fuel supply.

7.3.2.7 Summary of cooking practices

Investigation into cooking practices in the bostee reveals an affordability problem but otherwise a reasonably orderly and fair set of business arrangements. That is the case at least, in comparison with the exploitive and corrupted electricity practices. The notable deficiency in cooking practices is the unjust impact on human health and wellbeing resulting principally from the smoke of cooking fires, but also from radiant heat. The risk of accidents from fires is also noteworthy as is the time impact of fire attendance. These issues are explored in more detail in Chapter 9.

The fact that firewood is despised, and that all residents aspire to gas cooking is highlighted by responses to the survey question, '*what changes to the cooking practices in the bostee would make life better for people like you?*'. This was an open question with no prompted concepts, but only three responses were forthcoming[221]. Results are shown in Figure 7.18. There were a small number who commented on cost and a similar level nominating that no change is needed. However, over 90% of respondents nominated a change to gas for the entire bostee as the most desirable change. This differs from Malakar et al., (2018), who assert that some communities resist change from firewood cooking to gas due to socio-cultural attachments to the former. I found little evidence of such attachment in KPB. The difference in outcomes for people between a modern fuel (gas) and a non-modern fuel (firewood) are manifest, as will be emphatically demonstrated in Chapter 9. This 'modern-ness' of fuel is a clear conversion factor that has substantial capability impacts, especially of course, for women. Gender inequity in the capability outcomes resulting from firewood cooking is a stark energy injustice in Dhaka's slums.

---

[220] Except for possible protection rackets applying to the shops.

[221] Except for one woman who stated that the change most desired would be for her husband to collect the firewood.

Figure 7.18: What changes to the cooking practices in the bostee would make life better for people like you?
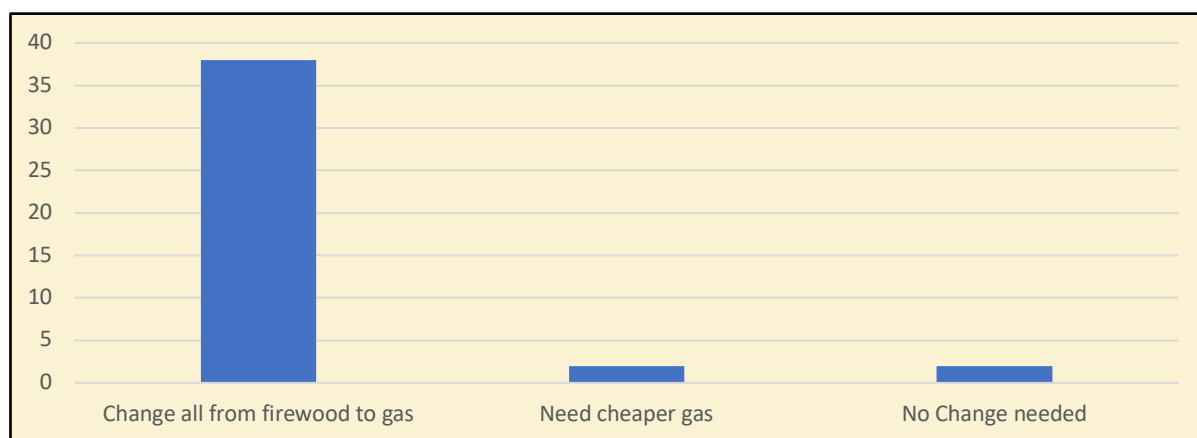
7.4   Chapter Conclusion

Fieldwork has obtained data which provide a detailed picture of how the people of KPB engage with electricity and with cooking fuels. Three technologies have been addressed in this discussion: electricity, gas, and firewood. Each has been discussed in terms of (a) affordability, (b) sufficiency, (c) reliability, (d) health and safety, (e) gender differences, and (f) intimidatory practices. Data findings are summarised in Table 7.10.

Table 7.10: Qualities of energy technologies in KPB

Principle	Electricity	Gas cooking	Firewood cooking
Affordability	Inflated cost and excessive portion of household budget.	Excessive portion of household budget. Excessive capital cost limits entry.	Excessive portion of household budget.
Sufficiency	Insufficient electricity and insufficient appliances.	Mostly sufficient but limited by cost.	Mostly sufficient but limited by cost.
Reliability	Not reliable, frequent voltage drops and occasional blackouts.	Reliable.	Reliable.
Health and safety	Unsafe installations, unsafe practices, frequent accidents. Some fatalities.	Safe.	Unsafe practices. Frequent accidents. Health impacts of smoke and heat.
Gender differences	Gender differences exist but are accepted as normal.	Advantages to women over firewood are substantial.	Major consequential differences between genders. Differences cause gender resentments.

Principle	Electricity	Gas cooking	Firewood cooking
Intimidatory practices	Intimidatory practices by agents of suppliers (mastaans).	No reports of intimidation.	No reports of intimidation.

Affordability is a problem across all three technologies with the average total expenditure in the bostee (electricity plus cooking) being more than 15% of the median income of bostee residents. Energy poverty literature cites a figure of 10% being a reasonable maximum for energy costs, or any household paying more than a nationwide median for energy (Bouzarovski and Petrova, 2015, p32; Bridge et al., 2018, pp129-130). Greater expenditure represents energy poverty. The bostee dwellers' expenditure exceeds both of these benchmarks. Sufficiency and reliability are serious problems in the electricity supply for the people and again are not such an issue for cooking fuels. Safety is an issue in the provision and use of electricity and firewood, as has been demonstrated in this section. Firewood cooking carries serious health implications. Practices with gas seem to be safe for users. In terms of gender differences in energy experience, firewood cooking delivers a disadvantage to females to a level which could reasonably be described as inhumane. Intimidatory practices apply in the electricity market but there is no evidence of the same for cooking fuel supply. It becomes evident through this discussion that the six dimensions discussed in this section are conversion factors in the energy-related realisation of capability outcomes. In fact, these dimensions represent measures of energy justice themselves.

The socio-technical and financial structures of energy access in KPB are represented in Figure 7.19. This shows the relationships between the various stakeholders at the community scale as determined through my fieldwork.

Figure 7.19: The socio-technical structures of energy in KPB
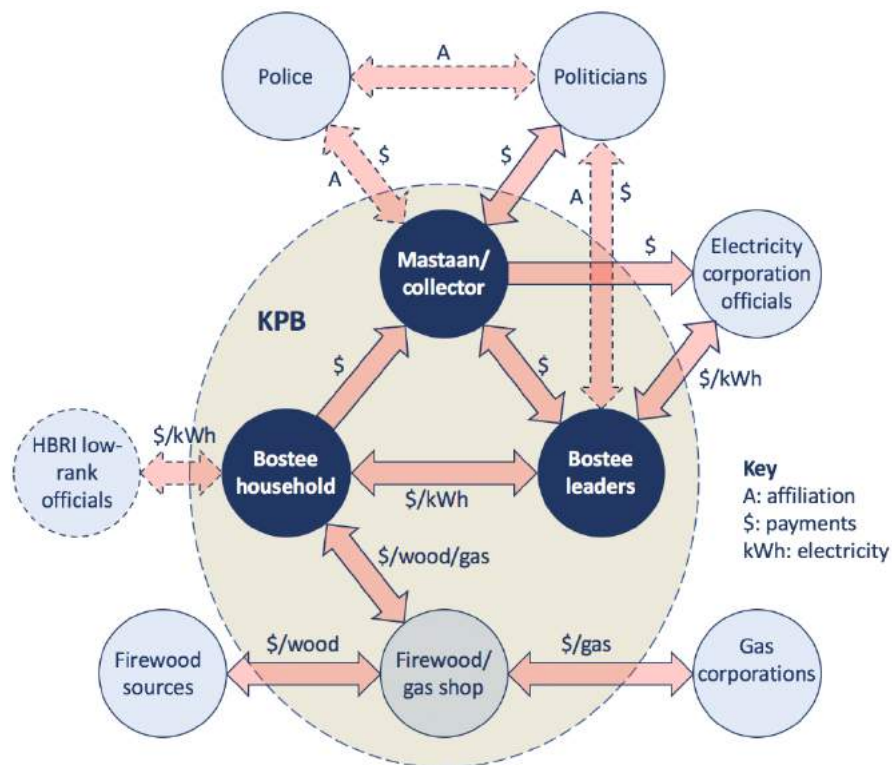
The principal actors in this constellation are the bostee households, the bostee leaders and the mastaans. The bostee households receive electricity at the behest of the bostee leaders. Those leaders are well-connected to powerful external people and their enforcers, the mastaans. They also have established the relationship with electricity authority officials, enabling the informal supply of electricity. The mastaans have a frontline role in the gangster culture that rules the bostee. They are answerable to powerful external people including politicians and have a mutually 'supportive' relationship with the police. Winners in this system are all those profiting through the informal and unregulated supply of electricity. These people hold the power and have a vested interest in the structures remaining unchanged. Corrupted relationships apply to electricity, and also to rental of the bostee dwellings. An absence of political voice for the majority poor in the bostee inhibits positive social change that would repair these flawed arrangements. In contrast to the informal electricity market, firewood and gas supply markets are relatively unproblematic. Bostee dwellers simply purchase supplies from local vendors, who in turn obtain the fuels in relatively uncorrupted markets.

Examination of local energy practices in KPB in this chapter has largely corroborated the literature review findings of Chapter 5 (Section 5.6). Referencing my research question 1a, we now have a verified picture of local energy practices in a Dhaka slum. Further, a number of injustices in the system are evident, the subject of research question 1b. We shall hold off on defining energy injustices until after the discussion of Chapter 9, which examines impacts of the unjust energy practices just outlined on capabilities valued by the residents of KPB, the focus of research question 1d. Prior to that examination, we return in the next chapter to assess the housing experience in KPB, which has a central place in this energy justice study.

8 The Housing Experience in Kalyanpur Pora Bostee

8.1 Chapter Objective

Access to adequate housing, including the condition of tenure security, has emerged through this research as a key consideration in energy justice for slum dwellers. We now take a detailed examination of the residential circumstances of the people in the case study bostee. This chapter analyses the data obtained in Kalyanpur Pora Bostee (KPB), with a view to unpacking the influence of inadequate housing on access to energy in the bostee. Within the theoretical framework of this thesis, discussion in this chapter investigates access to adequate housing as a conversion factor in KPB under the capability approach (CA). In other words, we shall examine how the dimensions of adequate housing influence the conversion of energy resources into human capabilities. Figure 8.1 reproduces the theoretical framework (Figure 6.4) with the focus of this chapter highlighted in red.

Figure 8.1: Theoretical framework: highlighting access to adequate housing as a conversion factor
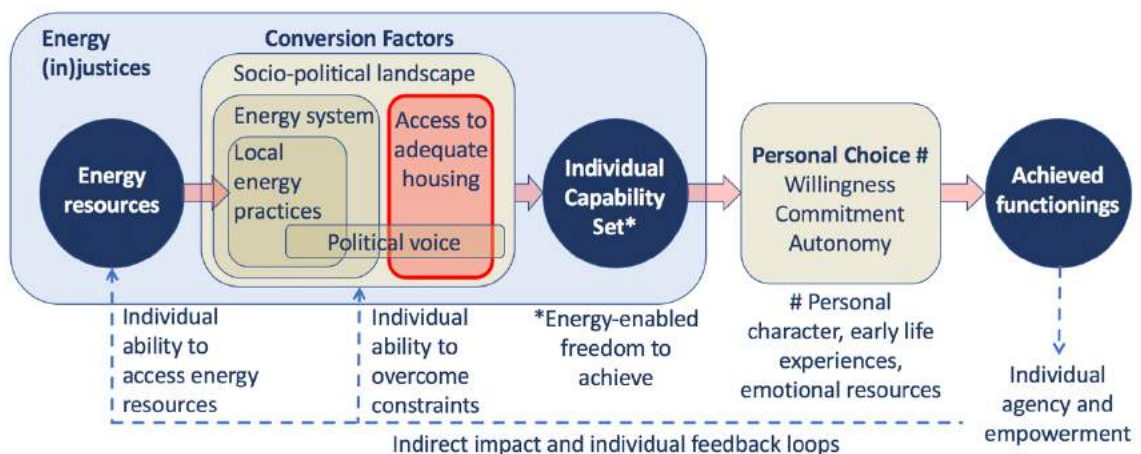
Through the review of the literature in Chapter 5, it emerged that access to adequate housing has a strong influence on energy-related outcomes for slum dwellers in Dhaka. We return now to three sub-conditions of adequate housing as defined by UN Habitat, (2009, p4), that have been engaged through previous chapters. These are (a) tenure security, (b) housing habitability and, (c) access to formal utilities. As has been

discussed in previous chapters, the issue of political voice has a significant place in this area, and we shall engage with that topic in relation to housing in KPB in this chapter. The role of all these dimensions in the energy experience in KPB will be considered in the following discussion. The analysis provides a fine-grained assessment of how the issue of adequate housing manifests for accessing energy in a slum of Dhaka. The discussion delivers an informative triangulation with the previous research. We begin with a description of the complexion of KPB's population before working through the three sub-conditions of adequate housing mentioned above.

8.2   The KPB Community

KPB is a squatter settlement on government land. There are two forms of occupation in the bostee: 57% of respondents report themselves as 'owners' and 43% as renters. The term 'owner' has been explained to me as people who squat on vacant land in KPB, build their own house illegally, and remain. Many resident owners have built extra houses for rental after establishing their own residence[222]. Renters lease from an owner, who may be one of these resident owners, or an external owner. I was informed that non-resident owners include low-ranking officials of the government department which owns the land[223], in what is clearly an illegal arrangement. Data collected in KPB illustrate a surprisingly stable population, given the precarious tenure of the settlement. More than 55% of KPB residents have lived in the bostee for more than 10 years with many in residence for more than 30 years. That is a testament to both the people's resilience and to the sense of community in this place. It also signifies an individual's inability to escape urban poverty in Dhaka. Amongst house owners, 79% have been in the bostee for more than 10 years, compared to 21% of renters. Understandably, there is a strong correlation between years in the bostee and tenure status.

Findings for migration to KPB support the assertions found in the Bangladeshi literature about urbanisation. Figure 8.2 shows the source location of KPB residents as

---

[222] Lata, (2020, p6) observes this pattern in the nearby slum, Sattola bostee.

[223] Interview with a senior HBRI official 25 June 2019 at HBRI offices.

determined in the bostee survey. Just 3% of residents[224] of KPB were born in the bostee. Another 12.5% migrated from within Dhaka or from another city of Bangladesh. Over 82% of residents are rural to urban migrants, evidence of the rapid urbanisation of Dhaka. Almost half of the rural migrants are from Bhola in Southern Bangladesh, which has been devastated by river erosion.

Figure 8.2: Place from where individual migrated to KPB

Legend:
- Bhola
- Other rural
- Dhaka
- Other city
- Always here
- Indeterminate
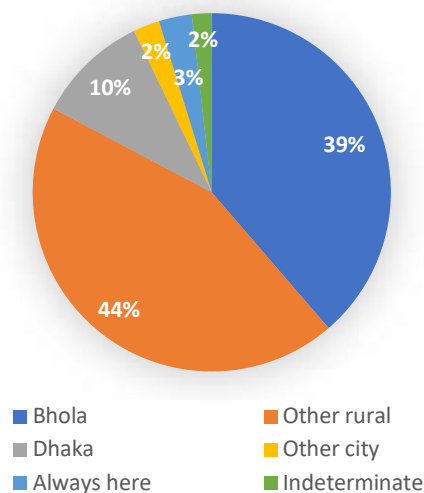
Reasons for KPB residents leaving their previous place of residency and for choosing to live in KPB are presented in Figure 8.3. The grounds for migration are given as follows: seeking livelihood opportunities (41%), escaping climate disasters (32%)[225], and avoiding social conflict (10%). Causes of displacement therefore are economic, environmental, and social. Reasons for choosing KPB specifically are to join family or friends (43%), for affordable accommodation (18%), to join a new spouse (11%), and being close to a workplace (8%). In environmental terms, a small number also noted that the bostee is safe from floods, a key consideration in flood-prone Dhaka. The most common reason for selecting KPB as their destination, to be with family and friends, helps in part to explain the strong sense of community in KPB.

---

[224] All respondents are aged over 18 years, so figures reflect the adult population.

[225] Almost all of these are from Bhola.

Figure 8.3: Reason for leaving previous place (left) and reason for choosing KPB specifically (right)

Left pie chart:
- Livelihood opportunities — 41%
- River erosion — 32%
- Family or personal problem — 10%
- Eviction or homeless — 7%
- For marriage — 6%
- Other — 4%

Right pie chart:
- Family or friends here — 43%
- Low cost here — 18%
- My new spouse lived here — 11%
- Close to job here — 8%
- Other — 14%
- Cryptic answer — 6%
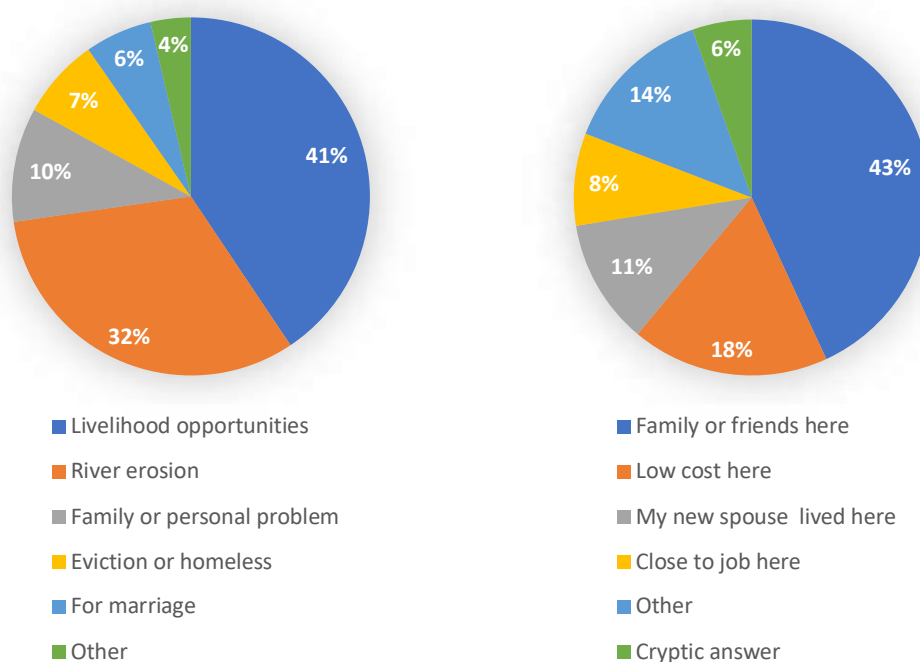
The positive sense of community in KPB was borne out in the fieldwork. For the most part, residents value the KPB community highly. One male FGD participant stated that '*our only strength is our unity*'[226]. Another male participant responded to the question about what constitutes a good life with '*living in peace and with unity with all the people in the slum*'[227]. Others reported on money collections for the ill and unemployed and the sharing of cooking fuel and food when one family is without. The prevalent tone of the FGD discussions indicated that community is important to KPB residents.

8.3   Tenure Security in KPB

The Bangladeshi literature presented in Chapter 5 describes a vulnerable class of urban people, the slum dwellers, living a life of constant anxiety about the threat of

---

[226] Leaders FGD, 7 June 2019 in KPB.

[227] Male Capabilities FGD, 8 June 2019 in KPB.

eviction. A dominant theme of the literature on tenure security in Dhaka's slums is the residents' fear of eviction. This is robustly reinforced by my research in KPB.

Discussions in the bostee reveal that the ever-present threat of eviction dominates the existence of the KPB residents. This includes the enduring peril of a fire event, one format for eviction. These issues were the prevalent themes of the FGDs. A number of FGD quotes on this topic are presented in Table 8.1, adding to those previously presented in Tables 6.1 and 6.3. Observations include people's frustration that governments pay no heed to their vocalised tenure aspirations. As has been noted earlier, my research team members and I were informed repeatedly in these sessions that the life-change most desired by the people is security of tenure. In the FGDs for the bostee leaders, the issue generated particularly animated and emotional discussion, including shouting, and crying by participants. The life of constant fear evidently carries seriously adverse impacts for the bostee residents in terms of mental health.

Table 8.1: FGD quotes relating to tenure insecurity

Session	Question	Response	Speaker gender
23 Jan 2019 Leaders	Is there anything else to say?	*All the leaders come here and give us hope, but we know that no one will give us a place to stay! We are all destitute people; we are landless.*	Male
8 June 2019 Female capabilities discussion 1	What does it mean to have a good life?	*We are always living in fear! When they will burn us down, when they might demolish us!*	Female
8 June 2019 Male capabilities discussion 1	Name one thing that should be provided here to improve living.	*There has been several eviction-drives at our slum in the past and has made many of us homeless. We don't want any more eviction here. Government intervention can help to avoid eviction. If government provide us with a place for permanent settlement anywhere within Dhaka, that would be adequate for us. Why the slum dwellers have to always live under fear?*	Male
8 June 2019 Male capabilities discussion 2	Which issues are most important to you?	*A permanent settlement!*	Male

The clear and consistent message from the statements presented in Table 8.1, and many other similar statements, is that the people's landless condition, and the associated vulnerability, causes deep distress. The people's fear is based on ongoing eviction threats delivered by the mastaans and the police, on past evictions, and on fire events.

A real eviction outcome was evident during my 2019 visits, during which a road through the bostee was being built by the local authority (Figure 8.4). According to residents, that necessitated the demolition of 400 dwellings or shops, which was carried out without compensation. I was advised that affected residents have mostly been absorbed into the rest of the bostee. The demolition is material evidence of the residents' vulnerable tenure in this place[228].

Figure 8.4: New road through KPB under construction on 22 January 2019 (M Jones)

---

[228] In a confronting experience for myself, I was witness to the 'live' demolition of illegal street stalls on the footpath adjacent to my hotel in Mirpur. The action was carried out with a bulldozer. This was clearly distressing for the stall owners (and I must say, distressing for me).

8.3.1   Tenure Security Potential in KPB

No formal tenure allocation proposals specific to KPB have been discovered during my research. Nevertheless, it is valuable to record some related findings from my fieldwork. An interview with a senior officer of the landowner[229] was particularly informative. The landowner aspires to develop its land, including the substantial portions now occupied illegally by the bostee dwellers. The owner, the Housing and Building Research Institute[230] (HBRI) is a governmental research institute established to investigate sustainable housing technologies. The proposed development of the site would serve that objective, and HBRI views the bostee as an unwelcome impediment to their worthwhile plans[231]. Meanwhile, the overwhelming message from bostee FGD participants is a desire for both permanence on this land, with decent housing, and maintenance of their community. Prevention by HBRI of a permanent settlement is resented. One male participant exclaimed that *'HBRI are our main enemy!'*[232]. This thesis makes no attempt to propose a solution to the conflicted tenure situation in KPB. It is worth observing however, that the aspirations of the landowner for experimental housing may in fact be compatible with the needs of the present illegal occupants. That discussion is for other fora.

8.3.2   Consequences of Tenure Insecurity in KPB

The underlying reality of bostee dwellers' voicelessness in Dhaka radiates through the conversations held in KPB. The people express their frustration at the neglect of their basic needs by governments and by wealthier sectors of society. This voicelessness is a function of their status as bostee dwellers. The people of KPB are unregistered residents of the city, and overwhelmingly (possibly entirely) reliant on informal employment. A function of these two conditions is the people's invisibility to

---

[229] Interview with a senior HBRI official, 25 June 2019 at HBRI offices.

[230] Part of the Ministry of Housing and Public Works.

[231] In reality, it is unlikely that HBRI has funds available for such a development.

[232] Leaders FGD, 23 January 2019 in KPB.

authorities and to middle class Dhaka[233]. In a practical sense, the neglect is at least partly explainable by the dearth of resources available in a poor nation like Bangladesh to deal with the large scale of the slum population[234]. Elevating the disadvantaged is an extreme challenge in these conditions. Beyond these genuine reasons, a more insidious dynamic prevents poverty alleviation. The quest for enrichment by powerful people in Bangladesh, through extraction of unfair levels of rents and fees from bostee dwellers, points to fundamental injustice in the sociocultural complexion of Dhaka. Residents of the bostee are a captive and vulnerable cache of income streams for many in the ruling classes and in the gangster world. Further, they are a profit-enhancing source of extremely low-cost labour. Incentive for change amongst the ruling classes is low.

Physical conditions, which are substantially attributable to tenure insecurity in KPB, include those identified in the literature: housing habitability and inability to access legal utilities. All three of these conditions are strongly interlinked, as has been discussed earlier in this thesis (Section 2.4). Under the current policy settings of Bangladesh, tenure security and its consequences are serious contributors to energy injustice in Dhaka's slums. The following sections explore these related concepts and identify implications for accessing reasonable energy services in KPB.

8.4   Housing Habitability in KPB

Habitability, under the UN Habitat definition, concerns the issues of structural fragility of housing, and protection from the elements provided by dwellings. It is reasonable to state that, for most people, housing quality is an important determinant of human wellbeing generally, and for slum dwellers that is no different. Many statements have been made in the bostee FGDs about the importance of having decent quality housing. A selection of quotes is presented in Table 8.2, which are additional to those in Tables 6.1 and 6.3. In a similar tone to the issue of security of tenure, the bostee leaders were

---

[233] That the slum dwellers are not a part of the middle-class consciousness was demonstrated to me upon appointing my research team. None of the Masters students appointed had ever before been to a slum. Given that about 40% of the city population lives in slums, this astonished me.

[234] At least 5 million people.

insistent that I cover housing and housing quality in my writings as an issue of primacy. The quotes demonstrate that the people are impassioned about their need for decent housing and are acutely aware of the deficiencies of their present dwellings. This profound desire was also borne out in Chapter 6, on valued capabilities, which determined that decent housing is the people's foremost aspiration. This view is more easily understood when the quality of KPB's existing housing stock is appreciated.

Table 8.2: FGD quotes relating to the importance of housing and of housing quality

Session	Question	Response	Speaker gender
7 June 2019 Leaders	General discussion	*Our main mission is housing … it would be a common plea from all of us that you add housing in your research. That would be best for us.*	Male
		Please tell Mr. Jones, that when he writes the report, he should tell everyone that after consulting with the people, it was found that their primary demand is housing.	Male
8 June 2019 Female capabilities discussion 2	What do you mean by a good life?	*A house with the basic necessities.*	Female
8 June 2019 Male capabilities discussion 1	So, name one thing that should be provided here to improve living.	*I need a house to live properly. … We can live without food, but we can't live without a shelter.*	Male
8 June 2019 Male capabilities discussion 2	How important is this (a good house) to you?	*If I could afford a good house, my family would be happier.*	Male

8.4.1   Houses in KPB

Houses in KPB are structurally fragile and provide inadequate protection from rain, wind, and particularly from the heat. Street views showing the exterior of houses are presented in Figure 8.5. Figure 8.6 shows the floor plan of a typical house in the bostee and Figure 8.7 presents two interior views of that same house. Houses are built on a bamboo frame with reused corrugated steel roofing and walling. The houses are uninsulated and have no windows, the only opening being the front door. In the

tropical heat of Dhaka, they become seriously hot[235]. Indoor temperatures certainly exceed 35°C for much of the year, far in excess of accepted maxima[236]. The steel cladding is extensively rusty and with holes, as seen in the interior view (Figure 8.6). The people report that leaks are a problem. Further, walls blackened by smoke exacerbate the heat.

Figure 8.5: Typical KPB street views showing 'tin shack' housing (M Jones)

Most houses are a single room of about 9 square metres, accommodating on average a family of four[237]. Dwelling sizes (rooms), as determined in the bostee survey, are presented in Figure 8.8; Figure 8.9 shows household sizes (people). Over 75% of dwellings comprise just one room, while 64% of households are of either three, four, or five persons. It is worth noting that this type and size of dwelling is representative of most houses across the six slums that I have visited, including in Korail. Jabeen and Guy, (2015, p312) present a similar dwelling as typical of Korail. Islam et al., (2006,

---

[235] My main fieldwork was conducted in midsummer and the surveys were hosted inside people's homes. Conditions were close to intolerable for my Australian research colleague and me. We returned each evening to our air-conditioned hotel, deeply aware that people in the bostee were living through the night in the hot boxes.

[236] Practical Action, (2010, p ix) states that 30°C is an acceptable maximum indoor temperature, a widely cited standard.

[237] Average household size in KPB is 4.03 persons.

p41), measure Dhaka slum dwellings at 7.1 m^2 to 9.2m^2. KPB appears to be representative of housing across many of Dhaka's slums.

Figure 8.6: Typical KPB house: measured floor plan (L Taylor)
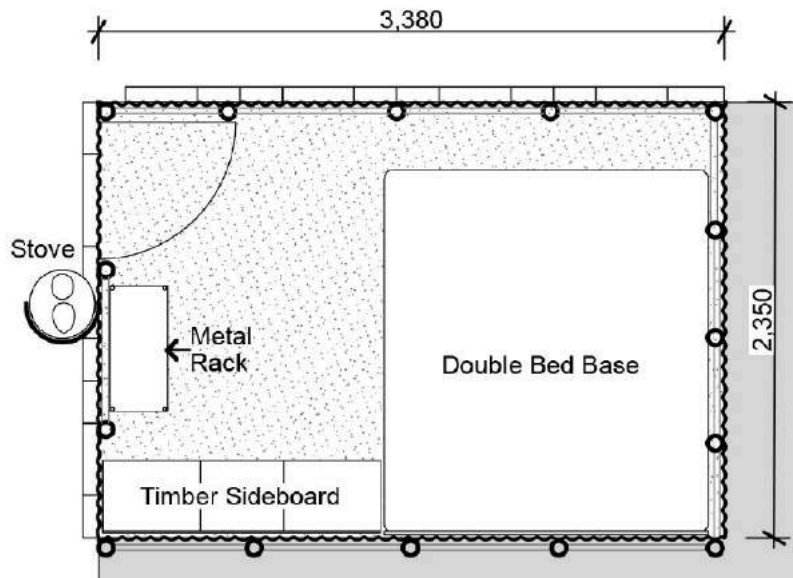
Figure 8.7: Typical KPB house: interior views (W Truer)

Figure 8.8: KPB dwelling sizes (rooms)
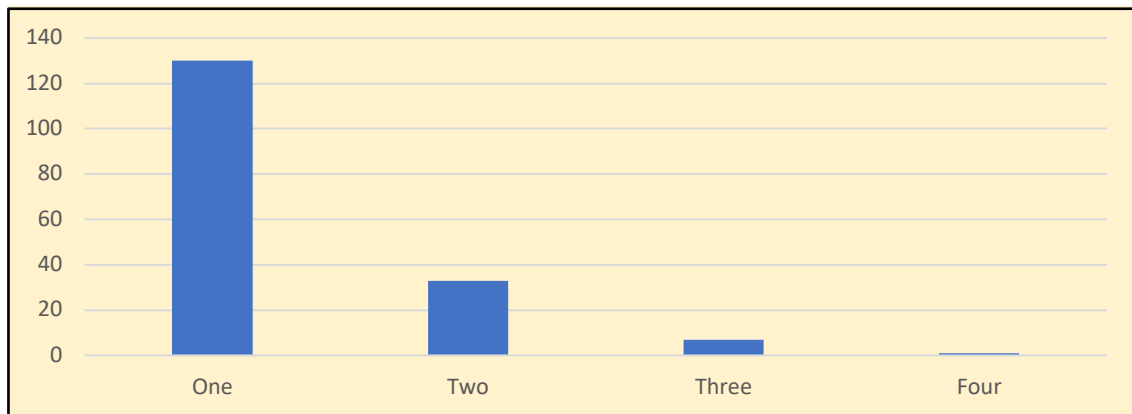
Figure 8.9: KPB household sizes (occupants)
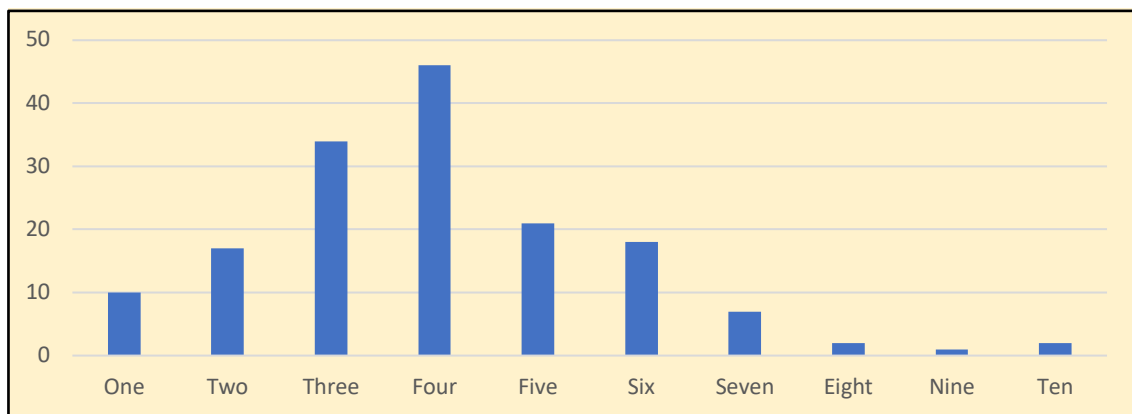
The average household size of about four persons is consistent with the average population per household found by Zanuzdana et al., (2013, p175) and Gruebner et al., (2012, p5) in their research in Dhaka slums. My Masters study in Korail found an average household size of 3.8 persons. These accommodation figures demonstrate another failing of housing in Dhaka's slums, including KPB, under the UN Habitat habitability dimension: provision of adequate space. By any measure, the houses of KPB and of other Dhaka slums are of a seriously poor quality and fail the UN Habitat criteria of habitability in every respect[238].

---

[238] *'housing is not adequate if it does not … provide adequate space, as well as protection against the cold, damp, heat, rain, wind, other threats to health and structural hazards'* UN Habitat, (2009, p4).

8.4.2   Bostee Survey: Habitability

Discussion below draws on the survey conducted in KPB, specifically on the topic of habitability. Details of this survey were described in Chapter 4 and the research instrument is included as Appendix 4.9. The exercise investigated (a) the most disagreeable qualities of the bostee dwellings, (b) whether people desire housing improvement and (c) what is preventing such improvement. Respondents in the bostee survey were firstly asked, 'What are the two worst aspects of your house?'. They were offered a range of issues from which to select. Results are presented in Figure 8.10.

Figure 8.10: Bostee survey: 'What are the two worst aspects of your house?'

- Heat
- Smoke
- Smells
- Leaks
- Drainage
- Utilities
- Other (dark, rats, dirtiness, lack of space)
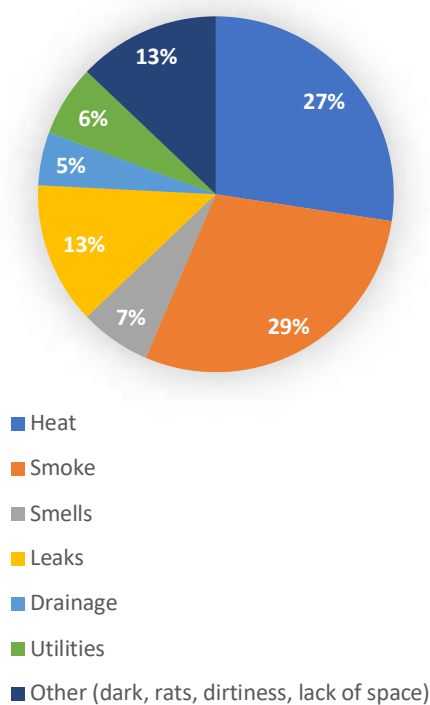
Dominant causes of discomfort for the people are smoke (29%) and heat (27%), both of which relate to the lack of ventilation in these houses. Smells (6%) also feature, another function of poor ventilation. It can be seen here that poor habitability, specifically lack of ventilation, causes physical distress for the occupants across several

outcomes (heat, smoke, smell). An absence of insulation certainly amplifies the heat problem[239]. In an attempt to moderate the high temperatures, excessive demands are placed on energy use, as the ceiling fan is required to operate all day and night for the entire year. Lack of ventilation and insulation exacerbates the issue greatly. Even with the single fan running [240], conditions are far from comfortable. Additional fans would help but that is not affordable for most residents. Electricity prices in the bostee are excessive as was revealed in the last chapter, preventing use of additional appliances. Thus, it can be concluded that poor habitability causes an unfair level of energy use and contributes to a situation of insufficient energy. It should also be mentioned here that another question was asked in the bostee survey about whether people lock their doors at night, with 100% of respondents stating that they do so for reasons of personal security[241]. Clearly, this action would further contribute to the people's thermal discomfort.

Interestingly, only 2% of respondents noted 'dark' as a problematic dimension of their housing. Nevertheless, it was apparent to me that the interior of the houses suffered from lack of natural light, a function of having no openings apart from the front door[242]. This conclusion is supported by the fact that all houses visited had their light switched on during the daytime. This is further evidence of the poor housing quality impacting on energy use and energy sufficiency. Other responses to the deficient features question that are worth noting are the issues of leaks (13%) and drainage (5%), both a reflection of deficiencies in habitability.

So, the poor quality of housing in KPB causes indoor conditions of darkness, poor ventilation, and extreme heat. It is perhaps stating the obvious to observe that these conditions are not conducive to human health; nor are the conditions, in any sense, supportive of individual efforts to achieve in respect to education, livelihood, and

---

[239] It is frustrating for me as an architect to observe that simple installation of low-cost roof ventilation would substantially moderate the heat issue (and moderate energy use).

[240] Close to 80% of dwellings have just one fan per room and 12% have two fans. Almost all of the remaining have one fan across two or more rooms.

[241] This question was asked in the second bostee survey in November 2019, occurring one week after the bostee experienced a night-time murder.

[242] Walls blackened by smoke add further to the darkness.

other life-affirming aspirations. The conclusion of this line of logic is that the poor habitability of housing in KPB not only has implications for access to energy. It also directly impacts on people's ability to attain a reasonable level of well-being and to lead a life that they value.

With a view to assessing the reasons for the atrocious[243] condition of housing in the bostee, the research team conducted a two-part inquiry. Respondents were asked whether they agree or disagree with the following statement: 'I would like to improve my present house'. Admittedly, this is a self-obvious question. Unsurprisingly, the statement was well supported as illustrated in Figure 8.11.

Figure 8.11: Bostee survey: Do you agree or disagree with the following statement? 'I would like to improve my present house'.
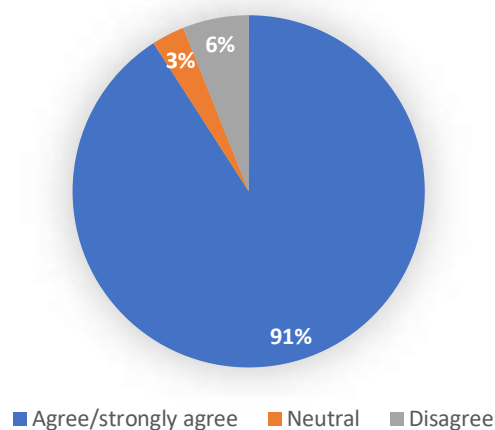
The ability of slum dwellers to improve and to individualise the home is identified by Frediani, (2019, p271), who notes that this freedom is not only linked to quality of life, but also to people's social status and dignity. This is a reality in KPB with residents, especially women, expressing shame about their dwellings. Given the importance of housing, and the overwhelming desire amongst residents of KPB for housing improvement, it is reasonable to inquire as to what is preventing such improvement. To find the answer to that question, respondents were then asked, 'What is your main

---

[243] A more 'academic' adjective would not represent the reality.

reason for not making improvements to your present house?'. The following reasons were offered:

a. I have no money

b. No point if we are to be evicted

c. I am a tenant so it's not up to me

d. Other (please specify)

e. No need to improve/ happy as it is

Results are shown in Figure 8.12. Almost 60% of responses reference the lack of funds to spend on improvements and 25% state that there is no point improving their dwelling if people are to be evicted. Another 14% say that as a tenant, they cannot make improvements. Zero respondents choose the last of the above options, indicative of the people's negative perception of the habitability of their dwellings.

Figure 8.12: Bostee survey: 'What is your main reason for not making improvements to your present house?'
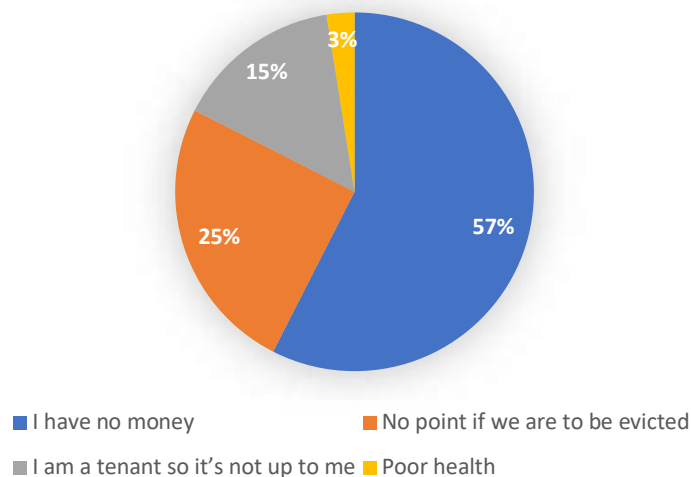
Responses to this question highlight two linkages. The first is a logical point: poverty limits people's ability to achieve desired improvements in the quality of their dwelling. The second is that insecure tenure disincentivises housing improvement. That response is also logical, as an occupant is unlikely to prioritise such spending within a meagre household budget, when the threat of forced eviction is ever-present. The reasonably strong selection of 'I am a tenant so it's not up to me' reveals the even

more precarious tenure of bostee tenants. As opposed to the position of 'owner-occupier', status as a renter adds another layer of disincentive for personal effort at housing upgrade. These findings are consistent with the global literature reviewed in Section 2.4 and with the Bangladeshi articles reviewed in Section 5.6, linking poor housing quality with both urban poverty and tenure insecurity.

This section has verified the 'logic chain', identified earlier, which claims that tenure security influences the habitability of housing which in turn has implications for access to energy, particularly in respect to energy sufficiency.

8.5   Access to Utilities in KPB

KPB is an illegal settlement and therefore, under current government policy, residents are unable to access the formal electricity market. This exclusion of unregistered residents extends, to some degree, to social services such as education[244], health care[245] and welfare. Exclusion from all of these services has been mentioned by residents in fieldwork discussions. Water services and sanitation services have been provided by NGOs in KPB, though they are limited in extent. The people are profoundly aware of the service deprivations and the negative consequences for their family members. The illegal electricity service is of particular concern to residents. Quotes from FGDs regarding concern about the illegality of the electricity are presented in Table 8.3.

---

[244] There is a school in the bostee for children up to year 5, though places are not available for all children. Education beyond that level requires school fees at mainstream schools in Dhaka. I met no families with members educated beyond year 5.

[245] Non-existent in the bostee. Participants describe the extreme challenge of acquiring medical attention in public hospitals.

Table 8.3: FGD quotes relating to informal electricity supply

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 1	What is the electricity connection that you are getting?	*It is an illegal connection that they operate and take money from us.*	Female
9 June 2019 Female energy discussion 2	Do you think that the electricity is safe?	*See, this is an illegal line. If the government people want, they can cut off the line at any time. There is no guaranteed service.*	Female
9 June 2019 Female energy discussion 3	What would make that better?	*If we had legal connections, with meters in each house, it would be better.*	Female

As was revealed in the last chapter, residents suffer from the consequences of the informal electricity, which include excessive costs (and thereby insufficiency), unreliability, and unsafe installations. The consequences of the gangster-type attributes of the informal electricity system are of particular concern to the bostee residents. This life of fear represents a substantial injustice that arises from the electrical service in this setting. For cooking, the bostee is not connected to town gas and most residents cannot afford to use bottled gas, leaving the majority of households with firewood cooking as the only available option. This has far-reaching quality-of-life impacts, with a severe gender imbalance. Outcomes arising from the illegal electricity and non-modern cooking fuel, including capability impacts, are examined in detail in the next chapter. People are well aware that their exclusion from decent energy services is substantially a function of their insecure residential status. These findings validate what was determined through the reviews of previous research in Sections 2.4 and 5.6.

8.6   Political Voice and Adequate Housing in KPB

Political voicelessness is a significant barrier to addressing many deprivations experienced by the urban poor. As indicated in the theoretical framework diagram (Figure 8.1), the notion of political voice cuts across most of the elements in the conversion factor zone. That includes people's access to adequate housing.

A key aspect of political voice is the ability to protest and to be heard. Through the main bostee survey, KPB residents were asked about their ability to protest (in relation to energy services). More than 90% of respondents stated that they could not protest or complain. Asked what would happen if they complained about electricity, almost half of respondents (46%), stated that nothing would change, with many others (total 16%) citing retribution through eviction, services disconnection, or violence. In relation to their political voice, there is an overwhelming sense of resignation or hopelessness amongst KPB residents. The people are acutely aware that they will not be heard and consequently make little effort to publicly speak up for their own advancement. The ability of KPB residents to seek improvement in their unfavourable residential circumstances is severely limited.

8.7 Chapter Conclusion

This chapter has interrogated access to adequate housing as a conversion factor under the theoretical framework of this thesis (Figure 8.1). It has delivered empirical validation of the findings of the Chapter 5 literature review on adequate housing in Dhaka's slums through fieldwork in the case study settlement, Kalyanpur Pora Bostee. Discussions have corroborated inclusion of adequate housing, tenure security, habitability, access to legal utilities, and political voice as important parts of the energy context for Dhaka's slum dwellers (refer back to Figure 5.18).

Access to adequate housing has a fundamental influence in access to reasonable energy services in KPB. Three elements of adequate housing, (a) tenure security, (b) habitability, and (c) ability to access legal utilities, are key considerations in providing equitable opportunity to access decent energy services. Indeed, access to adequate housing has been verified in this chapter as a significant conversion factor under the CA-based theoretical framework of this thesis. KPB is a squatter settlement where residents are without secure tenure, occupying poor quality housing and without access to formal energy services. Data collected from residents in KPB have demonstrated that the precariousness of these circumstances has primacy in the psyche of these people. Insecurity of tenure and the associated threat of eviction manifest as high levels of unremitting anxiety for residents. The poor quality of

housing in KPB, a condition linked to both urban poverty and tenure insecurity is the cause of substantial suffering and harm. The inhabitability of houses is a direct contributor to energy insufficiency. Exclusion from formal utilities leaves the bostee dwellers with problematic electricity services and most residents rely on firewood for cooking. This chapter has verified similar findings in the literature and has recorded the vehemence of the bostee dwellers' concerns about these residential issues.

The entreaties from KPB residents for permanence in their residential situation have gone unheard throughout the bostee's existence of more than three decades. The people are of the view that securing land tenure in the present location would preserve their valued community and deliver substantial flow-on advantages. These advantages are seen as access to improved social services and legal utilities, better quality housing and more equitable participation in the political economy of Dhaka.

These are the unjust circumstances for Dhaka's slum dwellers demanding a correction for social justice in the city. For millions in Dhaka, important freedoms cannot be actualised under existing socio-political, spatial, and physical conditions. The struggle for access to decent energy services is inseparable from the struggle for the provision of adequate housing. In other words, energy justice is highly dependent on spatial justice.

9 Impacts of Unjust Energy Practices in KPB on Valued Capabilities

9.1 Chapter Objective

We are now in a position to draw together the findings of previous chapters to discover the effects of energy injustices on the people of Kalyanpur Pora Bostee (KPB). The objective is to develop an understanding of the impacts of energy practices in KPB on residents' most valued capabilities. This understanding will provide insight into the human experience of energy injustice, which in turn will inform development of the energy justice framework in the next chapter. The particular capabilities to be assessed in this analysis were established in Chapter 6, they being: the capability of having (a) good health, (b) a decent education, (c) a fair livelihood, and (d) dignity and self-respect. The process of this chapter builds from the description of the energy practices in the bostee in Chapter 7. Impacts of both electricity and cooking fuels are examined through an analysis of survey data gathered in KPB. The place of this chapter in the theoretical framework is highlighted in red in Figure 9.1. We are examining interactions between energy practices, as a conversion factor, and capabilities.

Figure 9.1: Theoretical framework: highlighting local energy practices and the capability set
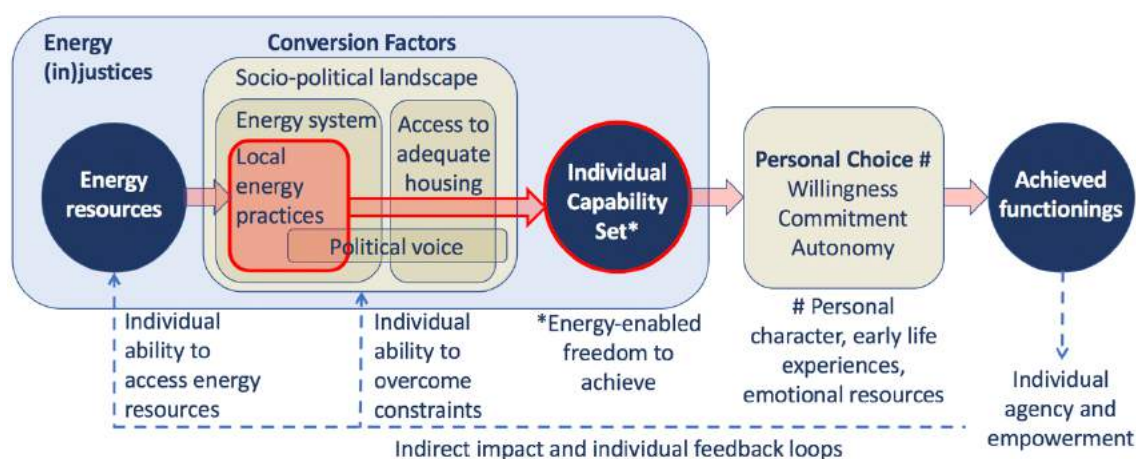
Participants in the focus group discussions (FGDs) were asked about the effects of electricity and cooking on the four selected capabilities in a general sense. Subsequently, in the bostee survey, participants quantitatively nominated the impact

of electricity and cooking on a Likert scale (very positive, positive, neutral, negative, very negative). Subsequent to each response, participants were asked 'Why did you give that answer?'. The following analysis draws from both the bostee survey data and the FGDs. Discussion firstly covers the impacts of electricity practices on each capability, then those of cooking practices.

9.2   Impact of <u>Electricity</u> Practices on Valued Capabilities

9.2.1   Core Finding

The impact of electricity practices on family members' capabilities overall is regarded by residents as mostly positive. This is a surprising result as explained in Box 9.1.

Box 9.1: Personal expectations regarding feedback on electricity

I came to the bostee from my privileged Western environment with high-quality electrical services and was confronted by what is clearly an unsafe, unreliable, and over-priced electricity system. Consequently, I was initially surprised by the positive responses in the bostee to the questions on the impacts of electricity on people's capabilities. My expectation was that responses would be overwhelmingly negative. The positive responses were mystifying until I realised that the people are simply grateful to have access to this essential modern technology.

In essence, people regard electricity as essential to the well-being of their family and they are grateful for the service, despite the obvious shortcomings discussed in Chapter 7. When asked about the benefits of the electrical service, one male participant exclaimed *'Yes! Its better in every way! '*[246]. This can be taken to mean better than an absence of electricity. To the bostee dwellers, electricity is a modern energy form and it has a positive and critical role in the life of their family members. This is despite the substantial negative attributes of the electricity arrangements as described in Chapter 7. With this enigma in mind, we now move on to analyse the data

---

[246] Male energy FGD 1, 9 June 2019

in relation to the impact of the electricity service on the four selected capabilities. Each subsection will draw firstly from the FGDs and then from the bostee household survey.

9.2.2 Electricity Practices and Health

General discussions in the FGDs delivered a consistent message that moderation of indoor heat by ceiling fans is the premier health benefit of the electricity service. A selection of quotes is presented in Table 9.1. As discussed in the previous chapter, the uninsulated and poorly ventilated steel-clad houses in the bostee are extremely hot in the tropical heat of Dhaka. Our surveys were conducted in the houses through summer days, and conditions were a real shock to my team members and to me. In all cases, a fan was running but temperatures were intolerably high, regardless. One female FGD participant blames the recent death of her husband on the heat of their house. The people are acutely aware of the essential role of electricity in powering ceiling fans to moderate indoor heat.

Table 9.1: FGD quotes relating to the impact of electricity practices on health

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 1	So due to the electricity connections that you are getting, is your health being benefitted?	*I used to use hand fan all night, but no one in the family could sleep! We used to come and sit in the streets! A lot of us fell ill as it was too hot without electricity!*	Female
9 June 2019 Female energy discussion 2	Is there any benefit of electricity to health?	*Yes! If there is no electricity, people become ill from the extreme heat.*	Female
9 June 2019 Male energy discussion 1	Would there be any problem to health if there was no electricity?	*We all feel very weak if there is no electricity!*	Male
9 June 2019 Female energy discussion 3	So, has electricity brought you benefits?	*Yes, if we didn't have electricity, we would not live comfortably. … We would simply become sick without electricity!*	Female

The role of the electricity service in affecting family members' health is regarded as positive or very positive by about 80% of survey respondents (Figure 9.2). Of the

positive responses, about 70% reference the essential nature of the ceiling fan to deal with indoor heat. Many respondents point out that occupation of the 'hot box' houses is intolerable without fans[247], and so the electricity is critical in providing a relatively healthy home. Mention was also made in FGDs of the potential health benefits that ownership of a refrigerator would bring to people's lives. Negative responses on the health question concern the unreliability of the electricity supply and insufficiency of electricity affecting the health of family members.

Figure 9.2:
'Thinking of the quality of your electrical service, what is the impact on your family members' health?'
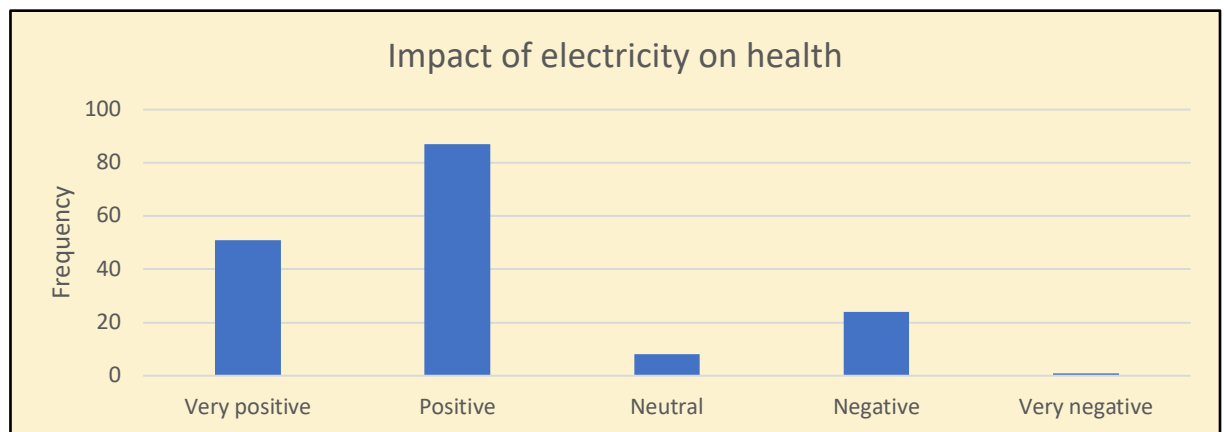
The people clearly value the role of the electricity service for its beneficial contribution to family members' health. Despite the people's positivity in this dimension, the reality is that an insufficiency of electricity and appliances, combined with poor housing, constrains their ability to achieve good health. In turn, these health impacts carry through to obstruct other life-opportunities. Educational and livelihood achievements are certainly influenced by the state of a person's health, for instance. Not only is the opportunity for good health inhibited by unreliable and insufficient electricity and insufficient appliances, but residents also live with the risk of accidents from the unsafe electrical installations. We have learned that the bostee people appreciate their meagre electrical service. However, in reality, compared to wealthier residents of

---

[247] As occurs during blackouts.

the city accessing decent electricity, the bostee dwellers have limited freedom to actualise good health and other related capabilities.

9.2.3   Electricity Practices and Education

The FGDs delivered emphatic statements that ceiling fans and lights are essential for children to study. Typical quotes are presented in Table 9.2. Both the thermal advantage of ceiling fans and night-time illumination are mentioned as positive impacts of the electricity service on education.

Table 9.2: FGD quotes relating to the impact of electricity practices on education

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 1	Does electricity have any impacts on education?	*Yes! Children couldn't appear for exams if there was no electricity. See, if they would give exams without electricity, they would obviously not do well because they can't study.*	Female
9 June 2019 Female energy discussion 3	Does electricity help in education?	*If there is no electricity, children won't study. They say it's too hot!*	Female
9 June 2019 Male energy discussion 1	As you have electricity in your houses, how is this helping you with your education?	*We can make our children study. Children can feel more comfortable as there is fan … without light this room would be dark.*	Male

For impacts of electricity on education, survey responses (Figure 9.3) are more divided than for health. Of all respondents, 53% are positive, 32% neutral and 15% negative. About 80% of positive responses are backed by comments on the essential nature of the fan to enable study with most others noting lighting for study at night. Negative responses on education impacts concern problems with the electricity supply including blackouts and voltage drops. Insufficient illumination provided by a single light is mentioned by a small number of negative respondents. Survey responses bear out the fact that the people appreciate that an absence of an electricity service would substantially handicap their children's capability of having a decent education.

Figure 9.3:

'Thinking of the quality of your electrical service, what is the impact on your family members' education?'

Impact of electricity on education

A bar chart titled "Impact of electricity on education" with the vertical axis labelled "Frequency" ranging from 0 to 60. The categories on the horizontal axis and their approximate frequencies are: Very positive ≈ 25, Positive ≈ 54, Neutral ≈ 47, Negative ≈ 21, Very negative ≈ 1.
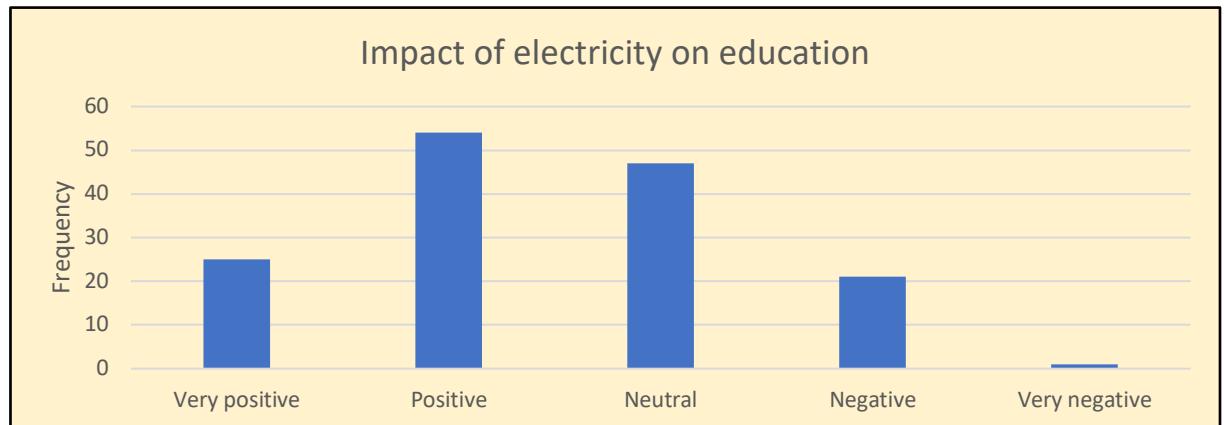
Again, positive responses in this dimension belie the reality that the insufficient and unreliable electricity supply limits children's opportunity to obtain a decent education. While students in middle-class Dhaka benefit from constant and adequate lighting and cooling, (and decent housing), the bostee children are handicapped in their freedom to study by deficiencies in these respects. The thermal moderation issue has composite capability consequences including restricting health and education outcomes, which in turn affect other freedoms and opportunities. Education is a recognised pathway out of poverty, and therefore any restriction on education represents a severe and enduring injustice in the energy system.

9.2.4 Electricity Practices and Livelihood

Discussions on the relationship between electricity practices and the capability of having a livelihood in the FGDs were not illuminating in themselves. Several participants pointed out that few KPB residents work from home. Those that do so have little reliance on electricity. For example, some people sew and repair garments from home, but all use pedal driven sewing machines (Figure 9.4). The survey question asking about the impact of electricity on livelihood does not stimulate significant findings, with about half being neutral and 35% being negative (Figure 9.5). The reason for the latter mostly concerns the cost of electricity impacting on the household budget. That almost no respondents use electricity to work in their home would partly

explain the large number of neutral responses. No clear conclusions can be drawn from my primary data regarding a link between electricity practices and people's capability of having a livelihood.

Figure 9.4: Home sewing businesses (M Jones, W Truer)

Figure 9.5:
'Thinking of the quality of your electrical service, what is the impact on your family members' livelihood?'
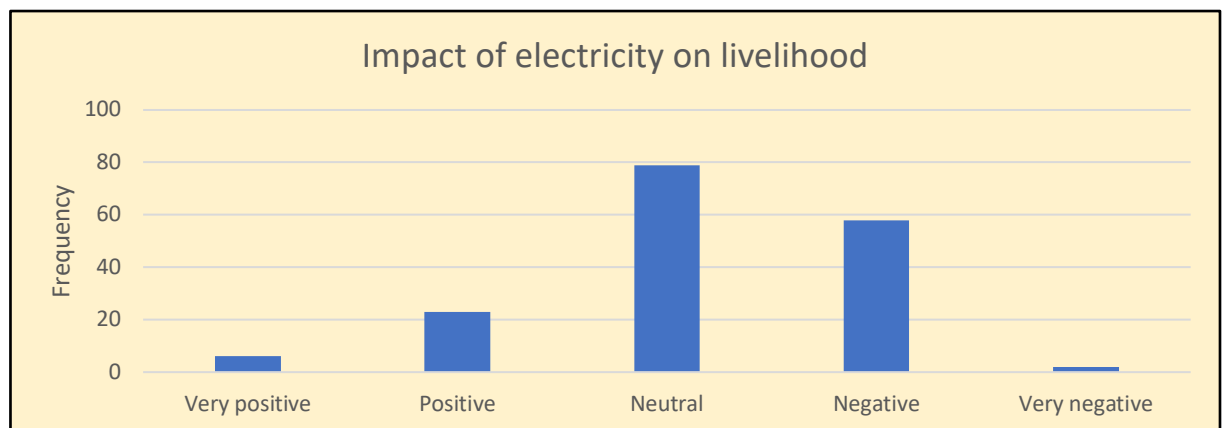
This inconclusive result in the primary data does not hide the reality that affordable, sufficient, and reliable electricity in the home would provide an elevated opportunity to generate additional income. It is easy to imagine the increased income potential for

the bostee dwellers that could be generated by not only additional lighting and fans, but also electrical appliances, such as electric sewing machines, refrigerators, computers, and hand tools. The capability of having a decent (home-based) livelihood is clearly constrained by what is a deficient electrical service. It is important to keep in mind the interconnectedness of capability outcomes. Economic empowerment through enhanced livelihood would deliver other opportunities such as access to better housing, healthcare, and other services.

9.2.5   Electricity Practices and Dignity

There was little comment in the FGDs about a linkage between the electricity service and dignity, most discussion being centred on more technical shortcomings. The bostee survey was more informative. Regarding the impact of electricity on dignity and self-respect, over 70% of respondents were positive or very positive, and only 9% negative (Figure 9.6). More than 75% of the positive respondents stated that they were proud to have the electricity. Another 15% reported that they were satisfied with the service. Interestingly, for all its faults, the system is a source of pride for the people.

Figure 9.6:
'Thinking of the quality of your electrical service, what is the impact on your family members' dignity and self-respect?'
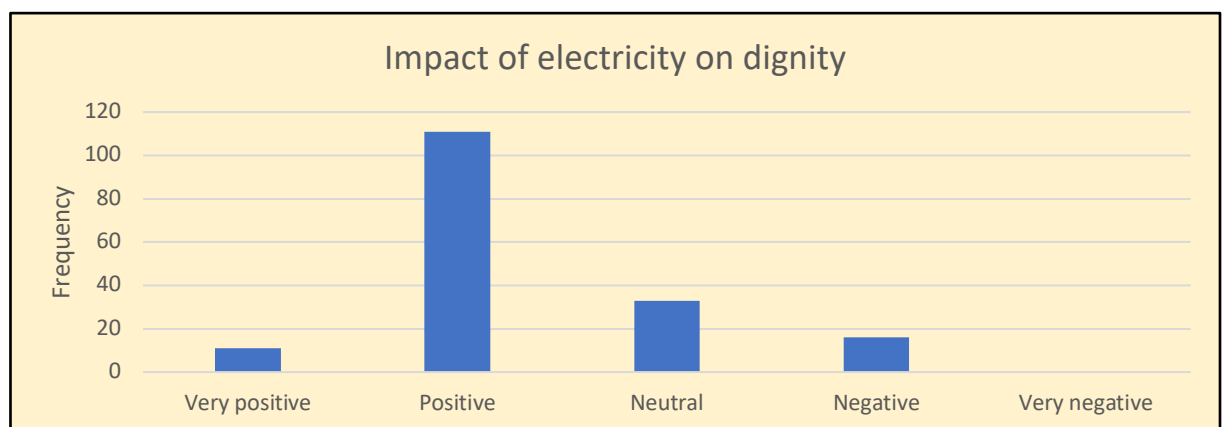
9.2.6 Discussion: Impacts of Electricity Practices

As has been mentioned through this section, there is something of a disconnect between the positivity of the people about the value of an electricity service, and the compromised quality of that service in KPB. It is probably fair to state that the positive responses on the importance of electricity in their lives is an assessment of having electricity, versus not having electricity. Quotes in Tables 9.1 and 9.2 support that assertion. Most KPB residents would never have experienced a decent electricity service, and therefore have no such comparator by which to assess their existing service. It is possible that the people are unaware of how poorly serviced the bostee is, in terms of the quality of electricity supply relative to the service for legal customers. It may be reasonable to interpret the people's gratitude for the compromised electricity service is reflective of an adaptive preference[248], founded on modest expectations. Wealthier residents of the city would certainly object to enduring equivalent circumstances.

The Chapter 7 analysis of energy practices in KPB found a severely compromised electricity service in terms of affordability, sufficiency, reliability, and health and safety. These adverse attributes unquestionably compromise KPB residents' ability to actualise various important freedoms, most notably, freedoms to achieve in areas of greatest value to their family members: health, education, livelihood, and dignity. For the most part, opportunity to achieve these capabilities is improved by having electricity, but for the bostee dwellers, that opportunity falls far short of that available in middle-class Dhaka. In these terms, realisation of positive outcomes from electricity in the bostee, is substantially handicapped.

---

[248] An adaptive preference under the CA is '*the phenomenon whereby the subjective assessment of one's wellbeing is out of line with the objective situation*' (Robeyns, 2017, p137).

9.3   Impact of <u>Cooking</u> Practices on Valued Capabilities

9.3.1   Core finding

It should be remembered when reading this section that all cooking in KPB is undertaken by women. It will be demonstrated that my findings regarding cooking emphatically demand a place for the notion of *gender equity* in any energy justice deliberation in this type of setting.

This section reviews the FGD and survey findings regarding impacts on people's valued capabilities of gas cooking and use of firewood. Unsurprisingly, cooking with firewood in the bostee is despised by all users[249]. This is principally on the basis of problems caused by the smoke. Other reasons for disapproval of firewood are the serious risk of fire damage to property and to person, discomfort caused by radiant heat, and the time demands of firewood cooking. As would be expected, the impact of cooking practices on the selected capabilities is sharply divided between those using gas and those using firewood. Gas is comprehensively appreciated as the optimal cooking technology. Firewood users universally aspire to having a gas cooking system for their household.

The graphs in this section are presented in pairs, the comparison within each illuminating the contrast between attitudes to gas cooking and to firewood cooking. As for the preceding discussion on electricity, each subsection here will reference firstly the FGDs and then the bostee household survey.

9.3.2   Cooking Practices and Health

The clear message from the FGD discussions is that smoke from firewood cooking is well understood by the people to cause respiratory bad health. The radiant heat is also reported as impacting on health, and accident risk is noted by a number of participants. A number of quotes from the FGDs on the topic of firewood cooking are presented in Table 9.3.

---

[249] The only positive comments about firewood cooking came from a small number of males who appreciate the alleged superior taste of cooking on firewood.

Table 9.3: FGD quotes relating to the impact of firewood cooking practices on health

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 1	Is firewood safe?	*We women are having asthma, TB* (tuberculosis), *cancer and so many other diseases from the firewood! How is it safe?*	Female
9 June 2019 Female energy discussion 2	Due to cooking fuel, is there any connection to health?	*See, due to this firewood stove and the heat, we are mostly ill. Even in a month, we fall sick 5 to 6 times.*	Female
9 June 2019 Female energy discussion 2	Was there any incident of major fires?	*Yes, there was a fire from the stove where about 5 to 10 houses were completely burnt down! It happened 2 years ago! About 7 people died! The fire caught from the stove of a women!*	Female
9 June 2019 Male energy discussion 2	Is this firewood stove safe?	*No, it is not safe. Firewood stoves causes a lot of problems. It causes breathing problems, heart problems.*	Male

Data collected in the bostee record the people's perceptions of the different impacts of gas and firewood cooking on human health. The impact of cooking with gas on health was regarded as positive by 74% of respondents with 9% neutral, and for firewood 62% of respondents were negative with 25% neutral (Figures 9.7a and 9.7b). The negative firewood responses were mostly (82%) to do with the effects of smoke and to a lesser degree, complaints about the radiated heat (10%). Positive gas responses were dominated by the absence of smoke (86%). Noteworthy is the significant portion (25%) of neutral responses regarding firewood cooking's impact on health. Most of those particular respondents asserted that they are accustomed to the smoke and that for them, it is not bothersome. For the most part though, people in the bostee are well aware of the health impacts of the smoke and of the radiant heat. Injury and accident risks are also significant concerns for the bostee dwellers.

Figure 9.7a:

'Thinking of the quality of your cooking fuel (gas), what is the impact on your family members' health?'

Figure 9.7b:

'Thinking of the quality of your cooking fuel (firewood), what is the impact on your family members' health?'
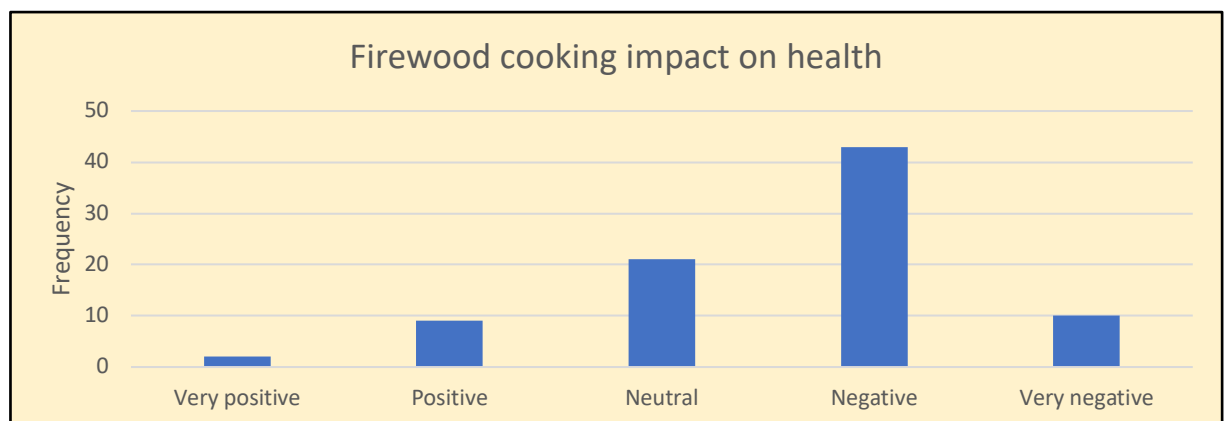
The academic and NGO literature emphatically determines the tangible health benefits of replacing solid fuel cooking with gas cooking. The scale and severity of the health impact of solid fuel cooking was noted on page 1 of this thesis. What my fieldwork has revealed is that the bostee dwellers themselves are acutely aware of the health (and safety) impacts of firewood cooking. As both gas and firewood are used in KPB, the benefits of gas cooking are obvious to all residents, and all firewood users aspire to gas cooking. Access to gas cooking is restricted only by the capital cost of the equipment, meaning that people's limited income feeds through inferior cooking technology to detrimental health outcomes. As mentioned earlier in relation to

electricity, elevating human health through upgraded energy practices will clearly improve people's freedom to achieve in other important areas, such as education and livelihood. In this case, transition from a non-modern fuel to a modern fuel will enhance the capability to achieve good health along with the many flow-on advantages. The crossover of cooking fuels and health is a key nexus in the energy justice debate. It represents the premier focal point in a crucial dimension of energy justice, gender equity.

9.3.3 Cooking Practices and Education

According to assertions in the FGDs, firewood cooking adversely affects the children's ability to study. This concerns the presence of smoke in the home, the radiant heat, and the time impact of firewood cooking. A collection of FDG quotes on cooking and education are presented in Table 9.4. As was mentioned in the last chapter, the location of firewood cooking stoves adjacent to the dwelling entry doors is a curiosity, as this exacerbates smoke ingress to the interior. This is the configuration of most houses in KPB and is certainly an impactful dwelling design fault.

Table 9.4: FGD quotes relating to the impact of cooking practices on education

Session	Question	Response	Speaker gender
9 June 2019 Female energy discussion 1	What about children's education?	*They can't study. There is smoke and … often their eyes are irritated. And they also have breathing problems.*	Female
9 June 2019 Male energy discussion 1	So due to your cooking fuel how is education affected?	*There is one more problem. You see, with the gas supply when you are in a hurry you can light it and quick you can fry an egg, eat with rice and go but in case of the firewood stove, it takes a long time just to light the stove 8/10 minutes, so in the morning, the children and we go to school or work without having breakfast.*	Male
9 June 2019 Male energy discussion 2	How does it impact education?	*They can't study because of the smoke and also heat.*	Male

Gas cooking has a positive impact on the capability of having an education, according to 62% of survey respondents, with 30% being neutral (Figure 9.8a). In the case of

firewood, about 50% of people are neutral, while about 40% see the impact as negative (Figure 9.8b). Again, positive gas responses and negative firewood responses cite the absence of smoke and presence of smoke as beneficial and detrimental, respectively. Smoke filling the houses of firewood users was cited by almost 90% of negative firewood respondents as preventing children from studying. Other negative responders reference the time impact of firewood cooking that prevents mothers from assisting with children's homework.

The impacts on education from firewood cooking due to smoke, radiated heat and time inefficiency are recognised by many of the bostee dwellers. Gas cooking is seen as the modality to overcome all such problems. A significant number of respondents were neutral on both technologies for this question, suggesting that many people see little connection between cooking technology and educational outcomes.

Figure 9.8a:
'Thinking of the quality of your cooking fuel (gas), what is the impact on your family members' education?'

Figure 9.8b:

'Thinking of the quality of your cooking fuel (firewood), what is the impact on your family members' education?'
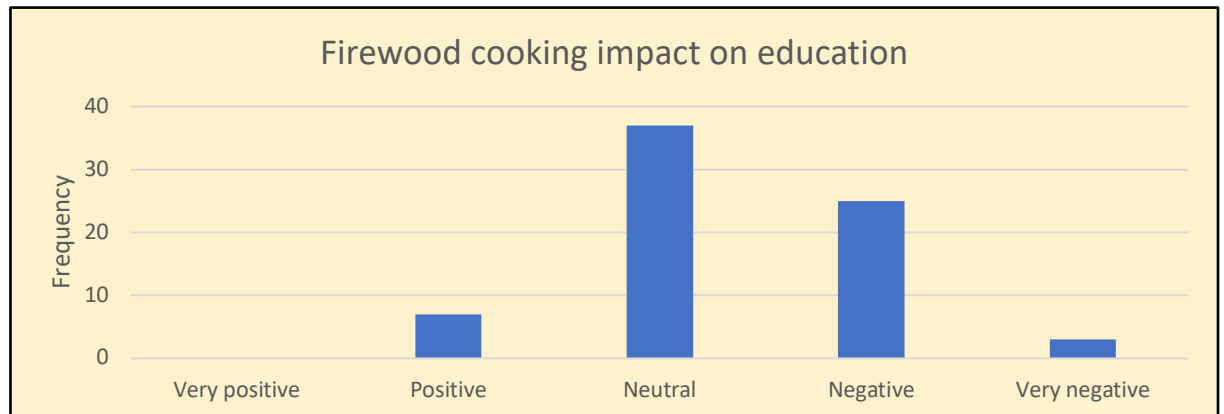
Findings in KPB about the detrimental effect of smoke-filled dwellings on children's education might be quite specific to the unusual arrangement of stoves in this bostee (adjacent to the front door). Certainly, the heat of the dwellings being exacerbated by the firewood stoves leads to conditions far from conducive to study. Further, the health impact of firewood cooking on women, and the time-intensity of firewood cooking are detrimental to educational outcomes. These consequences for women constrain their important role in supporting their children's home study, and indeed hinder their own educational advancement. Causal links between cooking technologies and educational outcomes in KPB are both direct and indirect. In essence, gas cooking will usually improve children's opportunity to achieve a decent education beyond that achievable in fire-dependent households.

9.3.4   Cooking Practices and Livelihood

Cooking practices and the capability of having a decent livelihood have an important linkage in terms of time impacts, fire attendance being time consuming, but gas cooking not so much so. The issue of timesaving with gas cooking is appreciated by FGD participants as enabling more time for income-generating activity, and other valued pursuits. Various authors reference that for access to energy to be considered reasonable, it must be *'without undue time investment'* (Day et al., 2016, p260). The bostee dwellers have a clear awareness of this disadvantage of firewood cooking. The

FGD quote presented in Table 9.5 emphasises the opportunity cost of firewood cooking.

Table 9.5: FGD quote relating to the impact of cooking practices on livelihood

Session	Question	Response	Speaker gender
9 June 2019 Male energy discussion 2	How does it impact your work?	*If we had supply gas it would be better for the women as they would be able to go to work*[250].	Male

Responses to the survey question of the impact of gas cooking on livelihood are quite evenly spread across positive, neutral, and negative (Figure 9.9a). Negative responses are dominated by comments on costs, and positivity is mostly related to the timesaving aspect of gas cooking. For firewood cooking, about half view the impact as negative, with 30% neutral (Figure 9.9b). Negative responses are accompanied by statements about the time and cost impacts of firewood usage, and that fire-related accidents and ill-health impact on ability to earn[251]. The quantitative findings on cooking and livelihood are inconclusive but the qualitative questioning reveals the important time-saving quality of gas cooking.

---

[250] Obviously, this remark raises significant questions about the lifestyle benefits for women in a transition to gas cooking. This male respondent perceives an opportunity for increased household income rather than for greater leisure time for the female.

[251] Suggesting that such accidents are frequent.

Figure 9.9a:

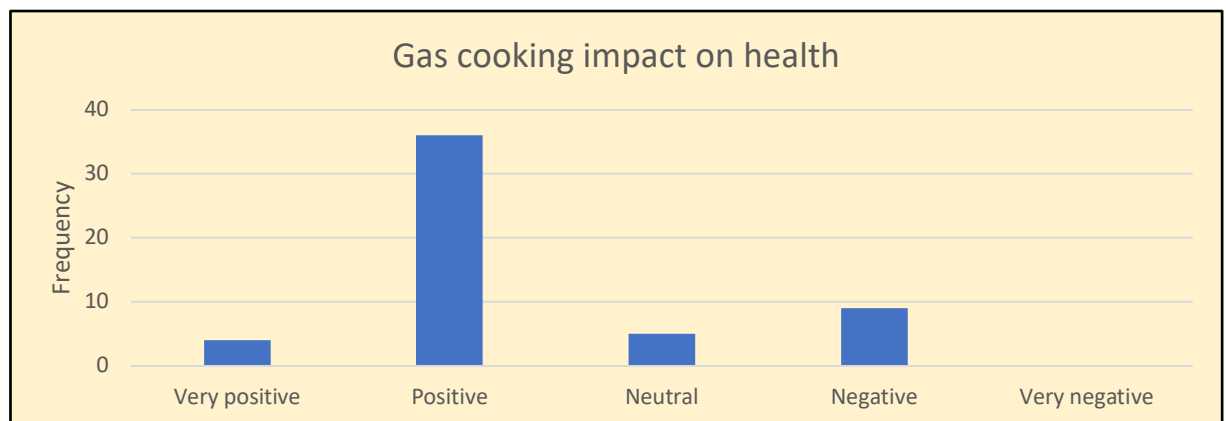'Thinking of the quality of your cooking fuel (gas), what is the impact on your family members' livelihood?'
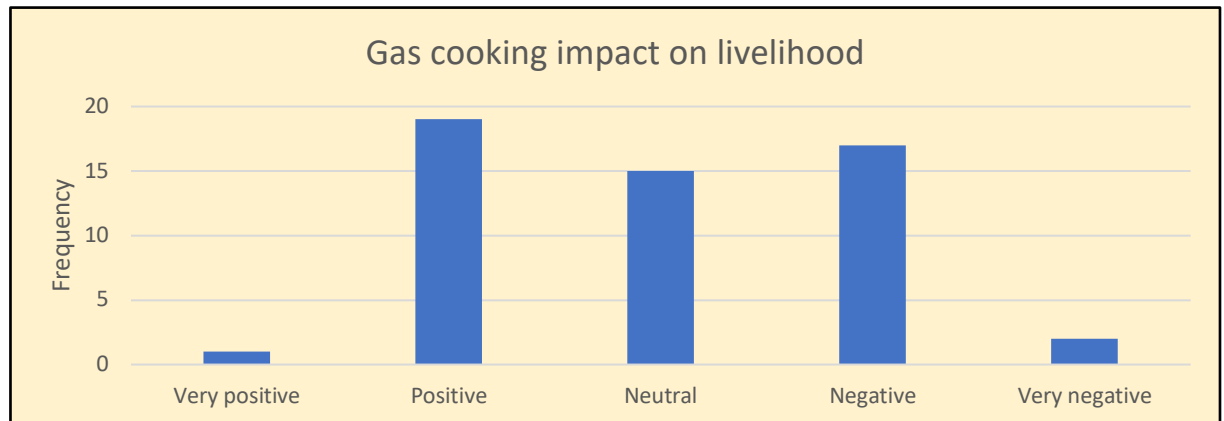
Figure 9.9b:

'Thinking of the quality of your cooking fuel (firewood), what is the impact on your family members' livelihood?'
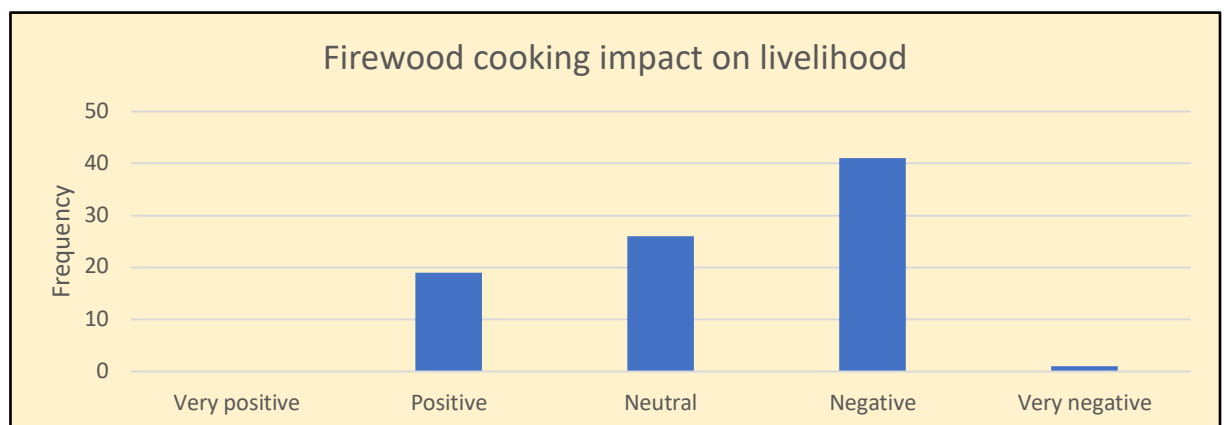
Differences between gas and firewood cooking represent a substantial variation in quality-of-life for women. The ability to generate an income is significantly enhanced for women who cook with gas. A principal contributor is the time differential between the fuels, but other aspects have an influence. For instance, physical impacts of firewood cooking, such as smelly clothes, influence the ability to obtain employment. Psychological outcomes, including detrimental levels of self-respect, can impede women's autonomy and therefore their freedom to earn. While the residents do not readily associate cooking fuels with livelihood potentials, there is an ecosystem of both subtle and more palpable disadvantages inherent in firewood cooking that

impede the ability of women to generate an income. This reinforces the demand for a gender equity dimension in energy justice.

9.3.5 Cooking Practices and Dignity

The FGDs did not explicitly reveal a relationship between cooking practices and the capability of having dignity and self-respect. There was, however, a pervasive 'disgust' of firewood cooking throughout those discussions.

On the other hand, the bostee survey showed that most people with gas are proud to have that technology, and most with firewood are ashamed of their cooking fuel. In the survey, just 4% of gas users are negative, and conversely only 9% of firewood users are positive about the effects of their cooking practices on dignity and self-respect (Figure 9.10a and Figure 9.10b). Of the negative respondents for firewood, 82% stated that they were ashamed to not have gas cooking. The shame about firewood cooking included not only the low social status of firewood technology compared to gas, but also issues of disturbing neighbours, smelly clothes, blackened and smelly households, and general uncleanliness. The smell and discolouration caused by smoke was described as a source of both discomfort and shame to KPB residents. Houses have blackened walls, both internally and externally (Figure 9.11). This causes staining on clothes or the skin, really not conducive to a sense of wellness or dignity.

Figure 9.10a:

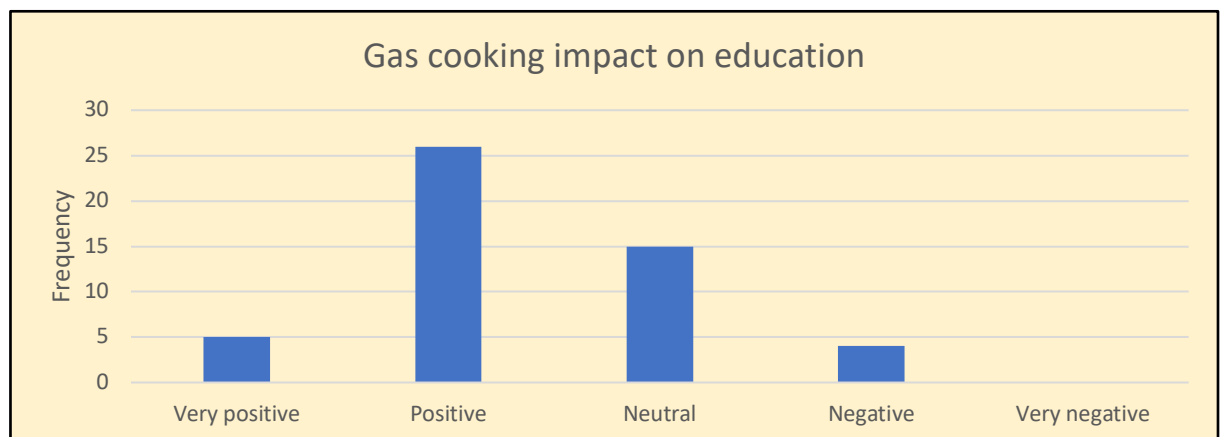'Thinking of the quality of your cooking fuel (gas), what is the impact on your family members' dignity and self-respect?'
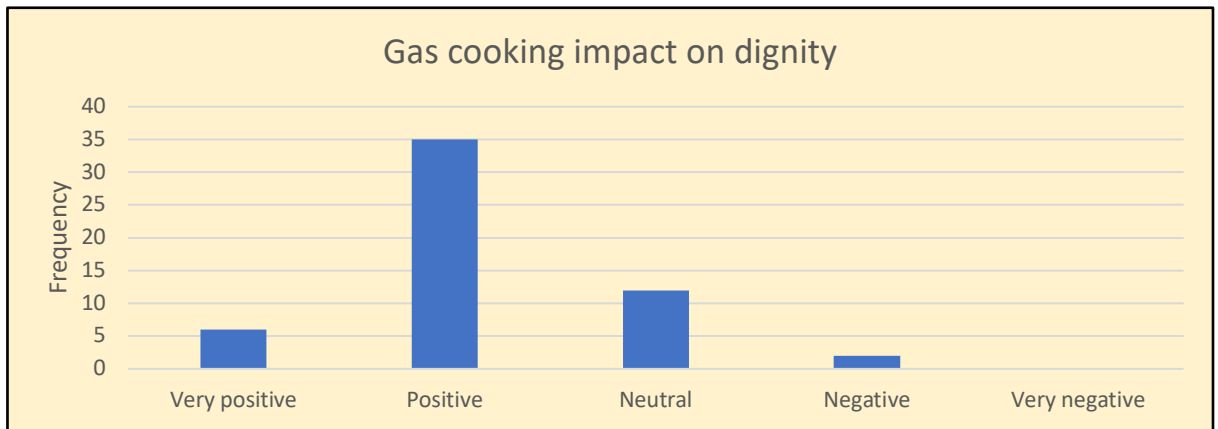
Figure 9.10b:

'Thinking of the quality of your cooking fuel (firewood), what is the impact on your family members' dignity and self-respect?'
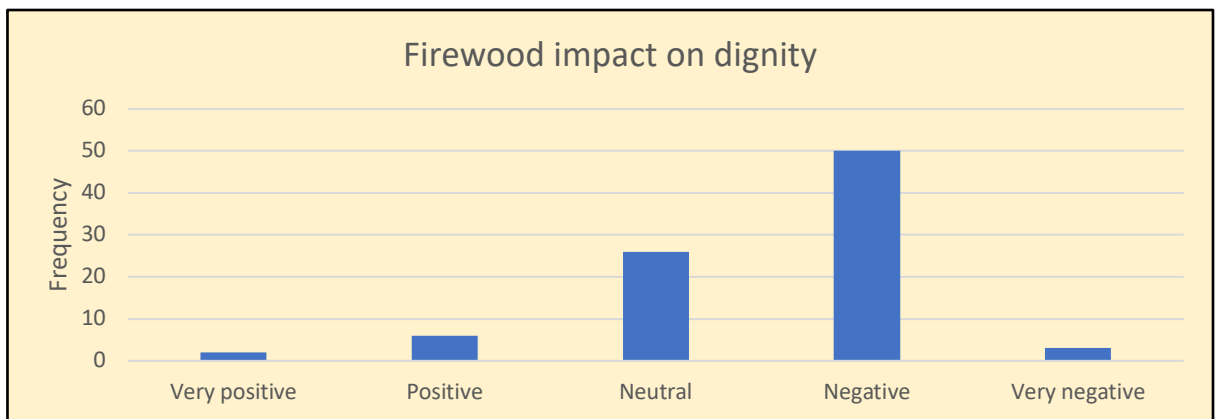
Figure 9.11: Blackened walls of the bostee houses (M Jones, W Truer)

The dignity outcome differential between gas and firewood cooking emerges from a myriad of factors. These include not only pride in the 'modern-ness' of the respective fuels. Impacts on dignity are also a function of the drudgery of fire attendance, the smell issues, time impacting on more satisfying pursuits, impatience of family members awaiting meals, practices of ash disposal, and much more. These issues were all mentioned in FGDs. Many such micro issues contribute to a diminished sense of dignity and self-respect for the women. Inevitably, a depressed sense of worth affects other important opportunities, such as the ability to be employed or educated. Further, there would likely be some replication of behaviours across generations, perpetuating gendered injustice. It can be argued that in this setting, the dignity impacts of cooking practices are a significant consideration in energy justice assessment, especially along the gender divide.

9.3.6   Discussion: Impacts of Cooking Practices

FGD and survey data gathered in the bostee demonstrate that KPB residents perceive a clear difference between impacts of the two cooking technologies on people's capabilities - in reality, we may read that as women's capabilities. Firewood is a negative influence on all surveyed capabilities, while gas cooking enhances people's freedom to achieve in health, education, and dignity. This capability analysis highlights

the difference between a modern and non-modern cooking fuel. In that respect, this exercise has been a localised endorsement of the UN SDG7 aspiration for universal access to modern cooking fuels.

Another dimension to the cooking aspect of life in Dhaka's slums needs to be recorded. Unlike KPB, in most slums, cooking is undertaken on multiple stoves in a collective space. Figure 9.12 shows one such space in Korail, which I visited during my Masters study. The socialisation aspect of the shared cooking zone is highly valued by women in these slums. On that basis, any project to change the cooking technology needs to preserve these social arrangements. Along the same lines, for KPB, provision of gas cooking may best be enacted along communal arrangements to enhance women's interactions.

Figure 9.12: Communal cooking space in Korail bostee (M Jones)

9.4 Chapter Conclusion

This chapter has drawn upon perceptions of the residents of KPB about the impacts of their energy services on their most valued capabilities. What has emerged is that people place great value on the modern energy sources of electricity and gas, the latter being for cooking. Despite its demonstrable shortcomings, electricity delivers appreciated outcomes in terms of health, education, dignity, and to a lesser extent, livelihoods. The people have an acute awareness of the positive quality-of-life impact of having electricity over having no electricity. Residents have experienced a history of blackouts in the bostee, and many have migrated to Dhaka from un-serviced rural areas. The value placed on the electrical service is born of these comparisons. Nevertheless, as established in Chapter 7, the electrical service is highly compromised, largely a result of the exploitive culture in the informal electricity market of Dhaka's slums. Problems around affordability, sufficiency, reliability, safety, and intimidatory practices certainly inhibit people's freedoms and opportunities across many facets of life. As such, it is logical to assert that the attributes just mentioned (affordability, sufficiency etc) represent measures of energy justice. Deficiency in any of these attributes for a household would be an unfair and inequitable condition.

Gas for cooking delivers benefits in terms of all four capabilities examined. Conversely, firewood cooking is harmful in every respect. Based on findings in the literature, and from primary data in KPB, a full transition from firewood cooking to gas is highly desirable. Such a transition holds promise of extensive benefits for all, but particularly for women. This evolution would be consistent with the aspirations of SDG 7.

The final chapter will draw on the findings of all discussion thus far to firstly respond to the primary research question. That discussion will inform development of a new energy justice framework for informal settlements in the global South, the topic of the secondary research question.

10 Conclusion

10.1 Chapter Objective

The analytical chapters (6 to 9) have made sense of the primary data, much of which triangulates consistently with the literature and some of which adds depth to the literature findings. We are now prepared to harvest conclusions and to define the contribution of this study. This chapter firstly reflects on the effectiveness of the research process in this thesis before addressing the research questions. Evidence from previous chapters informs the closure of the primary research question concerning probable causes and effects of energy injustices in Dhaka's slums. Findings that emerge from those discussions feed into the response to the secondary research question. The latter research question constitutes a key objective of this thesis, namely that of proposing a new energy justice framework for informal settlements in the global South, which is presented in this concluding chapter. Discussion related to both research questions illuminates the reality that the complexion of energy justice in a setting of urban poverty in the global South is far removed from that generally advanced in previous research, which has been predominantly focussed on Northern conditions. The thesis closes with commentary on the implications of this research for policy and practice, some notes about study limitations and the generalisability of the research and a final recommendation for further related research.

10.2 Research Process

Current energy justice research and energy justice frameworks fall short of addressing many key characteristics of Southern cities, and do not speak to the particular challenges for slum dwellers in accessing energy services. The research process for this study has responded to that insufficiency in the current energy justice discourse.

This thesis has provided an in-depth examination of how the residents of a squatter settlement in Dhaka participate in the socio-political and technical dimensions of their energy services. Fieldwork has engaged with the people to explore how they perceive their place in Dhaka society. 'Energy services' has been an informative entry point for

those conversations. Through the literature reviews and the analysis of primary data, the research questions as presented in Section 4.1 have been systematically addressed through this thesis. It has been demonstrated that a number of socio-technical factors influence the conversion of energy resources into human well-being. In other words, under the capability approach (CA) theoretical framework of this thesis (Figure 6.4, re-presented here as Figure 10.1), a constellation of conversion factors has been identified and the relationships between those factors has been mapped. This network of influences is presented in the next section. The research has corroborated some aspects in the literature and has identified original concepts, for example 'tenure security' and 'housing quality' emerged as pre-eminent issues, which was an entirely unanticipated research finding.

Figure 10.1: Theoretical framework of this thesis (repeat of Figure 6.4)
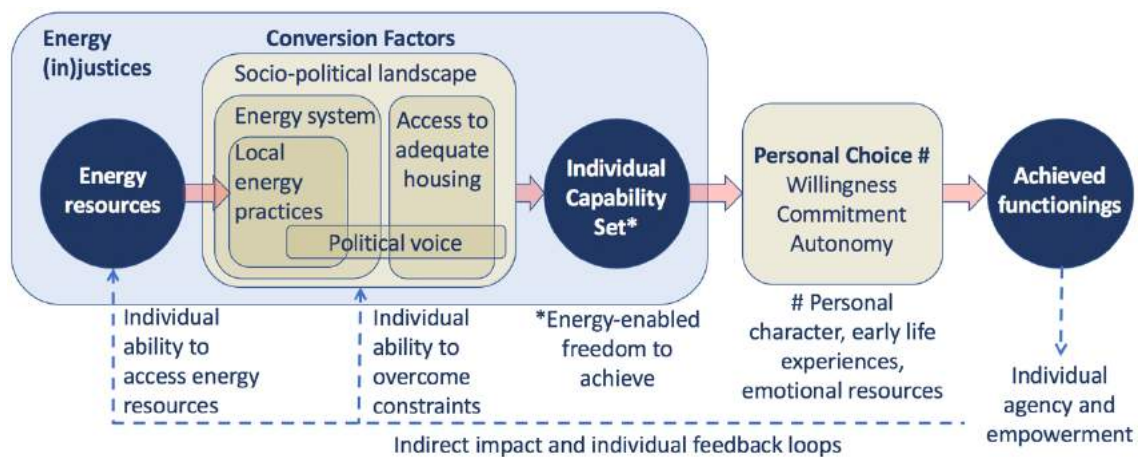
My research has adopted a critical realist ontology to explore not only the apparent realities of energy access for slum dwellers, but also the structures and mechanisms underlying those practices. The observable local energy experience in Kalyanpur Pora Bostee (KPB) has proven to be deeply affected by the illegal nature of the electricity service and the non-modern quality of most households' cooking fuel. Mechanisms that construct and maintain those unfavourable energy services are situated within the governance regime at both the national and local scales. The governance regime in turn is stressed by macro issues such as rapid urbanisation and widespread poverty.

Adoption of the critical realist ontology has been instrumental in exposing these fundamental influences on the energy system.

This study has contributed specific operational research to the energy justice debate, undertaken by interrogating the human impacts of unjust energy practices through an assessment of capability outcomes. A grass-roots process of determining the capabilities most valued by the bostee dwellers, and of revealing the details of energy practices in the bostee, has enabled an examination of the capability outcomes from local energy practices. The capability analysis has exposed several negative effects of unjust energy practices for the bostee dwellers. Research interactions with the residents of the bostee have been conducted through a combination of focus group discussions, interviews, and an extensive household survey. This bottom-up capability analysis has illuminated not only wellbeing outcomes but also socio-technical issues in the people's energy experience.

This thesis has engaged a case study methodology to obtain an in-depth understanding of social phenomena in a setting representative of many other settings. The selected case study bostee in the city of Dhaka has provided a fitting site for research into energy justice in an informal settlement, proving fruitful in exposing a complex and wide-ranging set of energy injustices experienced by slum dwellers in Dhaka. Exploration through interviews, FGDs and surveys into the use of electricity and cooking fuel in this setting has provided a rich data set, from which to inform the findings of this thesis.

The research process, guided by the critical realism ontology, the CA-based theoretical framework, and grounded theory methodology, has facilitated a detailed understanding of a complex network of issues and relationships involved in accessing energy for slum dwellers. These are presented in the following section.

10.3 Energy Injustices in Dhaka's Slums

Middle-class residents of Dhaka, accessing the legal electricity system and with gas cooking, undoubtably enjoy a more positive energy experience than do their slum dweller neighbours. Beneficial energy-related outcomes for the important capabilities

of having good health, a good education, decent livelihood, and dignity and self-respect would be the norm for these wealthier residents. Comparison with the far more negative impacts of energy practices in Dhaka's slums on people's capabilities is glaring evidence of a set of injustices enacted against the poor.

In this section, we draw from learnings across previous chapters to describe and model energy injustices in Dhaka's slums, their causes, and their effects. These are the topics of the primary research question (Section 4.1 and re-presented in Box 10.1). Figure 10.2 represents the findings, engaging the format of the CA-based theoretical framework of this thesis (Figure 10.1). As such, this diagram is a graphic representation of the response to the primary research question. The discussion following, presents the logic of this response.

Box 10.1: Primary research question

What are the causes of energy injustices in Dhaka's Slums and what are the effects on slum dwellers' capabilities?

There is value here in comparing Figure 10.2 with Figure 5.18, which presented a diagram of the literature review findings. It can be seen that the analysis of primary data has deepened our understanding of the complex factors influencing energy justice in Dhaka's slums.

Figure 10.2: The capability approach model for access to energy in Dhaka's slums (Answer to PRQ)
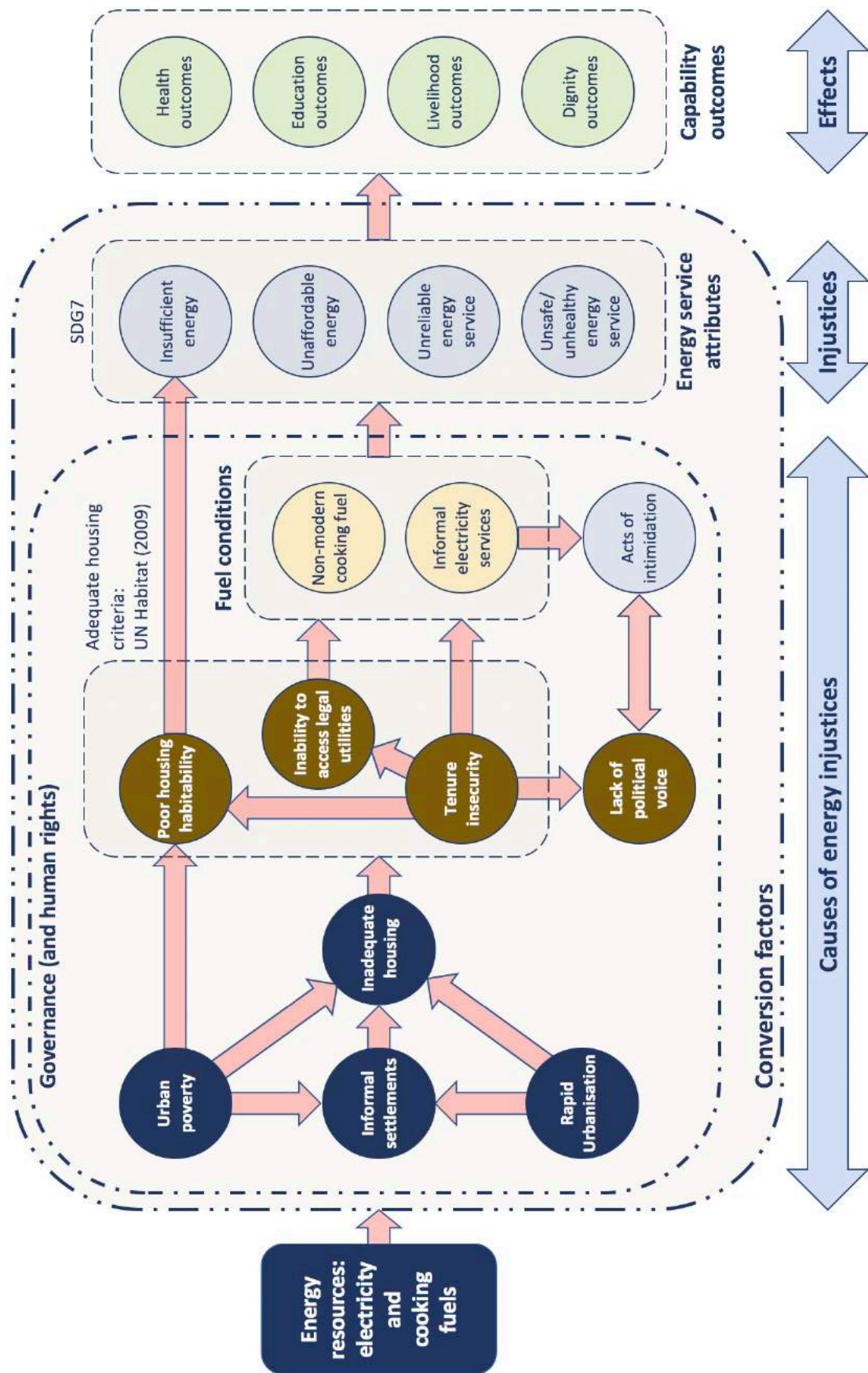
Energy resources in the form of electricity and cooking fuels (left of diagram) are converted into human capabilities (right of diagram), after being subjected to a complex and wide-ranging set of conversion factors. As has been argued earlier, deficiency in the SDG7-related energy service attributes represent actual energy injustices. That is, a household's energy service is unjust if it is either unaffordable, insufficient, unreliable, unsafe, or unhealthy. Those attributes are noted on the diagram as the energy injustices. The remaining issues in the conversion factor zone in the diagram create the opportunity for those negative energy attributes, and therefore comprise the causes of energy injustices. Overall, as has been demonstrated in this thesis, the elements included in the conversion factor zone are what determine the quality of the capability outcomes. Each of the issues included in this zone influences the energy experience of Dhaka's slum dwellers. It can be seen that causes of energy injustices are technical/material (such as housing and fuel types), socio-demographic (urbanisation, poverty), and political. This conversion factor zone, which affects the aspirational outcomes of energy use, is multi-layered and multi-dimensional. In terms of the primary research question, the diagram identifies the elements in the governance zone as the causes of energy injustices in Dhaka's slums. The outcomes for human capabilities at the right of Figure 10.2 represent the effects of energy injustices.

The foundational issue affecting an equitable opportunity to access energy for all in Bangladesh, is the condition of governance in the nation; and the associated issues of human rights (inner dotted zone on the diagram). Discussion in Chapter 5 revealed a weak state apparatus in Bangladesh, lacking in accountability, separation of powers, and fair electoral processes. What is essentially a single party state displays little willingness to prioritise the welfare of the poor, while allowing those in the ruling class to profit from exploitive practices. Achieving a just delivery of energy and other services to the poor is highly challenging while these circumstances prevail. There is little evidence of genuine willingness in Bangladesh on the part of politicians to change deep-seated practices of governance that favour the privileged while discounting the public good. It is enlightening to recall Sen's instrumental freedoms at this point. Clearly, governance in Bangladesh and its consequences, compromise slum dwellers'

ability to achieve in political, economic, or social terms, while providing no transparency guarantee to the people and offering them little or no protection.

This unfortunate state of affairs is extensively covered in the literature and has been corroborated in expert interviews in this thesis. The tone of national governance permeates down through the system to affect how informal communities are (informally) governed in terms of housing, social services, and utilities provision. Informal governance within Dhaka's slums is largely founded on accumulation of profit by powerful identities, who are mostly outside the slums. This manifests as dispossession of the poor, in the form of overpriced and poor-quality housing and services.

A number of macro issues within the governance arena (indicated in dark blue on the diagram) have a foundational influence on slum dwellers' ability to access reasonable energy services. The immense socio-demographic problems of urban poverty and rapid urbanisation are instrumental in the formation of informal settlements and placing the urban poor within circumstances of inadequate housing. As was identified in Chapter 2, these four significant issues are common concerns in Southern cities, and are particularly intense in Dhaka, as was described in Chapter 5. These assertions are drawn from many authors in the Southern urban critique. In the Bangladeshi context, Banks, (2016) and Rashid, (2009) have been informative on these issues. The original contribution of this thesis on these points is to situate inadequate housing as the important outcome of poverty and rapid urbanisation, and in turn, to identify that inadequate housing feeds into energy injustice. Inadequate housing and its sub-conditions have been shown to form strong linkages between the macro issues just mentioned and energy-related outcomes.

A set of impactful factors (shown brown on Figure 10.2), which are grouped within the UN Habitat, (2009) definition of adequate housing, are consequently unleashed upon the urban poor of Dhaka. These are the interrelated issues of tenure insecurity, poor quality housing, and inability to access formal utilities. None of these three conditions presents favourably in Dhaka's slums, and all have been shown to hinder the ability of the people to access decent energy services. Accordingly, they are significant

conversion factors under the CA-based theoretical framework of this thesis and are key contributors to energy injustice in Dhaka's slums. I have drawn on a number of literatures to inform this part of the model. While the UN Habitat, (2009) Right to Adequate Housing report frames these issues, prominent Southern authors establish tenure security, housing quality and access to utilities as serious concerns in urban slums. Again, these issues are interwoven with Sen's instrumental freedoms. Further, I have built upon the concepts presented by David Satterthwaite, (2001), who has been hugely influential in this field. A contribution of my thesis has been to map where Satterthwaite's aspects of urban poverty fit in the conversion of energy resources to human wellbeing.

One of Satterthwaite's aspects, political voicelessness, also has a place in this part of the conversion factor network. Political voicelessness is an unfortunate reality for Dhaka's slum dwellers. For the urban poor, an absence of the right to protest, or political voicelessness, serves to sustain unjust arrangements in the community, including for energy services. My thesis has interrogated this condition to establish that political voice has a central place in a just energy system. I regard this as a key finding of this thesis, although one complementary with previous energy justice scholarship, such as Sovacool's references to due process and resistance (Table 3.2) and the notion of procedural energy justice described by many authors. In relation to the four factors, shown brown on Figure 10.2, earlier discussions in this thesis have established that tenure security has some primacy in the system: tenure insecurity has a substantial negative influence on housing habitability, on the ability to access to formal utilities and on political voice.

Tenure insecurity in Dhaka has potent consequences for energy access. These are (a) the inhabitants' reliance on informal electricity markets due to the absence of formal providers, and (b) for the majority, cooking with firewood, a non-modern fuel. The latter is a function of both poverty and the inability to participate in formal markets. Figure 10.2 shows these two core conditions in yellow. These flawed fuel conditions have both been shown to have adverse health and safety impacts, and problems with unaffordability. In the case of informal electricity, additional problems arise in terms of insufficiency and unreliability. Further, informal electricity customers in Dhaka's slums

are vulnerable to acts of intimidation at the hands of the gangster providers. Several Bangladeshi authors note this last point in articles covering broader informality issues (Banks, 2016; te Lintelo et al., 2018). My research has verified these significant energy-related outcomes of tenure insecurity.

For firewood cooking, poor health and safety outcomes are manifest, especially for women. This point is extensively made in the global academic (Bridge, 2018) and NGO (Practical Action, 2019) literature but appears to have little coverage in Bangladeshi literature. My research in a slum in Dhaka has verified that cooking with a non-modern fuel represents an injustice, particularly for its unfair impact on the health of women.

The SDG7-related attributes of an energy service (light blue on the diagram), are mostly unfavourable in Dhaka's slums, impeding the conversion of energy services into human well-being. Affordability, sufficiency, reliability, and heathy and safe practices are mostly outside the experience of energy for the slum dwellers. These are the essential attributes of a fair and equitable energy service, and in the context of Dhaka's slums, each deficiency represents an energy injustice.

Capability outcomes, or the effects of energy injustices, are indicated at the right of Figure 10.2 (in green). These constitute the energy service outcomes for Dhaka's slum dwellers, a function of the conversion factors discussed above. The previous chapter presented the impacts of the energy practices on the bostee dwellers' capabilities across three energy resources: electricity, gas cooking and firewood cooking. Capability outcomes from the energy system in Dhaka's slums, in its current form, have been shown to be overwhelmingly negative. The use of the CA to deepen our understanding of energy justice was explained and justified in Section 3.7. The value of the CA in this regard is identified by Benjamin Sovacool, (2013) and explored in regard to energy poverty by Rosie Day (Day, 2018, 2017; Day et al., 2016). I build on these theoretical works through operationalising the CA in a household scale analysis of energy access. This CA-based strategy has been used in studies of many topics. Within the energy justice stream, the approach may be claimed as an original contribution.

It can be seen that the model (Figure 10.2) is reasonably complex, with many cross-influencing issues. Indeed, it is easy to accept the argument of Omorogbe, (2020,

p330) that energy injustice '*cannot be separated from other social ills'* such as poverty and oppression; certainly a complex web of interconnectedness. As with any theoretical model, the reality is certain to be more intricate than I have modelled here. Whilst acknowledging that limitation, the principles and relationships as presented broadly illustrate the system in Dhaka's slums. It is reasonable to claim that this study has identified substantial energy injustices in Dhaka's slums, their major causes, and the principal effects of those injustices. This detailed appreciation of the challenged energy system in a slum in Dhaka is one of two principal contributions of this thesis[252].

Armed with this knowledge, we are in a position to develop an organised picture of the principles to be addressed in promoting the notion of energy justice in policy and project work in Dhaka's slums. The next section presents a new framework for energy justice for this type of context, situating the issues that need to be addressed for fair and equitable energy-related outcomes. This framework is the second significant contribution to knowledge of this thesis[253].

10.4 A New Framework for Energy Justice

10.4.1 The Framework

We now draw upon the discussion thus far in this thesis, to construct a new energy justice framework, specifically for informal settlements in the global South. The previous section presented an extensive set of conversion factors influencing capability outcomes. The next deliberation redefines those concepts as principles for energy justice, and then considers where to situate these principles within an energy justice framework. The framework presented in this section draws these principles into a hierarchical model, presented as Figure 10.3. This is a graphic representation of my response to the secondary research question of this thesis (Section 4.1 and re-presented in Box 10.2). The discussion following, explains the rationale behind this framework. We commence with the top tier of the diagram and work down to tier 5.

---

[252] Defined by the primary research question.

[253] Defined by the secondary research question.

Figure 10.3: Framework for energy justice in informal settlements in the global South (Answer to SRQ)
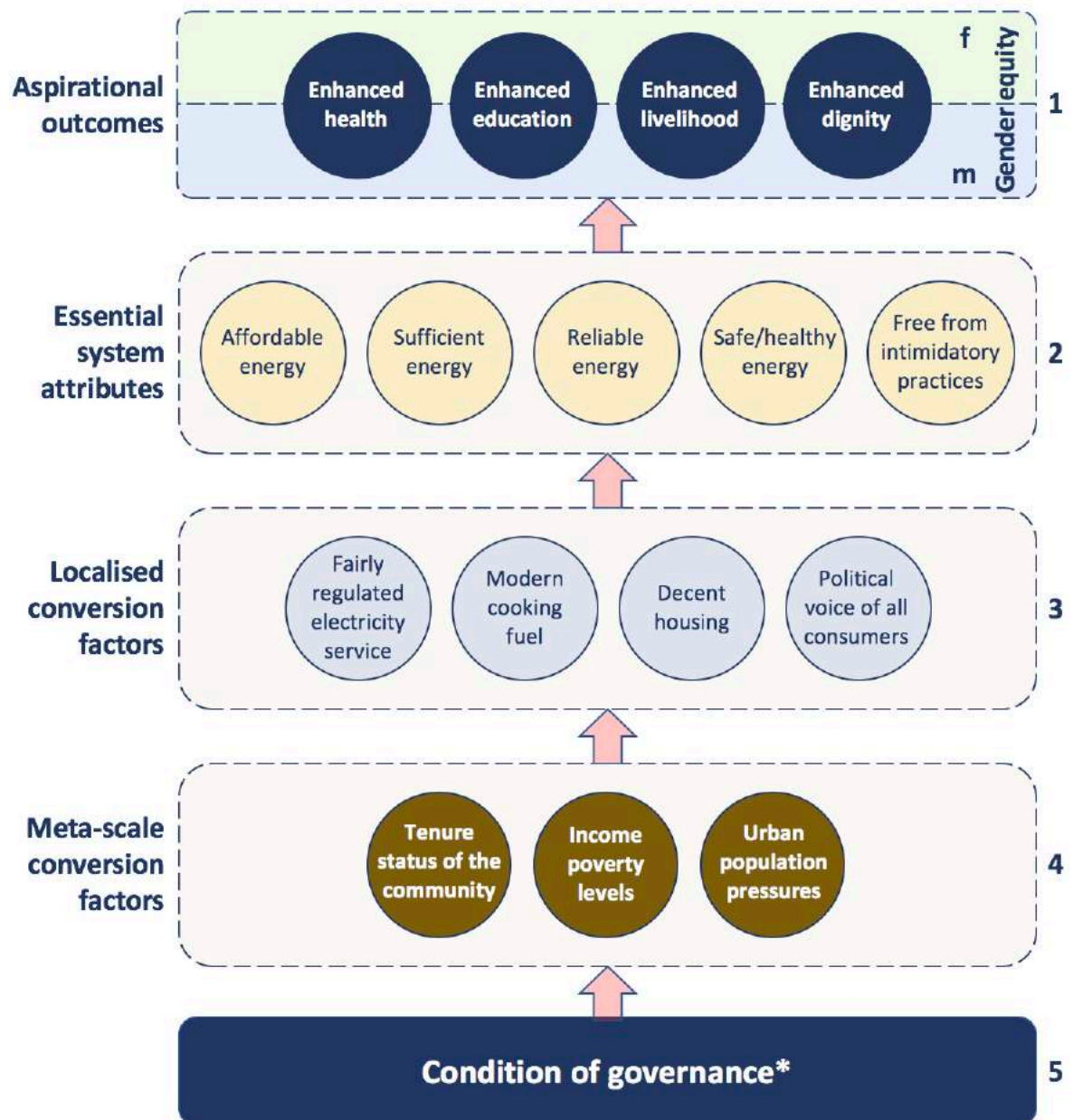
* (a) the right to protest, (b) the rule of law applied equally, (c) separation of powers, (d) free and fair elections, (e) accountability and transparency, (f) governing for the public good.

10.4.2 Tiers of the Framework

Chapter 3 advanced the argument that the important quality of energy services is not energy resource inputs but rather, the benefits that people derive from those inputs. That is, what people can achieve from energy services matters more than the quantity or type of fuel itself. These concepts are advanced in the general energy literature (Bridge, 2018, p135; Day et al., 2016, p259); but at a more fundamental level, the ideas are consistent with the insights of Amartya Sen, (1999, 1985). Sen's widely embraced notion is that human flourishing, not simple economic measures, is the important gauge in assessing development. Human flourishing may be interpreted in terms of capability outcomes. It follows that a just energy system is one that enhances human capabilities. That is, a fair and equitable energy service will be one that enhances the well-being of all consumers. In the context of this study, that should be framed in terms of the capabilities valued by Dhaka's slum dwellers: health, education, livelihood, and dignity. These aspirational outcomes are represented at the top of Figure 10.3. For a different community, consultation would be required to determine the specific valued capabilities in that community. Defining capability outcomes as the 'pinnacle' of an energy justice framework is perhaps an original contribution of this thesis. I would assert that it is non-controversial, as the notion is based firmly on the long-established development aspiration defined by Sen and embraced by many development scholars and agencies.

An important aspect of energy justice that has surfaced during this study, especially in relation to cooking, is gender equity. This is represented in the framework, encompassing the enhanced capability outcomes on tier 1 of the model. Plainly, energy justice has not been realised while benefits and burdens are unequal between the genders. For example, as has been established, the women of Dhaka's slums are a long way distant from equity in the energy experience, as their capability outcomes from cooking are substantially poorer than for males. Beyond issues of distributional energy justice, gender equity demands equitable participation between the genders in terms of recognition and procedural justice. It is clearly crucial that the aspirational outcomes of energy services are equitable between females and males. This might be criticised in some circles as a Western perspective. However, the Government of

Bangladesh's Seventh Five Year Plan (2015, p654) calls for efforts to establish *'a country where men and women will have equal opportunities and rights.'* As such, gender equity is not limited to Western countries and should have universal application, including in Bangladesh's slums. Gender equity does not have a presence in previous energy justice frameworks and appears to have little coverage in the energy justice literature. This surprising deficiency is possibly a function of the global scale of most energy justice discussion to date. My grassroots research has exposed a set of household scale issues, including unjust gender-based biases in the energy experience.

The next step is to consider the key attributes of an energy system that would liberate enhanced capabilities. This has been determined in this study as a system which provides energy that is (a) affordable, (b) sufficient, (c) reliable, (d) safe and healthy, and (e) is free from acts of intimidation. The second tier of the diagram shows these essential attributes. The first four are derived from SDG7, as described at the start of this thesis (Section 1.1). Both the literature review and the fieldwork data show that freedom from intimidation is a crucial inclusion in this set of attributes. As previously argued, these are the five imperative attributes of a just energy service. It seems reasonable to state that an energy system that performs poorly in respect of any one of these five attributes, will have a diminished possibility of supporting enhanced capabilities (tier 1), for users of the energy system. Therefore, energy justice is compromised where one or more of these attributes, for any individual[254], are deficient.

At this point, it is important to contemplate the socio-technical conditions needed to deliver energy services that satisfy the five basic attributes described above. Based on earlier analysis, four conditions present themselves in this role. These are located on the third tier of the energy justice framework. Each of the items on this tier directly influences the quality of the attributes on the tier above. We draw on previous

---

[254] This is an important point, derived from Nussbaum, (2000)

analysis in this thesis in making this determination of what may be termed localised conversion factors.

The first of these factors concerns the regulatory structure governing the supply of electricity to consumers. A substantial part of this thesis has demonstrated the unfavourable influence of the informal electricity market in Dhaka's slums across the five attributes presented above. It might then be deemed necessary to advocate for slum dwellers' access to the formal regulated electricity market of Dhaka. Providing such access is likely to be a successful strategy. If that access remains unattainable, as is likely, other paths to regulatory improvement would be needed. In essence, the principle of 'fairly regulated electricity' demands that all consumers have access to energy that is regulated for affordability, reliability and for health and safety. It is possible that informal delivery can achieve this objective. As identified in Chapter 2, informality is not a 'lost cause', as informal networks can have strong and fair rules. In the case of Dhaka's slums, the local political structures of electricity supply would need to be reformed to terminate exploitive profiteering and intimidatory practices. While the principle of 'fairly regulated electricity' does present a challenge in this setting, it is conceivable that an intervention could improve conditions markedly. For instance, it is likely that citizen-empowering arrangements such as collectives could lead to a fairer regulatory environment. The example of the intervention in the slums of Nairobi (presented in Section 2.4), offers a useful precedent in this regard. Fair regulation of energy is an important energy justice principle, but one which has not been emphasised in the energy justice literature to date[255]. My research in a 'loosely' regulated setting has highlighted this as a critical dimension of energy justice.

Provision of modern cooking fuels, essentially gas, is the second local consideration which can help to enable the five SDG-related attributes (tier 2 of the framework). Non-modern fuel is highly challenged in this regard, particularly in relation to the health impacts of smoke[256]. Certain configurations with biomass cooking fuels, such as

---

[255] An exception is Fortier et al., (2019), who present measures of a fair electricity service.

[256] But also, a range of other negative impacts as previously discussed.

improved cookstoves with chimneys, may deliver reduced indoor air pollution[257]. Such an arrangement would represent a somewhat improved level of gender equity and therefore, enhanced energy justice. However, it is likely that, in almost all cases, a transition to modern cooking fuels, most commonly gas[258], will be the most effective pathway to achieving genuine energy justice in relation to cooking.

The third local conversion factor, shown on tier 3 of the framework, is that of decent quality housing. It has been demonstrated in previous chapters that poor quality housing usually reduces slum dwellers' ability to derive benefit from energy services. Deficiency in respect to ventilation, insulation, and natural light may each severely impact on energy sufficiency and affordability, with additional implications for occupants' health. Energy justice will be far more difficult to achieve when people's energy experience is compromised by housing of a poor quality. In many slum environments, energy justice will be enhanced by simple low-cost improvements in ventilation, insulation, and natural light in dwellings. To date, the place of adequate housing in access to energy is an under-explored research area in the energy justice literature, though the idea is mentioned in some Bangladeshi research in allied areas (Bertuzzo, 2016; Jabeen and Guy, 2015). This thesis has stressed that adequate housing is a core issue in energy justice. This might be claimed as an original contribution to knowledge.

All three of the conditions discussed above, will only be obtainable and maintainable if the users of energy, the slum dwellers, are afforded a reasonable level of political voice. In many cases, that would initially involve an influential person or group advocating for the people. In developing any energy policy or energy project, it would be essential to undertake community participation during planning and further, to ensure that the people have a genuine avenue for complaint about their energy circumstances. Giving voice to all consumers is a critical factor in the delivery of fair and equitable energy services. This concept has some coverage in earlier energy

---

[257] Technologies as in programs reported by Practical Action, (2016).

[258] Ongoing advances in solar cookstoves may disrupt the place of gas cooking in global South contexts in the near future.

justice frameworks, though framed at a macro-scale and in terms of procedural justice and justice as recognition. In the context of urban poverty in informal settlements, the best definition of this essential energy justice principle is the provision of political voice for all consumers.

The possibility of successfully addressing these four principles (tier 3) is influenced by a number of what may be termed meta-scale conversion factors. Each is acute in Bangladesh. Shown as the fourth tier in Figure 10.3, these are large socio-demographic issues that affect energy justice. As has been discussed extensively in this thesis, the issue of tenure security absolutely sits at the core of energy justice deliberations for Dhaka's slums. Ascribing some form of secure tenure to a slum would deliver a demonstrable difference to energy access for slum dwellers through flow-on consequences as represented earlier in Figure 10.2. This has been achieved elsewhere, as was discussed in Section 2.4, for example in relation to Thailand (Archer, 2012). The consequences of tenure insecurity include implications for housing quality, access to regulated utilities and political voice. Under current arrangements in Dhaka, which are unlikely to change in the near future, consideration must be given as to how to deliver a fair and equitable energy service to households which are under threat of eviction or demolition. For instance, it may be possible to achieve an agreement with the landowner or energy provider for an energy service arrangement without secure tenure, as per the Kenyan example (de Bercegol and Monstadt, 2018), discussed in Section 2.4. Another option might be to ascribe some form of 'right to inhabit', allowing legal utility connections. This is clearly a difficult issue in energy decision-making processes regarding informal settlements. In any event, this thesis has advanced the original idea that tenure security is a key factor in energy justice, demanding serious attention in any assessment of energy services in slums.

Issues associated with income and asset poverty need to be addressed in considering fair and equitable delivery of energy to slums. At least two perspectives apply. The definitions of energy poverty are useful here. No household should pay more than a proportionate percentage of their budget for energy (compared to wealthier households), nor more than 10% of household income. These are measurable criteria, which can be used to establish acceptable energy costs for poor households in an

energy system. Costs in excess of those established benchmarks would represent an energy injustice. Another important point to consider concerns economic empowerment of slum dwellers facilitated by affordable energy services. The benefits of an affordable and sufficient energy service for health, education, and livelihood have been emphatically demonstrated in this thesis. In turn, health, education, and livelihood are all recognised pathways out of poverty. Income poverty and energy unaffordability are intricately linked economic variables. Energy justice is denied where energy is unaffordable.

The issue of urban population pressures represents the third meta-scale conversion factor in the framework. The extreme population pressures arising from Dhaka's rapid urbanisation constitute an underlying mechanism seriously affecting energy justice outcomes for slum dwellers. Energy policy and energy projects must afford due consideration to the dynamic issues around urbanisation, including the rapid growth in the numbers of people in informal settlements. Accommodating more and more poor residents in the energy system represents a sobering challenge, but one that must be addressed in the pursuit of a fair and equitable energy service. By implication, energy strategies will need to be readily scalable.

Underlying all of the upper four tiers of the framework, is the issue of the condition of governance in Bangladesh, shown as tier 5 on the framework. This concerns all of the factors listed across the bottom of Figure 10.3 and is discussed in some detail in Section 5.4. The unfortunate reality is that governance in Bangladesh, across all of the dimensions, has been shown to fall well short of optimal. The framework indicates that each and every one of the principles situated in the upper four tiers is obstructed by the blemished complexion of governance in Bangladesh.

The framework illustrates that formidable barriers to energy justice hamper slum dwellers' ability to achieve important freedoms. These barriers are not always visible to a casual observer. It can be seen that the tiered framework illustrates that underlying structural issues must be addressed for a complete picture of energy injustices. The need for such depth of understanding has long been recognised by renowned authors addressing social justice in the city (Harvey, 1996, 1973; Soja,

2010). This thesis has demonstrated the research value for an energy study of examining underlying influences that buttress injustices.

A difficult question next arises in relation to the energy justice framework: how can energy justice be achieved for Dhaka's slum dwellers, given the seeming unchangeability of governance (tier 5) and of the meta-scale conversion factors (tier 4)? My response would be for the energy provider to direct attention initially to the aspirational outcomes (tier 1) as the ultimate objective of any intervention, and to the essential system attributes (tier 2) as the necessary conditions of a fair energy system. To illustrate this, I offer an example project. Installation of solar home systems and gas stoves to slum households would enhance outcomes at those two levels of the framework, while the difficulties at tiers 3, 4 and 5 would continue to prevail. Energy justice would certainly be improved by a superficial intervention of that nature. Such moves, however, will merely deliver small-scale and short-term energy justice benefits. For example, all of that work would be extinguished by a slum eviction or slum fire event, a heartbreaking reality. In order to deliver enduring energy justice, the underlying structures and mechanisms of tiers 3, 4 and 5 need serious consideration in any energy policy or project. While modest interventions addressing the upper tiers are worthwhile, systemic improvements to the mid and lower tiers of the framework over time would deliver lasting benefits for slum dwellers. These benefits would extend beyond the quality of the energy system to fundamental societal aspirations such as poverty alleviation and broad social justice.

I conclude this direct discussion on the new framework by stating that it should be viewed not as a 'solution pattern'; rather, as a layered representation of principles that must be addressed to optimise the chances of delivering fair and equitable energy service to slum dwellers. An insight by Maxwell and Chmiel, (2014) is grounding at this point. In their analysis, they convincingly state that '*every theory is partial and incomplete, a simplification of the complexity of that phenomenon*' (ibid, pp21-22). Accordingly, it is acknowledged that the energy justice framework developed here is an effort at representing an intricate and multi-dimensional network of issues and relationships in a complex socio-technical system. The model could perhaps be regarded as an attempt at defining the tangled web of human interconnectivity; a web

that constructs the ways in which energy is accessed in the households of Dhaka's slums.

10.4.3 The Framework and Critical Realism

At this point, it is worth reflecting on the proposed framework for energy justice (Figure 10.3) in relation to the critical realism ontology of this study. Recalling discussion from Section 4.3, critical realism embraces complexity by acknowledging three layers of reality, they being:

1. Empirical: that which can be observed
2. Actual: that which exists whether observed or not
3. Real: that which can produce events, these mechanisms not being directly visible

In Figure 10.3, it can be seen that the upper levels (tiers 1 and 2) of the framework represent the observable circumstances of energy access in the slums. The mid-level (tier 3) represents the actual socio-technical conditions that exist, whether observed or not. Hidden politico-economic mechanisms that create the challenging energy-related circumstances of slums are represented in the lower levels of the framework (tiers 4 and 5). The critical realism approach has helped to deliver a model which represents a complex and layered network influencing equitable energy access, and therefore, in this study, it has facilitated a deep appreciation of energy justice in this setting. This perhaps strengthens the claim of this thesis to a reasonably robust contribution to knowledge.

10.4.4 Relationship to Theories of Justice

There is value here in revisiting the notions presented in Chapter 3 around theories of justice, including CA perspectives on justice. It was demonstrated that the work of several eminent theorists, notably Rawls, Fraser, Young and Honneth led to the widely embraced notion of the three tenets of justice. These are distributive justice, procedural justice and justice as recognition. There is some commentary in the literature that the CA concerns principally distributive justice (Robeyns, 2017, p149). For example, Nussbaum and Anderson advocate redistribution to help elevate the

capability set of deprived individuals to a threshold level. Certainly, the energy justice framework developed in this thesis provides for that form of redistribution, for instance, allocating resources for improvements in fuels and housing to improve capability outcomes. However, the framework also acknowledges the procedural and recognition tenets, for example, by the inclusion of political voice (recognition) and the broad area of governance (procedural justice).

Discussions in Chapter 3 also covered the relationship between the CA and theories of justice. That discussion identified that (Nussbaum, 2003, 2006) has a substantial offering through developing a partial theory of justice based on the CA. Her theory has an inherent objective to provide a sufficient level in ten capabilities for each and every individual. Anderson, (1999, 2010) supports this notion by promoting democratic equality through delivering threshold levels of capability for all. Sen takes a different direction calling for specific interventions to overcome identifiable injustices, delivering a comparative improvement in each case, rather than aspiring to an unachievable utopia.

I would submit that this thesis aligns more with Sen's philosophy. My findings frame a specific community (a Dhaka slum) in a specific sector (energy). My offering is a set of principles or guidelines for an intervention in this type of circumstance. These principles are built on practical socio-technical requirements, such as decent housing, inclusive governance, and modern cooking fuel, rather than transcendental concepts of social justice. Further, the principles in the framework reflect Sen's (1999, p10) instrumental freedoms of political freedoms, economic facilities, social opportunities, transparency guarantees, and protective security. My principles of energy justice do not necessarily align with the offerings of central capabilities Nussbaum's list, which more readily forms the basis for a theory of justice (or a partial theory of justice). Sen's freedoms relate more seamlessly to my findings.

10.5 Contribution of the Study

Prior to defining the contribution to knowledge of this study, there is value in reflecting on the issue of cross-cultural knowledge production. As noted in Chapter 1

and discussed in Chapter 3, my position is that of a Northern researcher examining a Southern condition. As advocated by Crocker, (1991), I have sought to leverage my outsider status to highlight a problematic social phenomenon. Knowledge production by Northern based scholars in recent decades has added value to our understanding of Southern conditions, particularly when founded on respectful dialogue with vulnerable groups. This pattern of knowledge production aspires to empower the marginalised by illuminating the particular challenges for the urban poor in the global South. I have sought to build on such previous scholarship (eg Frediani, 2010; Satterthwaite, 2001) in engaging closely and respectfully with the residents of my case study bostee, to produce knowledge with potential to benefit the marginalised.

This thesis has focussed principally on delivering a meaningful contribution to the energy justice discourse. I have also substantially engaged with the Southern urban critique and with the capability approach (CA). The precise contribution to the energy justice stream has been referenced through the previous two sections. In this section, I firstly offer a summary of those points and identify the previous energy justice scholarship with which this thesis converses. Following that discussion, I seek to define where my research is situated in relation to the dynamic Southern urban critique and within the highly populated CA discourse.

The new energy justice framework (Figure 10.3) is a useful basis for summarising the contribution of this thesis to the academic stream of energy justice. Promoting positive capability outcomes as the definitive objective of an energy system builds on previous research (Day et al., 2016). However, this thesis formalises that aspiration by situating capability outcomes at the head of a hierarchical energy justice framework. Nominating gender equity across the capabilities as an important concept is not evident in most previous work in this stream. The facilitation of those capability outcomes by virtue of the SDG7 derived qualities (as the essential attributes of an energy service) is possibly an original linkage, and one which emerged from analysis of the fieldwork data, particularly the capability analysis. In terms of the conversion factors which influence the condition of those attributes, most inclusions in the framework proposed here do not appear in previous frameworks. Original inclusions are tenure security, housing quality, regulated electricity and modern cooking fuel, all

critical energy justice issues, and all rarely mentioned in previous work. Accordingly, these conversion factors might fairly be claimed as new concepts in the energy justice stream. In actuality, the conversion factors are mostly concepts drawn from Southern theory and from urban poverty scholarship. My thesis has demonstrated that these factors have potent energy justice implications in the context of Dhaka's slums. Engagement with existing theory in the Southern urban critique for this global South study may be regarded as an obvious association, but that linkage has not been explicit in earlier energy justice scholarship. That engagement has been informative, indeed crucial in addressing my research questions.

Of the seven conversion factors included in the framework, my inclusion of tenure security is certainly a noteworthy contribution of this thesis to knowledge. I have presented evidence that tenure security has a core position in affecting just energy outcomes. This is not explicit in previous energy justice literature. In a similar vein, exposing the role of decent housing in enabling energy justice is also an important contribution of this thesis.

We move on now to nominate where this thesis sits in relation to prominent scholars in the field. The towering presence of Benjamin Sovacool in the energy justice conversation ensures that any study in this area engages with his work. Frameworks offered by Sovacool and by others including Raphael Heffron and Darren McCauley, bear little resemblance to that advanced in this thesis. My contention is that my offering does not contradict the works of those eminent scholars but rather that my conclusions are complementary. Global issues and most Northern issues are comprehensively and effectively serviced by those authors. My offering addresses local-scale energy justice in the global South, a domain largely untouched in the work of Sovacool, Heffron and McCauley. All three of these authors plus Kirsten Jenkins have produced insightful reflective works on energy justice in recent years. These have not only helped to clarify important concepts in the debate but have also clarified where new contributions might best focus. For instance, Jenkins et al., (2020, p5), writing on impactful energy justice research, call for *effective and adaptable conceptual frameworks that foster transformative thinking'*. This thesis has been an attempt at responding to such challenges by these scholars.

Next, we address the place of my study in the Southern urban critique. I make no claim of a substantial contribution to this long-established body of work. The concepts regarding the particularities of Southern urbanity developed by Susan Parnell, Jennifer Robinson and Vanesa Watson have formed the backbone of my thesis. The work of David Satterthwaite has provided additional reinforcement. It is probably reasonable to claim that the originality of this thesis lies in bringing the concepts of these Southern scholars to bear in a previously separate field, energy justice. I would assert that this has been an illuminating engagement. In relation to Satterthwaite, this thesis has presented evidence that his 'aspects of urban poverty' have a central place in energy justice. The same pattern of influence applies for key concepts of Parnell, Robinson, and Watson. In this way, I would claim that my thesis builds upon the work of these scholars.

We transfer our attention now to the place of this thesis in the CA literature. This stream has benefitted from some decades of work by many scholars working across many topics in many locations. Additionally, a number of eminent authors have analysed the foundational works of Sen and Nussbaum and clarified important concepts which define the CA. In this regard, for my thesis, the 2017 publication by Ingrid Robeyns has been the main basis for my engagement with the CA. She not only frames key CA ideas, but also defines a set of essential elements for a capability analysis, which has provided a useful charter for my CA related research.

In terms of my alignment with previous operationalisation of the CA, the researchers mentioned in Section 3.8 have provided the foundation for the design of my thesis. Those studies established a pattern for use of the CA in the field, which I have sought to emulate. The CA has long had a pervasive presence in the field of development in the global South. My work has been informed particularly by that of Alexandre Apsan Frediani (2019, 2015, 2010), who has also applied the CA to an urban informality context. While Frediani's research has focussed on housing aspirations in informal settlements, this study explores energy-related aspirational outcomes in these communities. Alignment in our findings is evident. For example, Sen's five instrumental freedoms emerge as premier issues that are problematic for slum dwellers in this study, while various housing related freedoms (or unfreedoms) are

advanced as important to human wellbeing in Frediani's work, which is reflected in my findings. These notably include the issues of political voice, tenure security, and access to urban services.

In essence, this thesis is a study in energy justice, informed by Southern theory and built on a CA-based theoretical framework. In other words, the principal contribution to knowledge is in energy justice through a persuasive engagement with the Southern urban critique and with the CA. It seems reasonable to state that this study, like many before, demonstrates the value of engaging the CA in development research. As argued by the leading CA philosopher, Ingrid Robeyns, (2017, p47), *'[t]he advantage of having a clear picture of the resources needed, and the particular conversion factors needed, is that it also gives those aiming to expand capability sets information on where interventions can be made'* (also Frediani, 2015, p66). My study has exploited this inherent advantage of the CA identified by Robeyns. In these terms, this study is speaking to '*those aiming to expand capability sets'* who may gain some understanding of key pressure points in the system. What can the findings of this thesis contribute to governments, NGOs and others seeking to implement energy policy and projects to benefit slum dwellers? That is the topic of the next section.

10.6 Implications for Policy and Practice

In Section 3.6, the critique of previous energy justice frameworks noted the difficulty in operationalising each of the principles presented (Heffron and McCauley, 2017; Islar et al., 2017). I would argue that the framework presented in this study (for this context) is more manageable, in effect providing a practical cause and effect flow chart. This pattern should enable the policymaker or practitioner to address energy justice across the scales presented.

Energy justice in the terms described in this chapter is a useful concept for policymakers concerned with delivering universal access to decent energy services. As McHarg, (2020, p15) observes, energy justice is *'recommended as a guiding principle for energy decision-makers at all levels'*. Further, she asserts that legislators are the

dominant agents of energy justice. Thereby, there is value in highlighting the implications of my research for policy and practice.

The Government of Bangladesh Seventh Five Year Plan[259] (2015, p23) lists twelve *'broad development goals',* which include *'ensuring adequate supply of energy and fuel'.* It would be hard to argue that slum dwellers should be excluded from that worthwhile objective. What can then be done to deliver on this core policy, clearly an important social justice issue, for all citizens of Dhaka? A central objective of social justice research is to illuminate a path to a better society (Belfrage and Hauf, 2017). In that respect, Thomas Piketty, (2014, p574) questions *'[w]hat public policies and institutions bring us closer to an ideal society?'*. This section presents some observations about potential improvements in policy and practices for energy access in slums, based on the findings of this thesis.

The above-mentioned governmental Five Year Plan contains ambitious statements in relation to poverty alleviation, and yet the section on energy policy has no reference to the urban poor and the poverty alleviation section does not mention energy. The linkage between affordable energy and the ability to escape poverty is well-established in the literature and in this thesis. Slum dwellers are invisible in Bangladesh's energy policy. That needs to change as a part of the stated pursuit of poverty alleviation and reduction of inequality.

As validated in this thesis, energy justice in Dhaka's slums goes well beyond the provision of adequate energy resources. Superficial assessment of the quantum of electricity and cooking fuel misses the reality of entrenched socio-cultural oppression through the energy system. A program or policy to increase volumetrics of existing energy forms will not, in itself, lead to improved quality-of-life, surely the ultimate aim energy policy and programs. Rather, a deep socio-technical ecosystem needs to be appreciated and addressed for the successful design of policy and implementation of projects. Calls in this regard have been evident in the literature for some time, for instance from Sovacool, (2012, p280): *'policymakers should shift their effort away from*

---

[259] The current public policy master plan.

the technical to focus at least partially on addressing barriers at social, political, and cultural domains'. That prescient statement applies today in Dhaka's slums. The design of policy and projects needs to encompass recognition of the marginalised through participatory planning practices and through transparent and inclusive procedures. As has been emphatically demonstrated, this involves addressing some key social issues such as tenure security and adequate housing.

As reported by the World Bank, (2014, p27)[260], allocation of secure tenure to slum communities is a strategy available to governments. That report identifies 78 projects in South East Asia, where communities were either gifted land by government or where there was a lease or sale agreement. The common genesis of these projects was the establishment of collectives empowering slum dwellers to take action for secure tenure and then for incremental improvements, including access to urban services. International precedents such as these can provide learning platforms for the Bangladeshi government.

This thesis advocates a focus on outcomes for human wellbeing as the vital objective of policy and practice. My engagement of the CA reinforces extensive previous scholarship demonstrating the value of a CA focus in enhancing the social and individual benefits of development projects (Alkire and Deneulin, 2009; Frediani et al., 2014). This literature builds on Sen's early call to refocus on the freedoms that people achieve through development processes, prioritising those freedoms that people most value. What constitutes perceptions of wellbeing will differ between contexts and for this reason, community participation is unquestionably required in development of policy and projects. The importance of participatory processes in slum improvement is well established in both the global literature (Frediani et al., 2019; Lombard, 2013) and the Bangladeshi literature (Swapan, 2016). Further, recent energy justice literature, observes a repeated failure of top-down approaches to policy and projects (Tucho, 2020, p143). Determining what matters to residents is an essential first step in designing policy and projects.

---

[260] In relation to an 'Asian Coalition for Community Action' program.

The findings of this study indicate that for places of urban poverty in the global South, certain energy system attributes are essential to provide opportunity for good health, education, and other capabilities. These attributes are affordability, sufficiency, reliability, health and safety, and a system free from acts of intimidation. Policy and projects need to be assessed in terms of their likelihood to deliver on all of these attributes, for all consumers. A practical recommendation arising from this study that will buttress those attributes, is for governments and NGOs to focus on efforts to deliver modern cooking fuel (most likely bottled gas) and fairly regulated electricity connections to all slum households[261]. These two moves clearly present substantial structural and financial challenges, but they would be life-changing for slum dwellers across Dhaka.

The new energy justice framework presents conversion factors that need to be addressed in order to have the best chance to realise the desirable attributes mentioned above. To date, many of these dimensions have had little consideration as relevant to energy policy. For instance, questions of tenure security and housing quality have been determined in this thesis as foundational considerations in energy justice, and yet neither issue appears to have significant coverage in energy policy or energy practice circles. This thesis has firmly demonstrated that tenure security and housing quality must be addressed in order to enable the delivery of fair and equitable energy services. The same argument can be mounted for each of the conversion factors presented in the new energy justice framework.

The conversion factors identified in the framework will often represent prodigious challenges for authorities in developing energy policy and projects. Even more challenging is the underlying 'elephant in the room' of governance in Bangladesh. Development of fair and equitable energy services for Dhaka's slum dwellers is likely to remain problematic until national leaders adjust the focus of governance from accumulation by the elite to elevating the disadvantaged. To quote from Transparency

---

[261] Adusei et al., (2018, p2519) researching electrical connections in Ghana's urban slums, advocate for slum upgrading projects to prioritise legal prepaid meters for each slum household.

International[262], it will be necessary '*to hold the powerful to account for the common good*' in order to achieve just outcomes for all. The literature on democracy and governance in Bangladesh is not optimistic in its assessment of the capacity or willingness of the government to make such a transformation. However, that endeavour is essential for many long-term social justice aspirations including for energy justice.

We return, at long last, to the two intriguing example projects from Bangkok and Nairobi presented in Section 2.4. In brief, the Bangkok project involved ascribing community title to slums. In the Nairobi project, slum households in Kibera without secure tenure were connected to the formal city electricity grid. Outcomes from both projects are nuanced, but learnings offer value to Bangladeshi policymakers and project designers.

The Bangkok project, named 'Baan Mankong' (secure housing), involved '*communities negotiating long-term leases or buying land collectively*' (Archer, 2012, p178). Dwellings can only be sold within the community, minimising speculatory practices. Many benefits have been generated by the formal community tenure allocation, including access to legal urban utilities. The principal challenge in the project has been the difficulty for slum dwellers in affording the lease or debt payment. In the Dhaka context, the affordability of an upgrade for slum dwellers has been demonstrated in a theoretical exercise for Korail by Alam and Matsuyuki (2017), though with six storey housing replacing existing shacks. Other slum upgrade models for Dhaka using the community title model have been proposed by Nahiduzzaman (2012), and Shafi and Payne (2007), as were presented in Section 5.6. All models are recommended for consideration by Bangladeshi authorities.

The Nairobi project may be regarded as an even more challenging proposition in Dhaka, but it certainly merits consideration. This thesis has uncovered many barriers to legal electricity connections in Dhaka's slums, possibly the most formidable of which is the gangster culture in informal service delivery. The Kenyan electricity

---

[262] https://www.transparency.org/en/about - accessed 22 June 2020

authority recognised a similar structure in Kibera and adroitly sought to engage informal providers in a seller role within the new legal structure. Writing about this project, de Bercegol and Monstadt (2018, p256), conclude that any upgrade project must grasp the details of the political economy of the community, which the Kenyan project managers attempted with sound intent. In the event, there was considerable resistance to the change from informal providers, yet de Bercegol and Monstadt, (2018) report partial and enduring success. Admittedly, in Dhaka the barrier is strengthened by the involvement of public officials in the corrupt informal system. Nevertheless, a concerted effort aligned with the Kenyan model would most likely start to dismantle some significant obstacles to legal electricity connections. A monitored pilot project along these lines would be highly informative.

In Bangladesh, the place of NGOs in the energy space is noteworthy. NGO's absence in this role in Dhaka's slums was discussed in Section 5.2.3. Bangladesh has the largest SHS program in the world, dominated by Grameen Shakti (GS), a subsidiary of the Grameen Bank. The program is entirely rural based, delivering solar home systems to villages not serviced by the grid. The UK-based NGO, Practical Action (PA) has had a facilitating role in much of this rollout. Both GS and PA also deliver improved cookstoves to rural households. These programs are on a micro-finance model. Despite their urban absence, it is informative to review the delivery model of both GS and PA in relation to the findings of this thesis. The philosophy of PA is set out in their acclaimed Poor People's Energy Outlook publication (Practical Action, 2019). PA state that a successful energy program will address a number of factors, including appropriate technology, funding and resource issues, and gender equity. Additionally, delivery should always be based on a participatory approach. These factors all have a presence in the energy justice framework (Figure 10.3). For GS, a number of authors have reviewed the delivery model (Asif and Barua, 2011; Hackett, 2016; Sovacool and Drupady, 2011). In essence, GS also has a focus on community participation, extending the concept to include local training and employment. Both organisations reference the SDG7 related advantages of their programs: affordability, reliability, and safety. Neither organisation seems to reference issues concerning the national or local socio-political context. Hackett, (2016) identifies this gap in GS operations. A possible

recommendation for NGOs arising from the findings of this thesis concerns the importance of the socio-political context in energy deliberations. That may be a valuable addition to the project deliberations of both GS and PA.

As noted earlier, NGOs have almost no presence in energy services for the urban poor in Bangladesh, possibly due to the local political challenges in urban slums and possibly due to the risk factors in electrical works. Further, I am advised that that NGOs prioritise rural communities which otherwise would have no electricity. It might be reasonable to hope that the energy justice framework developed in this thesis could be accepted by NGOs as a reference tool for successful urban interventions. A pilot project which gives consideration to the principles included on the framework would be highly informative. If implemented in consultation with both government officials and bostee residents, the chances of success may be reasonable.

Lastly, it is worth mentioning a simple low-cost option for fast improvement in energy justice for Dhaka's slum dwellers. Any program to improve slum housing in terms of ventilation, insulation, and natural light would deliver high value improvements in slum dwellers' energy experience (and health) and would probably represent the best achievable value-for-money outcome of any possible intervention and have far-reaching side benefits.

Unsurprisingly, many of the implications for policy and practice arising from the findings of my research present formidable challenges for authorities. Regardless, the deep inequities in the existing energy system demand informed action by political leaders. The new framework offers some practical guidance.

10.7 Limitations of this Research

Despite the rigorous approach to the design and implementation of my research, the study has had certain limitations which need to be voiced.

There is value now in returning to the insider/outsider concepts which were presented in Chapter 3. Crocker, (1991) developed important notions to help address concerns about Northern scholars undertaking research in the South, an accurate description of

my circumstances. My study has been of a 'fly in, fly out' nature in that my visits to Dhaka have been relatively brief. My research is that of an outsider, with a short exposure to the lived realities for the subject peoples. I claim to have made a strong attempt, within my time and cost limitations, to engage with the bostee dwellers. I feel that I have experienced a strong engagement and an openness from the people. Indeed, bostee residents seemed to appreciate an outsider taking an interest in their travails and deprivations. Nevertheless, in these interactions I would have been excluded from portions of insider knowledge. Crocker, (1991) describes this exclusion as the principal disadvantage of the outsider. On the other hand, I would make a claim to have built on the advantages of outsiderness, as described by Crocker, (1991), wherein I have been able to reflect an 'alien' culture back to the insiders and to the wider Dhaka community. In some way, I hope that this work will help the vulnerable to gain a voice by providing a new and independent perspective on a problematic situation. On reflection, I have made my best effort to immerse myself in the different life of others, the bostee dwellers, making an attempt to be accepted as a relatively equal dialogue partner (to use Crocker's terminology). However, I accept the limitations of my short-term engagement.

There would be benefit in Bangladeshi researchers deepening the findings of this area of research as they may have greater ability to be accepted as insiders in the bostee[263]. A related limitation of my research has been my inability to speak Bangla. A native-speaking researcher would most likely gain knowledge which is inaccessible to an English speaker. My inability to read Bangla has excluded me from some scholarship and from most public policy websites and publications, another avenue for research, and to which a local researcher would have greater access.

Any scholar would hold a deep admiration for Western researchers who have lived for a number of years in slums, learnt the local language and customs, and consequently produced deeply informed works[264]. These researchers have clearly achieved a far

---

[263] This is not a given, as the bostee dwellers may be less accepting of the motivations of a local from a different class.

[264] For instance, Caroline Moser's work in Ecuador and Eliza Bertuzzo's research in Korail, Dhaka.

deeper insider status through sharing in the life, hopes and memories of their fellow slum dwellers. My research draws on just a shadow of the understanding that such embedded scholars have attained.

My attempts to engage with government officials failed in almost every case, emphatically demonstrating my outsider status in that grouping. Approaches to government officials, in almost all cases, have never been acknowledged. It would have been useful to have gained greater access to the governmental viewpoints. The implication for my thesis is that my assertions may be one-sided in their complexion, particularly in relation to issues of governance. I have largely relied on the literature, which is overwhelmingly critical of governance in Bangladesh. Support for the government is difficult to find in any written sources beyond the local popular press. In these terms, a 'right of reply' would have been illuminating. In the end, I have spoken for a vulnerable group and have hopefully voiced a 'truth' that draws attention of the ruling class.

Conducting the study in just one slum is a notable limitation of this research. Additional case study sites would reinforce or challenge the findings obtained in one slum, deepening the contribution. This thesis may be regarded as an entry point to the topic, and a call for further research in other settings of urban poverty.

My study has not investigated the intra-household differences in energy experience to a deep level. For example, my valued capabilities list largely homogenises the genders. My objective has been a household scale analysis which might be regarded as superficial in terms of a gender study. While gender differences have been exposed in my data, I have not interrogated this dimension extensively.

My research plan had me returning to Dhaka in mid-2020 to disseminate my findings in an academic workshop co-organised with Professor Nazem. I expect that I would have received a strong critique of my work in that workshop, leading to a strengthening of my thesis. That plan was abandoned in the post-Covid world. Considerable email exchange with Bangladeshi academics through 2020 compensated to a degree.

In the end, this thesis needs to be assessed with an understanding of these limitations.

10.8 Generalisability

This thesis has aspired to a new framework for energy justice in slums, which can be adapted for engagement across the global South. This section reviews the achievability of that aspiration.

Informed by a strategy drawn primarily from Flyvbjerg, (2011), I have attempted to carefully select a '*paradigmatic case*' for this research. That is, the case study was selected on the basis of it meeting a number of criteria that positioned it as a representative of the '*domain that the case concerns*' (ibid, p307), to the best degree possible. A consistency between my primary data and various Bangladeshi sources in respect to energy-related socio-political dynamics in Dhaka's slums, suggests that substantial generalisation of the findings is possible across Dhaka, and probably across (urban) Bangladesh. The question remains as to whether the energy justice framework developed in this study has value for settings outside Bangladesh.

At this point, I defer to comments by de Satgé and Watson, (2018, p25), who state that '*a concept of this kind can only take the form of a proposition and cannot be put forward as a universal model, or generalised across territories without investigation'.* A core proposition of the Southern urban critique is that conditions in each setting are different and therefore universalism rarely has validity. This critique originally was directed to transference of Northern theory to the South. de Satgé and Watson, (2018) extend the notion to South-South transference. They go on to call for theoretical concepts '*to be thoroughly tested, critiqued and refined through in-depth research in many different contexts*' (ibid, p25). Accepting that as a research truism, the following discussion reviews the proposed energy justice framework for possible application in other informal settlements of the global South outside Bangladesh. My contention is that the framework can be cautiously applied in other contexts, subject to localised tuning. The following discussion references Figure 10.3.

Tier 1 of the framework presents a set of aspirational capabilities, the selection of which in this study has been developed through community consultation. The notion

that energy services must promote human flourishing prevails in any setting. Therefore, this tier of the framework is required in all cases. Clearly, it is essential that the community is consulted through participatory processes about inclusions in the list of valued capabilities. This would be essential for any application. The second tier of the framework is drawn from SDG7. Accordingly, it is reasonable to claim that the attributes are to be addressed in any energy justice deliberation in any community. It appears likely that this tier would remain intact across different global South environments, as an energy service must be affordable, sufficient, reliable, safe, and healthy in order for it to be a fair and equitable service. Freedom from intimidation is a crucial justice attribute in any context. Tier 3 of the framework includes four local conversion factors to be addressed for energy justice to be achieved in Dhaka's slums. The issues presented on this tier concern provision of decent energy services and decent housing and further, affording the people reasonable political voice. It is reasonable to argue that these features would be essential in any context. It is difficult to conceive of a situation where the four issues would not be essential for energy justice to prevail. The meta-issues situated on the fourth tier of the framework are large, general issues mainly derived from the broad Southern urban critique. Consequently, these are likely to require consideration in any informal settlement situation of the global South. Thus, my contention is that all conversion factors presented in the framework are likely to have relevance for most informal settlements across the global South. For the base tier, the fundamental issue of governance is almost certain to be significant across the global South. This is a large and complex domain, and as identified by Parnell, (2015) and others, is particularly challenging in the global South. In terms of generalisability, governance concerns will most likely have universal application. However, the specific issues of concern will almost certainly differ between different contexts.

While I argue that some generalisability of the framework is likely, my contentions need to be tempered by the compelling observation of de Satgé and Watson, (2018) presented above. Further research on energy justice in the global South would test the generalisability of the findings of this thesis and of the framework.

10.9 Perspectives for Further Research

On the basis of the discussion in the previous section, further research that explores the issues raised in this thesis in informal settlement settings, especially in other countries, would have great value. Apart from contributing new knowledge, such allied research may test and revise the theory developed in this thesis. Application of the framework elsewhere would help to assess its academic and practical value. I would claim that the grass-roots nature of this study has delivered a worthwhile contribution to the energy justice conversation. Other studies at this scale in different demographics and different geographies would enrich this important academic stream. Engagement with the CA in this thesis has delivered a deep understanding of the lived experience of accessing energy in the case study slum. The benefits and burdens of the energy system were clarified through the detailed capability analysis conducted in the bostee. Further energy justice studies which engage the CA would have potential to further illuminate previously underexplored energy justice issues.

There is a clear need for an energy justice study in a nation of the global South that originates from the governmental or large NGO perspective. Informing this academic stream about the top-down challenges of achieving energy justice, would have substantial value. It is undoubtably true that there are a great many well-intentioned people in government who care about poverty alleviation but are frustrated by the culture and system of government. It would be helpful to unpack the governance blockages and barriers to social justice. Such a study would be best conducted by a local scholar and optimally by a researcher with access to senior government officials and to government documents.

An exercise of particular value would be the testing of a technological transition for energy in a slum. For example, what would solar energy (home systems or a micro grid) deliver in terms of energy justice in a slum? The menace of evictions is a handicap to solar installations, as is the potential problem of theft. Nevertheless, this topic has a fascinating potential. In a similar vein, research into the impact of housing improvements on the energy experience would certainly be valuable as this is likely a high-value development vein to be mined.

As noted in the last section, my study has not interrogated the gender dimension in detail, though I have noted its crucial place in this debate. A recent paper by Moniruzzaman and Day, (2020) examines gendered energy poverty in rural Bangladesh. An allied study for the urban poor in Bangladesh would be a beneficial addition to the scant knowledge in this area, especially in relation to cooking. The CA-based work of Fernández-Baldor et al., (2014) also provides a sound base for future gender-focussed work in the global South. Ongoing studies will need to interrogate entrenched socio-cultural barriers to gender equity and how that affects differing engagement with energy services. On the topic of cooking, studies in slums appear to be lacking, surprising given the severe and widespread impacts of solid fuel cooking. This is an area demanding of considerable further research.

Prominent authors in the energy justice academic community have made several calls for detailed ongoing scholarship in the global South. Further exploration of energy justice across this largely neglected domain will contribute to finding solutions to the immense global challenge of providing '*universal access to affordable, reliable and modern energy services*' (SDG7). 'Universal' indubitably includes our one billion fellow human beings living in slums, most of whom live a life of deprivation, including exclusion from decent energy services. The notion of energy justice illuminates an essential and urgent emancipatory path forward.

11 Reference List

Adusei, P.K., Oduro-Ofori, E., Amponsah, O., Agyeman, K.O., 2018. Participatory incremental slum upgrading towards sustainability: an assessment of slum dwellers' willingness and ability to pay for utility services. Environ. Dev. Sustain. Dordr. 20, 2501–2520. http://dx.doi.org.libproxy.ucl.ac.uk/10.1007/s10668-017-0002-1

Agyeman, J., Evans, B., 2004. "Just Sustainability": the emerging discourse of environmental justice in Britain. Geogr. J. 170, 155–164.

Agyeman, J., Schlosberg, D., Craven, L., Matthews, C., 2016. Trends and Directions in Environmental Justice: From Inequity to Everyday Life, Community, and Just Sustainabilities. Annu. Rev. Environ. Resour. 41, 321–340. https://doi.org/10.1146/annurev-environ-110615-090052

Ahmad, S., 2015. Housing demand and housing policy in urban Bangladesh. Urban Stud. 52, 738–755. https://doi.org/10.1177/0042098014528547

Ahmed, I., 2014. Factors in building resilience in urban slums of Dhaka, Bangladesh. Procedia Econ. Finance 18, 745–753. https://doi.org/10.1016/S2212-5671(14)00998-8

Ahmed, I., Johnson, G., 2014. Urban safety and poverty in Dhaka, Bangladesh: understanding the structural and institutional linkages. Aust. Plan. 51, 272–280. https://doi.org/10.1080/07293682.2013.837833

Ahmed, S., Islam, M.T., Karim, M.A., Karim, N.M., 2014. Exploitation of renewable energy for sustainable development and overcoming power crisis in Bangladesh. Renew. Energy 72, 223–235. https://doi.org/10.1016/j.renene.2014.07.003

Alam, S.S.B., Matsuyuki, M., 2017. Applicability of Land Sharing Scheme to Korail Slum, Dhaka, Bangladesh. Urban Reg. Plan. Rev. 4, 151–167. https://doi.org/10.14398/urpr.4.151

Alexander, J.M., 2008. Capabilities and social justice: the political philosophy of Amartya Sen and Martha Nussbaum. Ashgate, Aldershot, UK.

Ali, M.A., Rahman, M., Choudhury, M.R., Dakua, M., 2016. Identifying the Challenges and Vulnerabilities in Selected Slums and Low Income Communities in Dhaka and Assessing the Need for an Integrated Slum Development Approach (No. 46465). Bangladesh University of Engineering and Technology, Dhaka, Bangladesh.

Alkire, S., 2015. Multidimensional poverty measurement and analysis, First edition. ed. Oxford University Press, Oxford, UK.

Alkire, S., 2007. Choosing Dimensions: the capability approach and multidimensional poverty, in: Kakwani, N., Silber, J. (Eds.), The Many Dimensions of Poverty. Palgrave Macmillan, Basingstoke, UK, pp. 89–119.

Alkire, S., 2005. Why the Capability Approach? J. Hum. Dev. 6, 115–135. https://doi.org/10.1080/146498805200034275

Alkire, S., 2002. Valuing freedoms: Sen's capability approach and poverty reduction, Queen Elizabeth House series in development studies. Oxford University Press, Oxford, UK.

Alkire, S., Bastagli, F., Burchardt, T., Clarke, D., Holder, H., Ibrahim, S., Munoz, M., Terrazas, P., Tsang, T., Vizard, P., 2009. Developing the equality measurement framework: selecting the indicators. Equality and Human Rights Commission, Manchester, UK.

Alkire, S., Deneulin, S., 2009. The Human Development and Capability Approach, in: Deneulin, S., Shahani, L. (Eds.), An Introduction to the Human Development and Capability Approach: Freedom and Agency. Earthscan, London, UK, pp. 22–48.

Anderson, E.S., 1999. What Is the Point of Equality? Ethics 109, 287–337. https://doi.org/10.1086/233897

Anderson, I., 2010. Justifying the capabilities approach to justice, in: Brighouse, H., Robeyns, I. (Eds.), Measuring Justice: Primary Goods and Capabilities. Cambridge University Press, Cambridge, UK, pp. 81–100.

Archer, D., 2012. Baan Mankong participatory slum upgrading in Bangkok, Thailand: Community perceptions of outcomes and security of tenure. Habitat Int. 36, 178–184. https://doi.org/10.1016/j.habitatint.2011.08.006

Archer, M., 1998. Introduction: Realism in the Social Sciences, in: Archer, M., Bhaskar, R., Collier, A., Lawson, T., Norrie, A. (Eds.), Critical Realism: Essential Readings, Critical Realism--Interventions. Routledge, London, UK, pp. 189–205.

Asian Development Bank, 2012. The Informal Sector and Informal Employment in Bangladesh; Country Report 2010. Asian Development Bank, Manila, Philippines.

Asif, M., Barua, D., 2011. Salient features of the Grameen Shakti renewable energy program. Renew. Sustain. Energy Rev. 15, 5063–5067. https://doi.org/10.1016/j.rser.2011.07.050

Babbie, E.R., 2016. The Practice of Social Research, 14th edition. ed. Centage Learning, Boston, USA.

Badhan, M.A., Roy, B., Sifat, S.A., 2017. Water supply and sanitation situation of Kalyanpur slum area in Dhaka. Int. J. Nat. Soc. Sci. 4, 54–59.

Bangladesh Power Development Board, 2019. Annual Report 2018-19. Bangladesh Power Development Board, Dhaka, Bangladesh.

Banks, N., 2016. Livelihoods Limitations: The Political Economy of Urban Poverty in Dhaka, Bangladesh. Dev. Change 47, 266–292. https://doi.org/10.1111/dech.12219

Banks, N., 2008. A tale of two wards: political participation and the urban poor in Dhaka city. Environ. Urban. 20, 361–376. https://doi.org/10.1177/0956247808096116

Banks, N., Lombard, M., Mitlin, D., 2019. Urban Informality as a Site of Critical Analysis. J. Dev. Stud. 1–16. https://doi.org/10.1080/00220388.2019.1577384

Baptista, I., Plananska, J., 2017. The landscape of energy initiatives in sub-Saharan Africa: Going for systemic change or reinforcing the status quo? Energy Policy 110, 1–8. https://doi.org/10.1016/j.enpol.2017.08.006

Barnes, D.F., Khandker, S.R., Samad, H.A., 2011. Energy poverty in rural Bangladesh. Energy Policy 39, 894–904. https://doi.org/10.1016/j.enpol.2010.11.014

Barnes, D.F., Samad, H., Banerjee, S.G., 2014. The Development Impact of Energy Access, in: Halff, A., Sovacool, B.K., Rozhon, J. (Eds.), Energy Poverty. Oxford University Press, pp. 54–76. https://doi.org/10.1093/acprof:oso/9780199682362.003.0004

Barua, S., Alam, D., Roy, A., 2013a. Modal Integration for Improving Urban Mobility in Dhaka, in: Urban Public Transportation Systems 2013 : Proceedings of the 3rd International Conference on Urban Public Transportation Systems. Transportation and Development Institute of the American Society of Engineers, Virginia, USA, pp. 179–192.

Becker, S., Naumann, M., 2017. Energy democracy: Mapping the debate on energy alternatives. Geogr. Compass 11, 1–13. https://doi.org/10.1111/gec3.12321

Bedi, H.P., 2018. 'Our energy, our rights': National extraction legacies and contested energy justice futures in Bangladesh. Energy Res. Soc. Sci. 41, 168–175. https://doi.org/10.1016/j.erss.2018.04.009

Belda-Miquel, S., Pellicer-Sifres, V., Boni, A., 2020. Exploring the Contribution of Grassroots Innovations to Justice: Using the Capability Approach to Normatively Address Bottom-Up Sustainable Transitions Practices. Sustainability 12, 3617. https://doi.org/10.3390/su12093617

Belfrage, C., Hauf, F., 2017. The Gentle Art of Retroduction: Critical Realism, Cultural Political Economy and Critical Grounded Theory. Organ. Stud. 38, 251–271. https://doi.org/10.1177/0170840616663239

Bertuzzo, E.T., 2016. The Multifaceted Social Structure of an Unrecognised Neighbourhood of Dhaka City: Experience from Karail Basti, in: Rahman, M. (Ed.), Dhaka: An Urban Reader. University Press, Dhaka, Bangladesh, pp. 151–173.

Bertuzzo, E.T., 2009. Fragmented Dhaka: analysing everyday life with Henri Lefebvre's Theory of production of space, Sozialgeographische bibliothek. Franz Steiner Verlag, Stuttgart, Germany.

Bhan, G., 2019. Notes on a Southern urban practice. Environ. Urban. 31, 639–654. https://doi.org/10.1177/0956247818815792

Bhan, G., 2009. "This is no longer the city I once knew". Evictions, the urban poor and the right to the city in millennial Delhi. Environ. Urban. 21, 127–142. https://doi.org/10.1177/0956247809103009

Bhaskar, R., 1978. A Realist Theory of Science, [2nd ed.]. ed. Harvester Wheatsheaf, London, UK.

Bickerstaff, K., Walker, G., Bulkeley, H. (Eds.), 2013. Energy Justice in a Changing Climate: Social Equity and Low-Carbon Energy. Zed Books, London, UK.

Biggeri, M., Ferrannini, A., 2014. Opportunity Gap Analysis: Procedures and Methods for Applying the Capability Approach in Development Initiatives. J. Hum. Dev. Capab. 15, 60–78. https://doi.org/10.1080/19452829.2013.837036

Biggeri, M., Libanora, R., Mariani, S., Menchini, L., 2006. Children Conceptualizing their Capabilities: Results of a Survey Conducted during the First Children's World Congress on Child Labour. J. Hum. Dev. 7, 59–83. https://doi.org/10.1080/14649880500501179

Binns, T., 2006. Doing Fieldwork in Developing Countries: Planning and Logistics, in: Desai, V., Potter, R.B. (Eds.), Doing Development Research. Sage, London, UK, pp. 13–24.

Blaikie, N.W.H., 2010. Designing social research: the logic of anticipation, 2nd ed. ed. Polity Press Ltd, Cambridge, UK.

Bouzarovski, S., Petrova, S., 2015. A global perspective on domestic energy deprivation: Overcoming the energy poverty–fuel poverty binary. Energy Res. Soc. Sci. 10, 31–40. https://doi.org/10.1016/j.erss.2015.06.007

Bridge, G., 2018. The map is not the territory: A sympathetic critique of energy research's spatial turn. Energy Res. Soc. Sci. 36, 11–20. https://doi.org/10.1016/j.erss.2017.09.033

Bridge, G., Barr, S., Bouzarovski, S., Bradshaw, M., Brown, E., Bulkeley, H., Walker, G., 2018. Energy and Society: a critical perspective. Routledge, Oxford, UK.

Brinkmann, S., Kvale, S., 2015. Interviews: learning the craft of qualitative research interviewing, Third edition. ed. SAGE, Los Angeles.

Brydon, L., 2006. Ethical Practices in Doing Development Research, in: Desai, V., Potter, R.B. (Eds.), Doing Development Research. Sage, London, UK, pp. 25–33.

Bryman, A., 2016. Social research methods, Fifth edition. ed. Oxford University Press, Oxford, UK.

Bujra, J., 2006. Lost in Translation? the Use of Interpreters in Fieldwork, in: Desai, V., Potter, R. (Eds.), Doing Development Research. SAGE Publications, Ltd, London, UK, pp. 172–179. https://doi.org/10.4135/9781849208925

Bullard, R.D., 2005. Environmental Justice in the 21st Century, in: Dryzek, J.S., Schlosberg, D. (Eds.), Debating the Earth: The Environmental Politics Reader. Oxford University Press, Oxford, UK, pp. 431–449.

Burchardt, T., Vizard, P., 2011. 'Operationalizing' the Capability Approach as a Basis for Equality and Human Rights Monitoring in Twenty-first-century Britain. J. Hum. Dev. Capab. 12, 91–119. https://doi.org/10.1080/19452829.2011.541790

Byskov, M.F., 2017. Democracy, Philosophy, and the Selection of Capabilities. J. Hum. Dev. Capab. 18, 1–16. https://doi.org/10.1080/19452829.2015.1091809

Caldeira, T.P., 2017. Peripheral urbanization: Autoconstruction, transversal logics, and politics in cities of the global south. Environ. Plan. Soc. Space 35, 3–20. https://doi.org/10.1177/0263775816658479

Calvert, K., 2016. From 'energy geography' to 'energy geographies': Perspectives on a fertile academic borderland. Prog. Hum. Geogr. 40, 105–125. https://doi.org/10.1177/0309132514566343

Castán Broto, V., Baker, L., 2018. Spatial adventures in energy studies: An introduction to the special issue. Energy Res. Soc. Sci. 36, 1–10. https://doi.org/10.1016/j.erss.2017.11.002

Castán Broto, V., Baptista, I., Kirshner, J., Smith, S., Neves Alves, S., 2018. Energy justice and sustainability transitions in Mozambique. Appl. Energy 228, 645–655. https://doi.org/10.1016/j.apenergy.2018.06.057

Charmaz, K., 2014. Constructing grounded theory, 2nd ed. ed, Introducing qualitative methods. SAGE, London, UK.

Choudhoury, Z. ul A., Durrat, F., Hussain, M., Alam, M.S., Andersen, M.K., 2016. Poverty and Violence in Korail Slum in Dhaka. University of Dhaka, Danish Institute Against Torture, Dhaka, Bangladesh.

Claassen, R., 2015. The Capability to Hold Property. J. Hum. Dev. Capab. 16, 220–236. https://doi.org/10.1080/19452829.2014.939061

Claassen, R., 2011. Making Capability Lists: Philosophy versus Democracy. Polit. Stud. 59, 491–508. https://doi.org/10.1111/j.1467-9248.2010.00862.x

Clarke, A.M., 2012. Critical Realism, in: Given, L. (Ed.), The SAGE Encyclopedia of Qualitative Research Methods. SAGE Publications, Inc., Thousand Oaks, USA, pp. 168–170. https://doi.org/10.4135/9781412963909

Cloke, J., Mohr, A., Brown, E., 2017. Imagining renewable energy: Towards a Social Energy Systems approach to community renewable energy projects in the Global South. Energy Res. Soc. Sci., Narratives and Storytelling in Energy and Climate Change Research 31, 263–272. https://doi.org/10.1016/j.erss.2017.06.023

Corbin, J.M., Strauss, A.L., 2015. Basics of qualitative research: techniques and procedures for developing grounded theory., 4th edition. ed. SAGE, Los Angeles, USA.

Creswell, J.W., 2014. Research design: qualitative, quantitative, and mixed methods approaches, Fourth edition, international student edition. ed. SAGE, Los Angeles, USA.

Creswell, J.W., Miller, D.L., 2000. Determining Validity in Qualitative Inquiry. Theory Pract. 39, 124–130. https://doi.org/10.1207/s15430421tip3903_2

Crocker, D.A., 1991. Insiders and Outsiders in International Development. Ethics Int. Aff. 5, 149–173. https://doi.org/10.1111/j.1747-7093.1991.tb00236.x

Dahl, R.A., 2015. On democracy, Second edition. ed. Yale University Press, New Haven, USA.

Damgaard, C., McCauley, D., Long, J., 2017. Assessing the energy justice implications of bioenergy development in Nepal. Energy Sustain. Soc. 7, 8. https://doi.org/10.1186/s13705-017-0111-6

Danermark, B., Ekstrom, M., Jakonsen, L., Karlsson, J.C., 2002. Explaining society: critical realism in the social sciences, Critical realism--interventions. Routledge, London, UK.

Davis, M., 2006. Planet of slums. Verso, London, UK.

Day, R., 2018. A capabilities-based approach to energy poverty. Presented at the Energy Justice and the Capabilities Approach, Malmo, Sweden.

Day, R., 2017. A Capabilities Approach to Environmental Justice, in: Holifield, R., Chakraborty, J., Walker, G. (Eds.), The Routledge Handbook of Environmental Justice, Routledge International Handbooks. Routledge, Abingdon, UK.

Day, R., Walker, G., Simcock, N., 2016. Conceptualising energy use and energy poverty using a capabilities framework. Energy Policy 93, 255–264. https://doi.org/10.1016/j.enpol.2016.03.019

de Bercegol, R., Monstadt, J., 2018. The Kenya Slum Electrification Program. Local politics of electricity networks in Kibera. Energy Res. Soc. Sci., Energy Infrastructure and the Fate of the Nation 41, 249–258. https://doi.org/10.1016/j.erss.2018.04.007

de Satgé, R., Watson, V., 2018. Urban Planning in the Global South. Springer International Publishing, Cham, Switzerland. https://doi.org/10.1007/978-3-319-69496-2

de Soto, H., 2000. The mystery of capital: why capitalism triumphs in the West and fails everywhere else. Bantam, London.

Degert, I., Parikh, P., Kabir, R., 2016. Sustainability assessment of a slum upgrading intervention in Bangladesh. Cities 56, 63–73. https://doi.org/10.1016/j.cities.2016.03.002

Demographia, 2019. Demographia World Urban Areas (No. 15th Annual Edition: 201904). Belleville, USA.

Deneulin, S., 2011. Development and the Limits of Amartya Sen's The Idea of Justice. Third World Q. 32, 787–797. https://doi.org/10.1080/01436597.2011.567008

Denscombe, M., 2014. The Good Research Guide: For Small-scale Social Research Projects. McGraw-Hill, Berkshire, UK.

Dhingra, C., Gandhi, S., Chaurey, A., Agarwal, P.K., 2008. Access to clean energy services for the urban and peri-urban poor: a case-study of Delhi, India. Energy Sustain. Dev. 12, 49–55.

Dryzek, J.S., Norgaard, R.B., Schlosberg, D., 2013. Climate-challenged society. Oxford University Press, Oxford, UK.

Durand-Lasserve, A., Fernandes, E., Payne, G., Rakodi, C., 2007. Social and economic impacts of land titling programmes in urban and peri-urban areas: A review of the literature. Presented at the World Bank Urban Research Symposium, Washington DC, USA, p. 83.

Durand-Lasserve, A., Royston, L. (Eds.), 2002. International Trends and Country Contexts - from tenure regularization to tenure security, in: Holding Their Ground: Secure Land Tenure for the Urban Poor in Developing Countries, Ebook Central. Earthscan, London, UK.

Dutta, S., Banerjee, S., 2014. Exposure to Indoor Air Pollution & Women Health: The Situation in Urban India. Environ. Urban. Asia 5, 131–145. https://doi.org/10.1177/0975425314521545

Economist Intelligence Unit, 2019. Democracy Index 2019. Economist Intelligence Unit, London UK.

Edwards, G.A.S., Reid, L., Hunter, C., 2016. Environmental justice, capabilities, and the theorization of well-being. Prog. Hum. Geogr. 40, 754–769. https://doi.org/10.1177/0309132515620850

Escobar, A., 1995. Encountering development: the making and unmaking of the Third World, Princeton studies in culture/power/history. Princeton University Press, Princeton, USA.

Esposito, N., 2001. From Meaning to Meaning: The Influence of Translation Techniques on Non-English Focus Group Research. Qual. Health Res. 11, 568–579. https://doi.org/10.1177/104973201129119217

Fernández-Baldor, Á., Boni, A., Lillo, P., Hueso, A., 2014. Are technological projects reducing social inequalities and improving people's well-being? A capability approach analysis of renewable energy-based electrification projects in Cajamarca, Peru. J. Hum. Dev. Capab. 15, 13–27. https://doi.org/10.1080/19452829.2013.837035

Field, E., 2007. Entitled to Work: Urban Property Rights and Labor Supply in Peru. Q. J. Econ. 122, 42.

Field, E., 2005. Property Rights and Investment in Urban Slums. J. Eur. Econ. Assoc. 3, 279–290. https://doi.org/10.1162/jeea.2005.3.2-3.279

Flyvbjerg, B., 2011. Case Study, in: Norman K. Denzin, editor, Yvonna S. Lincoln, editor (Eds.), The SAGE Handbook of Qualitative Research / Edited by Norman K. Denzin, Yvonna S. Lincoln. SAGE, Los Angeles, USA, pp. 301–316.

Fortier, M.-O.P., Teron, L., Reames, T.G., Munardy, D.T., Sullivan, B.M., 2019. Introduction to evaluating energy justice across the life cycle: A social life cycle assessment approach. Appl. Energy 236, 211–219. https://doi.org/10.1016/j.apenergy.2018.11.022

Fraser, N., 1997. Justice Interruptus: critical reflections on the "postsocialist" condition. Routledge, New York, USA.

Frediani, A.A., 2019. Participatory Research Methods and the Capability Approach: Researching the Housing Dimensions of Squatter Upgrading Initiatives in Salvador da Bahia, Brazil, in: Clarke, D.A., Frediani, A.A., Biggeri, M. (Eds.), The Capability Approach, Empowerment and Participation: Concepts, Methods and Applications, Rethinking International Development Series. Springer Berlin Heidelberg, New York, USA, pp. 261–288.

Frediani, A.A., 2015. Space and Capabilities: Approaching Informal Settlement Upgrading through a Capability Perspective, in: Lemanski, C., Marx, C. (Eds.), The City in Urban Poverty. Palgrave Macmillan UK, London, UK, pp. 64–84. https://doi.org/10.1057/9781137367433

Frediani, A.A., 2010. Sen's Capability Approach as a framework to the practice of development. Dev. Pract. 20, 173–187. https://doi.org/10.1080/09614520903564181

Frediani, A.A., 2009. The World Bank, Turner and Sen - Freedom in the Urban Arena (No. 136). Bartlett Development Planning Unit, London, UK.

Frediani, A.A., Boni Aristizábal, A., Gasper, D., 2014. Approaching Development Projects from a Human Development and Capability Perspective. J. Hum. Dev. Capab. 15, 1–12. https://doi.org/10.1080/19452829.2013.879014

Frediani, A.A., Clarke, D.A., Biggeri, M., 2019. Human Development and the Capability Approach: The Role of Empowerment and Participation, in: Clarke, D.A., Frediani, A.A., Biggeri, M. (Eds.), The Capability Approach, Empowerment and Participation: Concepts, Methods and Applications,

Rethinking International Development Series. Springer Berlin Heidelberg, New York, USA, pp. 3–36.

French, M., Gardner, J., 2012. The Health of Informal Settlements: Illness and the Internal Thermal Conditions of Informal Housing, in: Rassia, S.T., Pardalos, P.M. (Eds.), Sustainable Environmental Design in Architecture Impacts on Health, Springer Optimization and Its Applications, v. 56. Springer New York, New York, USA.

Galiani, S., Schargrodsky, E., 2010. Property rights for the poor: Effects of land titling. J. Public Econ. 94, 700–729. https://doi.org/10.1016/j.jpubeco.2010.06.002

Gardiner, S.M., 2018. Climate change and energy justice. Presented at the Presented at the Energy Justice and the Capabilities Approach., Malmo, Sweden.

Gardiner, S.M., 2011. A perfect moral storm: the ethical tragedy of climate change, Environmental ethics and science policy. Oxford University Press, Oxford, UK.

Geels, F.W., 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. Res. Policy 31, 1257–1274. https://doi.org/10.1016/S0048-7333(02)00062-8

Geertz, C., 1973. The interpretation of cultures: selected essays. Basic Books, New York, USA.

Ghertner, D.A., 2008. Analysis of New Legal Discourse behind Delhi's Slum Demolitions. Econ. Polit. Wkly. 43, 57–66. https://doi.org/10.2307/40277691

Gilbert, A., 2007. The Return of the Slum: Does Language Matter? Int. J. Urban Reg. Res. 31, 697–713. https://doi.org/10.1111/j.1468-2427.2007.00754.x

Gilbert, A., 2002. On the mystery of capital and the myths of Hernando de Soto. Int. Dev. Plan. Rev. 21, 1–19.

Government of Bangladesh, 2020. Sustainable Development Goals: Bangladesh Progress Report 2020 (No. 23). General Economics Division, Planning Commission, Dhaka, Bangladesh.

Government of Bangladesh, 2015. Seventh Five Year Plan FY2016 – FY2020. General Economics Division, Planning Commission, Dhaka, Bangladesh.

Graff, M., Carley, S., Pirog, M., 2019. A Review of the Environmental Policy Literature from 2014 to 2017 with a Closer Look at the Energy Justice Field. Policy Stud. J. 47, S17–S44. https://doi.org/10.1111/psj.12316

Graham, S., Marvin, S., 2001. Splintering Urbanism: networked infrastructures, technological mobilities and the urban condition. Routledge, London, UK.

Graham, S., McFarlane, C. (Eds.), 2015. Water wars in Mumbai, in: Infrastructural Lives: Urban Infrastructure in Context. Routledge, London, UK, pp. 61–85.

Gray, D.E., 2014. Doing research in the real world, Third edition. ed. SAGE, Los Angeles, USA.

Greco, G., Skordis-Worrall, J., Mkandawire, B., Mills, A., 2015. What is a good life? Selecting capabilities to assess women's quality of life in rural Malawi. Soc. Sci. Med. 130, 69–78. https://doi.org/10.1016/j.socscimed.2015.01.042

Gruebner, O., Khan, M.M.H., Lautenbach, S., Müller, D., Krämer, A., Lakes, T., Hostert, P., 2012. Mental health in the slums of Dhaka - a geoepidemiological study. BMC Public Health 12, 177. https://doi.org/10.1186/1471-2458-12-177

Guruswamy, L., 2011. Energy Poverty. Annu. Rev. Environ. Resour. 36, 139–161. https://doi.org/10.1146/annurev-environ-040610-090118

Hackett, M.T., 2016. Solving 'Social Market Failures' with Social Enterprises? Grameen Shakti (Village Energy) in Bangladesh. J. Soc. Entrep. 7, 312–341. https://doi.org/10.1080/19420676.2016.1188324

Halff, A., Sovacool, B.K., Rozhon, J., 2014a. Introduction: The End of Energy Poverty: pathways to development, in: Halff, A., Sovacool, B.K., Rozhon, J. (Eds.), Energy Poverty: Global Challenges and Local Solutions. Oxford University Press, Oxford, UK, pp. 1–10.

Halff, A., Sovacool, B.K., Rozhon, J. (Eds.), 2014b. Energy poverty: global challenges and local solutions. Oxford University Press, Oxford, UK.

Hall, L., 2014. 'With' not 'about' – emerging paradigms for research in a cross-cultural space. Int. J. Res. Method Educ. 37, 376–389. https://doi.org/10.1080/1743727X.2014.909401

Haq, M. ul, 1995. Reflections on Human Development. Oxford University Press, Oxford, UK.

Harrison, M.E., 2006. Collecting Sensitive and Contentious Information, in: Desai, V., Potter, R.B. (Eds.), Doing Development Research. Sage, London, UK, pp. 62–69.

Harrison, P., 2006. On the Edge of Reason: Planning and Urban Futures in Africa. Urban Stud. 43, 319–335. https://doi.org/10.1080/00420980500418368

Harvey, D., 1996. Justice, nature and the geography of difference. Blackwell Publ, Oxford, UK.

Harvey, D., 1973. Social justice and the city. Edward Arnold, London, UK.

Healy, N., Barry, J., 2017. Politicizing energy justice and energy system transitions: Fossil fuel divestment and a "just transition." Energy Policy 108, 451–459. https://doi.org/10.1016/j.enpol.2017.06.014

Heffron, R.J., McCauley, D., 2017. The concept of energy justice across the disciplines. Energy Policy 105, 658–667. https://doi.org/10.1016/j.enpol.2017.03.018

Heffron, R.J., McCauley, D., de Rubens, G.Z., 2018. Balancing the energy trilemma through the Energy Justice Metric. Appl. Energy 229, 1191–1201. https://doi.org/10.1016/j.apenergy.2018.08.073

Heffron, R.J., McCauley, D., Sovacool, B.K., 2015. Resolving society's energy trilemma through the Energy Justice Metric. Energy Policy 87, 168–176. https://doi.org/10.1016/j.enpol.2015.08.033

Held, D., 2006. Models of democracy, 3rd ed. ed. Polity, Cambridge, UK.

Hennink, M.M., 2017. Cross-Cultural Focus Group Discussions, in: Barbour, R., Morgan, D. (Eds.), A New Era in Focus Group Research. Palgrave Macmillan, London, UK, pp. 59–82. https://doi.org/10.1057/978-1-137-58614-8_4

Hick, R., Burchardt, T., 2016. Capability Deprivation, in: Brady, D., Burton, L. (Eds.), The Oxford Handbook of the Social Science of Poverty. Oxford University Press, Oxford, UK, pp. 73–93.

Honneth, A., 1995. The struggle for recognition: the moral grammar of social conflicts. Polity, Cambridge, UK.

Hossain, H., 2014. Human Rights and the Nation State, in: Ahmed, I. (Ed.), Human Rights in Bangladesh: Past, Present and Futures. The University Press Limited, Dhaka, pp. 107–132.

Hossain, N., 2017. The aid lab: understanding Bangladesh's unexpected success. Oxford University Press, Oxford, UK.

Hossain, S., 2013. The informal practice of appropriation and social control – experience from a "bosti" in Dhaka. Environ. Urban. 25, 209–224. https://doi.org/10.1177/0956247812465803

Hossain, S., 2012. The production of space in the negotiation of water and electricity supply in a bosti of Dhaka. Habitat Int. 36, 68–77. https://doi.org/10.1016/j.habitatint.2011.05.007

Huchzermeyer, M., 2011. Cities with "slums": from informal settlement eradication to a right to the city in Africa. UCT Press, Claremont, South Africa.

Hui, A., Walker, G., Day, R. (Eds.), 2018. Demanding energy: space, time and change. Springer Berlin Heidelberg, New York, USA.

Ibrahim, S., 2014. Introduction: The Capability Approach: from theory to practice - rationale, review and reflections, in: Tiwari, M., Ibrahim, S. (Eds.), Capability Approach: From Theory to Practice. Palgrave Macmillan, Basingstoke, UK, pp. 1–28.

Incropera, F.P., 2016. Climate change: a wicked problem : complexity and uncertainty at the intersection of science, economics, politics, and human behavior. Cambridge University Press, New York, USA.

International Energy Agency, 2019. WORLD ENERGY OUTLOOK 2019. Paris France.

Islam, K.M., Baten, M.A., 2016. Exploring dynamics of internal migration to slums of Dhaka city in Bangladesh: A study on drivers and factors. Res. Gate 19.

Islam, Md.S., Mahmud, R., 2015. Trust in Governance in Bangladesh: Ideas, Issues and Solutions. Millenn. Asia 6, 128–146. https://doi.org/10.1177/0976399615590513

Islam, N., Mahbub, A., Nazem, N.I., 2006. Slums of Bangladesh, Mapping and Census 2005. Centre for Urban Studies, Dhaka, Bangladesh.

Islam, S., Khan, Md.Z.R., 2017. A Review of Energy Sector of Bangladesh. Energy Procedia, 1st International Conference on Energy and Power, ICEP2016, 14-16 December 2016, RMIT University, Melbourne, Australia 110, 611–618. https://doi.org/10.1016/j.egypro.2017.03.193

Islar, M., Brogaard, S., Lemberg-Pedersen, M., 2017. Feasibility of energy justice: Exploring national and local efforts for energy development in Nepal. Energy Policy 105, 668–676. https://doi.org/10.1016/j.enpol.2017.03.004

Jabeen, H., 2015. Adapting the assets of urban low-income households with climate extremes: experience from Dhaka. Int. J. Urban Sustain. Dev. 7, 72–88. https://doi.org/10.1080/19463138.2014.977293

Jabeen, H., Guy, S., 2015. Fluid engagements: Responding to the co-evolution of poverty and climate change in Dhaka, Bangladesh. Habitat Int. 47, 307–314. https://doi.org/10.1016/j.habitatint.2015.02.005

Jabeen, H., Johnson, C., Allen, A., 2010. Built-in resilience: learning from grassroots coping strategies for climate variability. Environ. Urban. 22, 415–431. https://doi.org/10.1177/0956247810379937

Jaglin, S., 2014. Regulating service delivery in southern cities: rethinking urban heterogeneity, in: Parnell, S., Oldfield, S. (Eds.), The Routledge Handbook on Cities of the Global South, Routledge Handbooks. Routledge, London, UK, pp. 434–447.

Jahan, N.A., Howlader, S.R., Sultana, N., Ishaq, F., Sikder, M.Z.H., Rahman, T., 2015. Health Care Seeking Behavior of Slum-Dwellers in Dhaka City: Results of a Household Survey. Institute of Health Economics, University of Dhaka, Dhaka, Bangladesh.

Jenkins, K., McCauley, D., Heffron, R., Stephan, H., Rehner, R., 2016. Energy justice: A conceptual review. Energy Res. Soc. Sci. 11, 174–182. https://doi.org/10.1016/j.erss.2015.10.004

Jenkins, K., Sovacool, B.K., McCauley, D., 2018. Humanizing sociotechnical transitions through energy justice: An ethical framework for global transformative change. Energy Policy 117, 66–74. https://doi.org/10.1016/j.enpol.2018.02.036

Jenkins, K.E.H., Stephens, J.C., Reames, T.G., Hernández, D., 2020. Towards impactful energy justice research: Transforming the power of academic engagement. Energy Res. Soc. Sci. 67, 101510. https://doi.org/10.1016/j.erss.2020.101510

Jorgenson, A.K., Rice, J., 2016. Slum Prevalence and Health in Developing Countries: Sustainable Development Challenges in the Urban Context. Sustain. Dev. 24, 53–63. https://doi.org/10.1002/sd.1606

Kabir, A., Maitrot, M.R.L., 2017. Factors influencing feeding practices of extreme poor infants and young children in families of working mothers in Dhaka slums: A qualitative study. PLOS ONE 12, e0172119. https://doi.org/10.1371/journal.pone.0172119

Khan, A.R., 2015. The economy of Bangladesh: a quarter century of development. Palgrave Macmillan, Basingstoke, UK.

King, P., 2003. Housing as a Freedom Right. Hous. Stud. 18, 661–672. https://doi.org/10.1080/02673030304259

Klein, N., 2015. This changes everything: capitalism vs. the climate. Penguin Books, London, UK.

Kotikalapudi, C.K., 2016. Corruption, crony capitalism and conflict: Rethinking the political economy of coal in Bangladesh and beyond. Energy Res. Soc. Sci. 17, 160–164. https://doi.org/10.1016/j.erss.2016.05.001

Kumar, A., 2018. Justice and politics in energy access for education, livelihoods and health: How socio-cultural processes mediate the winners and losers. Energy Res. Soc. Sci. 40, 3–13. https://doi.org/10.1016/j.erss.2017.11.029

LaBelle, M.C., 2017. In pursuit of energy justice. Energy Policy 107, 615–620. https://doi.org/10.1016/j.enpol.2017.03.054

Lacey-Barnacle, M., Robison, R., Foulds, C., 2020. Energy justice in the developing world: a review of theoretical frameworks, key research themes and policy implications. Energy Sustain. Dev. 55, 122–138. https://doi.org/10.1016/j.esd.2020.01.010

Lata, L., 2020. To Whom Does the City Belong? Obstacles to Right to the City for the Urban Poor in Bangladesh. J. Contemp. Asia 1–22. https://doi.org/10.1080/00472336.2020.1791934

Lata, L., Walters, P., Roitman, S., 2019. A marriage of convenience: Street vendors' everyday accommodation of power in Dhaka, Bangladesh. Cities 84, 143–150. https://doi.org/10.1016/j.cities.2018.08.002

Latif, M.B., Irin, A., Ferdaus, J., 2016. Socio-economic and health status of slum dwellers of the Kalyanpur slum in Dhaka city. Bangladesh J. Sci. Res. 29, 73–83. https://doi.org/10.3329/bjsr.v29i1.29760

Lawhon, M., Truelove, Y., 2020. Disambiguating the southern urban critique: Propositions, pathways and possibilities for a more global urban studies. Urban Stud. 57, 3–20. https://doi.org/10.1177/0042098019829412

Laws, S., Harper, C., Jones, N., Marcus, R., 2013. Research for development: a practical guide, Second edition. ed. SAGE Publications Ltd, London, UK.

Lewis, D., 2011. Bangladesh: politics, economy and civil society. Cambridge University Press, Cambridge, UK.

Lewis, D., Hossain, A., 2017. Revisiting the Local Power Structure in Bangladesh: Economic Gain, Political Pain? London School of Economics, London, UK.

Liamputtong, P., 2010. Performing qualitative cross-cultural research. Cambridge University Press, Cambridge, UK.

Lincoln, Y.S., Guba, E.G., 1985. Naturalistic inquiry. Sage, Newbury Park, London, UK.

Lipu, M.S.H., Shrestha, P., Kumar, S., 2016. Energy poverty and access to modern energy of urban poor: a case of Dhaka, Bangladesh. Int. J. Energy Technol. Policy 12, 270–294.

Lipu, M.S.H., Waliullah Bhuiyan, A.Md., 2014. Electricity access in urban slum households of Bangladesh: A case of Dhaka. J. Renew. Sustain. Energy 6, 053112. https://doi.org/10.1063/1.4896697

Lloyd-Evans, S., 2006. Focus Groups, in: Desai, V., Potter, R.B. (Eds.), Doing Development Research. Sage, London, UK, pp. 153–162.

Lofland, J., 2006. Analyzing social settings: a guide to qualitative observation and analysis, 4th ed. ed. Wadsworth/Thomson Learning, Belmont, USA.

Lombard, M., 2015. Discursive Constructions of Low-income Neighbourhoods. Geogr. Compass 9, 648–659. https://doi.org/10.1111/gec3.12251

Lombard, M., 2014. Constructing ordinary places: Place-making in urban informal settlements in Mexico. Prog. Plan. 94, 1–53. https://doi.org/10.1016/j.progress.2013.05.003

Lombard, M., 2013. Citizen Participation in Urban Governance in the Context of Democratization: Evidence from Low-Income Neighbourhoods in Mexico. Int. J. Urban Reg. Res. 37, 135–150. https://doi.org/10.1111/j.1468-2427.2012.01175.x

Malakar, Y., 2019. Social constructs of energy poverty and the resulting capability deprivations in rural India (PhD Thesis). The University of Queensland. https://doi.org/10.14264/uql.2019.419

Malakar, Y., Greig, C., van de Fliert, E., 2018. Structure, agency and capabilities: Conceptualising inertia in solid fuel-based cooking practices. Energy Res. Soc. Sci. 40, 45–53. https://doi.org/10.1016/j.erss.2017.12.002

Malakar, Y., Herington, M.J., Sharma, V., 2019. The temporalities of energy justice: Examining India's energy policy paradox using non-western philosophy. Energy Res. Soc. Sci. 49, 16–25. https://doi.org/10.1016/j.erss.2018.11.002

Malaque, I., Bartsch, K., Scriver, P., 2018. Thriving in the slums: progressive development and empowerment of the urban poor to achieve secure tenure in the Philippines. Archit. Sci. Rev. 61, 313–318. https://doi.org/10.1080/00038628.2018.1502154

Mao, B., Tian, Z., Gao, Z., Huang, H., Feng, X., Wang, R., Kudrot-E-Khuda, M., Nakamura, F., Tanaka, S., 2014. The 9th International Conference on Traffic and Transportation Studies (ICTTS 2014)A Cost-benefit Analysis of Commuter Train Improvement in the Dhaka Metropolitan Area, Bangladesh. Procedia - Soc. Behav. Sci. 138, 819–829. https://doi.org/10.1016/j.sbspro.2014.07.231

Marshall, C., Rossman, G.B., 2016. Designing qualitative research, Sixth edition. ed. SAGE, Los Angeles, USA.

Maxwell, J.A., Chmiel, M., 2014. Notes Toward a Theory of Qualitative Data Analysis, in: Flick, U. (Ed.), The SAGE Handbook of Qualitative Data Analysis. SAGE Publications Ltd, London, UK, pp. 21–34.

McCauley, D., Heffron, R., 2018. Just transition: Integrating climate, energy and environmental justice. Energy Policy 119, 1–7. https://doi.org/10.1016/j.enpol.2018.04.014

McCauley, D., Ramasar, V., Heffron, R.J., Sovacool, B.K., Mebratu, D., Mundaca, L., 2019. Energy justice in the transition to low carbon energy systems: Exploring key themes in interdisciplinary research. Appl. Energy 233–234, 916–921. https://doi.org/10.1016/j.apenergy.2018.10.005

McCauley, D.A., Heffron, R.J., Stephan, H., Jenkins, K., 2013. Advancing energy justice: the triumvirate of tenets. Int. Energy Law Rev. 32, 107–110.

McFarlane, C., 2012. Rethinking Informality: Politics, Crisis, and the City. Plan. Theory Pract. 13, 89–108. https://doi.org/10.1080/14649357.2012.649951

McHarg, A., 2020. Energy Justice: Understanding the 'Ethical Turn' in Energy Law and Policy, in: del Guayo, I., Godden, L., Zillman, D.D., Montoya, M.F., González, J.J. (Eds.), Energy Justice and Energy Law. Oxford University Press, Oxford, UK, pp. 15–30.

Mimmi, L.M., 2014. From informal to authorized electricity service in urban slums: Findings from a household level survey in Mumbai. Energy Sustain. Dev. 21, 66–80. https://doi.org/10.1016/j.esd.2014.05.008

Minnery, J., Argo, T., Winarso, H., Hau, D., Veneracion, C.C., Forbes, D., Childs, I., 2013. Slum upgrading and urban governance: Case studies in three South East Asian cities. Habitat Int. 39, 162–169. https://doi.org/10.1016/j.habitatint.2012.12.002

Mitlin, D., Patel, S., 2014. The urban poor and strategies for a pro-poor politics: ref lections on Shack/Slum Dwellers International, in: Parnell, S., Oldfield, S. (Eds.), The Routledge Handbook on Cities of the Global South, Routledge Handbooks. Routledge, London, UK, pp. 296–308.

Mohit, M.A., 2012. Bastee Settlements of Dhaka City, Bangladesh: A Review of Policy Approaches and Challenges Ahead. Procedia - Soc. Behav. Sci. 36, 611–622. https://doi.org/10.1016/j.sbspro.2012.03.067

Mollah, Md.A.H., Jahan, R., 2018. Parliamentary election and electoral violence in Bangladesh: the way forward. Int. J. Law Manag. 60, 741–756. https://doi.org/10.1108/IJLMA-07-2017-0161

Mollik, S., Rashid, M.M., Hasanuzzaman, M., Karim, M.E., Hosenuzzaman, M., 2016. Prospects, progress, policies, and effects of rural electrification in Bangladesh. Renew. Sustain. Energy Rev. 65, 553–567. https://doi.org/10.1016/j.rser.2016.06.091

Moniruzzaman, M., Day, R., 2020. Gendered energy poverty and energy justice in rural Bangladesh. Energy Policy 144, 111554. https://doi.org/10.1016/j.enpol.2020.111554

Monyei, C.G., Jenkins, K., Serestina, V., Adewumi, A.O., 2018. Examining energy sufficiency and energy mobility in the global south through the energy justice framework. Energy Policy 119, 68–76. https://doi.org/10.1016/j.enpol.2018.04.026

Morshed, Md.M., 2014. Illegality of private subdivision and access to land for housing by the urban poor in Dhaka. Habitat Int. 44, 386–393. https://doi.org/10.1016/j.habitatint.2014.08.004

Morshed, Md.M., Asami, Y., 2015. The role of NGOs in public and private land development: The case of Dhaka city. Geoforum 60, 4–13. https://doi.org/10.1016/j.geoforum.2015.01.001

Moses, J.W., Knutsen, T.L., 2012. Ways of knowing: competing methodologies in social and political research, Second edition. ed. Palgrave Macmillan, Basingstoke, UK.

Muchadenyika, D., 2015. Slum upgrading and inclusive municipal governance in Harare, Zimbabwe: New perspectives for the urban poor. Habitat Int. 48, 1–10. https://doi.org/10.1016/j.habitatint.2015.03.003

Mujeri, M.K., Chowdhury, T.T., Shahana, S., 2014. Energy Sector in Bangladesh: An agenda for reforms. International Institute for Sustainable Development, Geneva, Swtzerland.

Munro, P., van der Horst, G., Healy, S., 2017. Energy justice for all? Rethinking Sustainable Development Goal 7 through struggles over traditional energy practices in Sierra Leone. Energy Policy 105, 635–641. https://doi.org/10.1016/j.enpol.2017.01.038

Murray, E.L., Brondi, L., Kleinbaum, D., McGowan, J.E., Mels, C.V., Brooks, W.A., Goswami, D., Ryan, P.B., Klein, M., Bridges, C.B., 2012. Cooking fuel type, household ventilation, and the risk of acute lower respiratory illness in urban Bangladeshi children: a longitudinal study. Indoor Air 22, 132–139. https://doi.org/10.1111/j.1600-0668.2011.00754.x

Nahiduzzaman, K.M., 2012. Housing the Urban Poor: an integrated governence perspective: The Case of Dhaka, Bangladesh. KTH Royal Institute of Technology, Stockholm, Sweden.

Nakamura, S., 2017. Does slum formalisation without title provision stimulate housing improvement? A case of slum declaration in Pune, India. Urban Stud. 54, 1715–1735. https://doi.org/10.1177/0042098016632433

Nawaz, R., 2004. Right to shelter: Bangladesh. Presented at the Adequate and Affordable Housing for All, Centre for Urban and Community Studies, Toronto, Canada, p. 18.

Niu, S., Jia, Y., Wang, W., He, R., Hu, L., Liu, Y., 2013. Electricity consumption and human development level: A comparative analysis based on panel data for 50 countries. Int. J. Electr. Power Energy Syst. 53, 338–347. https://doi.org/10.1016/j.ijepes.2013.05.024

Nussbaum, M., 2003. Capabilities as Fundamental Entitlements: Sen And Social Justice. Fem. Econ. 9, 33–59. https://doi.org/10.1080/1354570022000077926

Nussbaum, M.C., 2011. Capabilities, Entitlements, Rights: Supplementation and Critique. J. Hum. Dev. Capab. 12, 23–37. https://doi.org/10.1080/19452829.2011.541731

Nussbaum, M.C., 2006. Frontiers of justice: disability, nationality, species membership, Tanner lectures on human values (Cambridge, Mass.). The Belknap Press of Harvard University Press, London, UK.

Nussbaum, M.C., 2000. Women and human development: the capabilities approach, John Robert Seeley lectures. Cambridge University Press, Cambridge, UK.

Nussbaumer, P., Bazilian, M., Modi, V., 2012. Measuring energy poverty: Focusing on what matters. Renew. Sustain. Energy Rev. 16, 231–243. https://doi.org/10.1016/j.rser.2011.07.150

Okyere, S.A., Kita, M., 2015. RETHINKING URBAN INFORMALITY AND INFORMAL SETTLEMENTS GROWTH IN URBAN AFRICA: A LITERATURE DISCUSSION. J. Sustain. Dev. Afr. 17, 24.

Omorogbe, Y., 2020. Legal Dimensions of Access to Modern Energy Services in Africa: Lessons from Nigeria, Ghana, and Rwanda, in: del Guayo, I., Godden, L., Zillman, D.D., Montoya, M.F., González, J.J. (Eds.), Energy Justice and Energy Law. Oxford University Press, Oxford, UK, pp. 328–246.

Ouedraogo, N.S., 2013. Energy consumption and human development: Evidence from a panel cointegration and error correction model. Energy 63, 28–41. https://doi.org/10.1016/j.energy.2013.09.067

Pachauri, S., Rao, N.D., 2013. Gender impacts and determinants of energy poverty: are we asking the right questions? Curr. Opin. Environ. Sustain. 5, 205–215. https://doi.org/10.1016/j.cosust.2013.04.006

Parikh, P., Chaturvedi, S., George, G., 2012. Empowering change: The effects of energy provision on individual aspirations in slum communities. Energy Policy, Special Section: Past and Prospective Energy Transitions - Insights from History 50, 477–485. https://doi.org/10.1016/j.enpol.2012.07.046

Parnell, S., 2015. Poverty and 'the City,' in: Lemanski, C., Marx, C. (Eds.), The City in Urban Poverty. Palgrave Macmillan UK, London, UK, pp. 16–38. https://doi.org/10.1057/9781137367433

Parnell, S., 2008. Urban Governance in the South: The Politics of Rights and Development, in: Cox, K.R., Low, M., Robinson, J. (Eds.), The SAGE Handbook of Political Geography. Sage Publications Ltd, London, UK, pp. 595–608.

Payne, G., 2004. Land tenure and property rights: an introduction. Habitat Int. 28, 167–179. https://doi.org/10.1016/S0197-3975(03)00066-3

Payne, G., Durand-Lasserve, A., 2012. Research Paper prepared for the Special Rapporteur on adequate housing as a component of the right to an adequate standard of living, and on the right to non-discrimination in this context, Raquel Rolnik, to inform her Study on Security of Tenure 78.

Payne, G., Durand-Lasserve, A., Rakodi, C., 2009. The limits of land titling and home ownership. Environ. Urban. 21, 443–462. https://doi.org/10.1177/0956247809344364

Payne, G.K., 2002b. Conclusion: the way ahead, in: Payne, G.K. (Ed.), Land, Rights and Innovation: Improving Tenure Security for the Urban Poor. ITDG, London, UK, pp. 300–308.

Payne, G.K., 2002a. Introduction, in: Payne, G.K. (Ed.), Land, Rights and Innovation: Improving Tenure Security for the Urban Poor. ITDG, London, UK, pp. 3–22.

Pellegrini-Masini, G., Pirni, A., Maran, S., 2020. Energy justice revisited: A critical review on the philosophical and political origins of equality. Energy Res. Soc. Sci. 59, 101310. https://doi.org/10.1016/j.erss.2019.101310

Piketty, T., 2014. Capital in the twenty-first century. The Belknap Press of Harvard University Press, Cambridge, USA.

Practical Action, 2019. Poor People's Energy Outlook 2019: Enabling energy access: from village to nation. Practical Action, Rugby, UK.

Practical Action, 2016. Poor People's Energy Outlook 2016. Practical Action Publishing, Rugby, UK.

Practical Action, 2010. Poor People's Energy Outlook 2010. Practical Action, Rugby, UK.

Rahman, G., 2008. Town planning and the political culture of planning in Bangladesh, 1st ed. ed. A H Development PubHouse, Dhaka, Bangladesh.

Rahman, H.Z., 2014. Urbanization in Bangladesh: Challenges and Priorities, in: Bangladesh Economists' Forum. Dhaka, Bangladesh, p. 8.

Rahman, M., 2009. Government and housing for the poor. Policy and Implementation in Bangladesh. East West J. Humanit. 1.

Rahman, Md.M., Hassan, Md.S., Md. Bahauddin, K., Khondoker Ratul, A., Hossain Bhuiyan, M.A., 2018. Exploring the impact of rural–urban migration on urban land use and land cover: a case of Dhaka city, Bangladesh. Migr. Dev. 7, 222–239. https://doi.org/10.1080/21632324.2017.1301298

Rahman, T., 2011. The Emergence of Informal Governance in Neighborhood Upgrading in Dhaka, Bangladesh. DisP - Plan. Rev. 47, 70–81. https://doi.org/10.1080/02513625.2011.10654020

Rana, M.M.P., 2010. Urbanization and sustainability: challenges and strategies for sustainable urban development in Bangladesh. Environ. Dev. Sustain. 13, 237–256. https://doi.org/10.1007/s10668-010-9258-4

Rashid, S.F., 2009. Strategies to Reduce Exclusion among Populations Living in Urban Slum Settlements in Bangladesh. J. Health Popul. Nutr. 27, 574–586.

Rashid, S.F., 2007. Accessing Married Adolescent Women: The Realities of Ethnographic Research in an Urban Slum Environment in Dhaka, Bangladesh. Field Methods 19, 369–383. https://doi.org/10.1177/1525822X07302882

Rawls, J., 1987. The Idea of an Overlapping Consensus. Oxf. J. Leg. Stud. 7, 1–25.

Rawls, J., 1971. A Theory of Justice. Harvard University Press, Cambridge, Mass, USA.

Rehman, I.H., Kar, A., Banerjee, M., Kumar, P., Shardul, M., Mohanty, J., Hossain, I., 2012. Understanding the political economy and key drivers of energy access in addressing national energy access priorities and policies. Energy Policy 47, 27–37. https://doi.org/10.1016/j.enpol.2012.03.043

Riaz, A., 2015. How did we arrive here? Prothoma Prokashan, Dhaka, Bangladesh.

Riaz, A., 2014a. Electoral Democracy and Human Rights in Bangladesh, in: Ahmed, I. (Ed.), Human Rights in Bangladesh: Past, Present and Futures. The University Press Limited, Dhaka, pp. 133–162.

Riaz, A., 2014b. Bangladesh's Failed Election. J. Democr. 25, 119–130. https://doi.org/10.1353/jod.2014.0034

Robeyns, I., 2017. Wellbeing, freedom and social justice: the capability approach re-examined. Open Book Publishers, Cambridge, UK.

Robeyns, I., 2006. The Capability Approach in Practice. J. Polit. Philos. 14, 351–376. https://doi.org/10.1111/j.1467-9760.2006.00263.x

Robeyns, I., 2005. Assessing Global Poverty and Inequality: Income, Resources, and Capabilities. Metaphilosophy 36, 30–49. https://doi.org/10.1111/j.1467-9973.2005.00355.x

Robeyns, I., 2003. Sen's Capability Approach and Gender Inequality: Selecting Relevant Capabilities. Fem. Econ. 9, 61–92. https://doi.org/10.1080/1354570022000078024

Robinson, J., 2006. Ordinary Cities : Between Modernity and Development. Routledge, London, UK. https://doi.org/10.4324/9780203506554

Robinson, J., Parnell, S., 2011. Traveling Theory- Embracing Post-neoliberalism Through Southern Cities, in: Bridge, G., Watson, S. (Eds.), The New Blackwell Companion to the City. John Wiley & Sons, Incorporated, Somerset, UK, pp. 521–531.

Roy, A., 2014. Slum-free cities of the Asian century: Postcolonial government and the project of inclusive growth. Singap. J. Trop. Geogr. 35, 136–150. https://doi.org/10.1111/sjtg.12047

Roy, A., 2011a. Slumdog Cities: Rethinking Subaltern Urbanism. Int. J. Urban Reg. Res. 35, 223–238. https://doi.org/10.1111/j.1468-2427.2011.01051.x

Roy, A., 2011b. Urbanisms, worlding practices and the theory of planning. Plan. Theory 10, 6–15. https://doi.org/10.1177/1473095210386065

Roy, A., 2009. Why India Cannot Plan Its Cities: Informality, Insurgence and the Idiom of Urbanization. Plan. Theory 8, 76–87. https://doi.org/10.1177/1473095208099299

Rufín, C., De Miranda, M., Moskowicz, M., 2020. International experiences of criminal violence and delivery of urban basic services: the case of electricity. Environ. Urban. 095624782091911. https://doi.org/10.1177/0956247820919110

Sachs, J.D., 2015. The Age of Sustainable Development. Columbia University Press, New York, USA.

Samarakoon, S., 2019. A justice and wellbeing centered framework for analysing energy poverty in the Global South. Ecol. Econ. 165, 106385. https://doi.org/10.1016/j.ecolecon.2019.106385

Sareen, S., Haarstad, H., 2018. Bridging socio-technical and justice aspects of sustainable energy transitions. Appl. Energy 228, 624–632. https://doi.org/10.1016/j.apenergy.2018.06.104

Satterthwaite, D., 2001. Reducing urban poverty: constraints on the effectiveness of aid agencies and development banks and some suggestions for change. Environ. Urban. 13, 137–157. https://doi.org/10.1177/095624780101300111

Schindler, S., 2017. Towards a paradigm of Southern urbanism. City 21, 47–64. https://doi.org/10.1080/13604813.2016.1263494

Schlosberg, D., 2012. Climate Justice and Capabilities: A Framework for Adaptation Policy. Ethics Int. Aff. N. Y. 26, 445–461. http://dx.doi.org/10.1017/S0892679412000615

Schlosberg, D., 2007. Defining environmental justice: theories, movements, and nature. Oxford University Press, Oxford, UK.

Schlosberg, D., 2004. Reconceiving Environmental Justice: Global Movements And Political Theories. Environ. Polit. 13, 517–540. https://doi.org/10.1080/0964401042000229025

Scholte, J.A., 1999. Globalization: A Critical Introduction. Palgrave Publishers, New York, USA.

Sen, A., 2010a. The Idea of Justice. Penguin, London, UK.

Sen, A., 2010b. The place of capability in a theory of justice, in: Brighouse, H., Robeyns, I. (Eds.), Measuring Justice: Primary Goods and Capabilities. Cambridge University Press, Cambridge, UK, pp. 239–253.

Sen, A., 2004. Capabilities, Lists, and Public Reason: Continuing the Conversation. Fem. Econ. 10, 77–80. https://doi.org/10.1080/1354570042000315163

Sen, A., 1999. Development as Freedom. Oxford University Press, Oxford, UK.

Sen, A., 1985. Commodities and capabilities, Professor Dr. P. Hennipman lectures in economics ; v. 7. North-Holland, Oxford, UK.

Shafi, S.A., 2010. Urban crime and violence in Dhaka. University Press, Dhaka, Bangladesh.

Shafi, S.A., 2005. Rehabilitation of dwellers at Sattala Bastee Area, Mohakhali. Centre for Urban Studies, Dhaka, Bangladesh.

Shafi, S.A., Payne, G.K., 2007. LAND TENURE SECURITY AND LAND ADMINISTRATION IN BANGLADESH (No. BGD/98/006). LOCAL PARTNERSHIPS FOR URBAN POVERTY ALLEVIATION, Dhaka, Bangladesh.

Shafique, S., Bhattacharyya, D.S., Anwar, I., Adams, A., 2018. Right to health and social justice in Bangladesh: ethical dilemmas and obligations of state and non-state actors to ensure health for urban poor. BMC Med. Ethics 19. https://doi.org/10.1186/s12910-018-0285-2

Simon, D., 2006. Your Questions Answered? Conducting Questionnaire Surveys, in: Desai, V., Potter, R.B. (Eds.), Doing Development Research. Sage, London, UK, pp. 163–171.

Sintusingha, S., Mirgholami, M., 2013. Parallel modernization and self-colonization: Urban evolution and practices in Bangkok and Tehran. Cities 30, 122–132. https://doi.org/10.1016/j.cities.2012.02.001

Soja, E.W., 2010. Seeking spatial justice, Globalization and community. University of Minnesota Press, Minneapolis, USA.

Sovacool, B.K., 2013. Energy and Ethics: justice and the global energy challenge, Energy, climate, and the environment series. Palgrave Macmillan, Basingstoke, UK.

Sovacool, B.K., 2012. The political economy of energy poverty: A review of key challenges. Energy Sustain. Dev. 16, 272–282. https://doi.org/10.1016/j.esd.2012.05.006

Sovacool, B.K., Axsen, J., Sorrell, S., 2018. Promoting novelty, rigor, and style in energy social science: Towards codes of practice for appropriate methods and research design. Energy Res. Soc. Sci. 45, 12–42. https://doi.org/10.1016/j.erss.2018.07.007

Sovacool, B.K., Burke, M., Baker, L., Kotikalapudi, C.K., Wlokas, H., 2017. New frontiers and conceptual frameworks for energy justice. Energy Policy 105, 677–691. https://doi.org/10.1016/j.enpol.2017.03.005

Sovacool, B.K., Drupady, I.M., 2011. Summoning earth and fire: The energy development implications of Grameen Shakti (GS) in Bangladesh. Energy 36, 4445–4459. https://doi.org/10.1016/j.energy.2011.03.077

Sovacool, B.K., Dworkin, M.H., 2014. Global energy justice: problems, principles, and practices. Cambridge University Press, Cambridge, UK.

Sovacool, B.K., Hook, A., Martiskainen, M., Baker, L., 09/2019b. The whole systems energy injustice of four European low-carbon transitions. Glob. Environ. Change 58, 101958. https://doi.org/10.1016/j.gloenvcha.2019.101958

Sovacool, B.K., Lipson, M.M., Chard, R., 2019. Temporality, vulnerability, and energy justice in household low carbon innovations. Energy Policy 128, 495–504. https://doi.org/10.1016/j.enpol.2019.01.010

Sovacool, B.K., Sidortsov, R.V., Jones, B.R., 2014. Energy Security, Equality and Justice. Routledge Ltd, Abingdon, UK.

Stram, B.N., 2016. Key challenges to expanding renewable energy. Energy Policy 96, 728–734. https://doi.org/10.1016/j.enpol.2016.05.034

Sudhakara Reddy, B., Nathan, H.S.K., 2013. Energy in the development strategy of Indian households— the missing half. Renew. Sustain. Energy Rev. 18, 203–210. https://doi.org/10.1016/j.rser.2012.10.023

Suykens, B., 2015. The Land that Disappeared: Forceful Occupation, Disputes and the Negotiation of Landlord Power in a Bangladeshi "Bastee." Dev. Change 46, 486–507. https://doi.org/10.1111/dech.12165

Swapan, M.S.H., 2016. Participatory Urban Governance in Bangladesh: A Study of the Gap between Promise and Realities. Environ. Urban. ASIA 7, 196–213. https://doi.org/10.1177/0975425316652548

Swapan, M.S.H., April 2016b. Who participates and who doesn't? Adapting community participation model for developing countries. Cities 53, 70–77. https://doi.org/10.1016/j.cities.2016.01.013

Tacoli, C., McGranahan, G., Satterthwaite, D., 2015. Urbanisation, rural-urban migration and urban poverty (Working Paper). International Institute for Environment and Development, London, UK.

Taylor, D.E., 2000. The Rise of the Environmental Justice Paradigm. Am. Behav. Sci. 43, 508–580. https://doi.org/10.1177/0002764200043004003

te Lintelo, D.J.H., Gupte, J., McGregor, J.A., Lakshman, R., Jahan, F., 2018. Wellbeing and urban governance: Who fails, survives or thrives in informal settlements in Bangladeshi cities? Cities 72, 391–402. https://doi.org/10.1016/j.cities.2017.10.002

Thornberg, R., 2012. Informed Grounded Theory. Scand. J. Educ. Res. 56, 243–259. https://doi.org/10.1080/00313831.2011.581686

Tilly, C., 2007. Democracy. Cambridge University Press, Cambridge, UK.

Trani, J.-F., Bakhshi, P., Biggeri, M., 2011. Rethinking Children's Disabilities through the Capability Lens: A Framework for Analysis and Policy Implications, in: Biggeri, M., Ballet, J., Comim, F. (Eds.), Children and the Capability Approach. Palgrave Macmillan, Basingstoke, UK, pp. 245–270.

Transparency International, 2020. Corruption Perception Index 2019 (No. cpi2019). Transparency International, Berlin, Germany.

Tucho, G.T., 2020. The Impacts of Policy on Energy Justice in Developing Countries, in: Bombaerts, G., Jenkins, K., Sanusi, Y.A., Guoyu, W. (Eds.), Energy Justice Across Borders. Springer International Publishing, Cham, Switzerland, pp. 137–154. https://doi.org/10.1007/978-3-030-24021-9

UN Habitat, 2015. Habitat III Issue Paper Informal Settlements (No. 2). United Nations, New York, USA.

UN Habitat, 2009. The Right to Adequate Housing (No. Fact Sheet No. 21/Rev.1). UN Habitat, Geneva, Switzerland.

UN-Habitat, 2018. SDG Indicator 1.4.2 Training Module: Secure Tenure Rights to Land. UN-Habitat, Nairobi, Kenya.

United Nations, 1948. Universal Declaration of Human Rights [WWW Document]. URL http://www.un.org/en/universal-declaration-human-rights/index.html (accessed 2.27.18).

United Nations Department of Economic and Social Affairs, 2016. The World's Cities in 2016, Statistical Papers - United Nations (Ser. A), Population and Vital Statistics Report. UN, New York, USA. https://doi.org/10.18356/8519891f-en

United Nations Human Settlements Programme (Ed.), 2003. The Challenge of Slums: global report on human settlements, 2003. Earthscan Publications, London, UK.

van Gelder, J.-L., Luciano, E.C., 2015. Tenure Security as a Predictor of Housing Investment in Low-Income Settlements: Testing a Tripartite Model. Environ. Plan. Econ. Space 47, 485–500. https://doi.org/10.1068/a130151p

van Schendel, W., 2009. A History of Bangladesh. Cambridge University Press, Cambridge, UK.

Varley, A., 2017. Property titles and the urban poor: from informality to displacement? Plan. Theory Pract. 18, 385–404. https://doi.org/10.1080/14649357.2016.1235223

Vizard, P., 2007. Specifying and Justifying a Basic Capability Set: Should the International Human Rights Framework be given a more Direct Role? Oxf. Dev. Stud. 35, 225–250. https://doi.org/10.1080/13600810701514787

Vizard, P., Burchardt, T., 2007. Developing a capability list: final recommendations of the Equalities Review Steering Group on Measurement, CASEpaper, 121. Centre for Analysis of Social Exclusion, London School of Economics and Political Science, London, UK.

Walker, G., Day, R., 2012. Fuel poverty as injustice: Integrating distribution, recognition and procedure in the struggle for affordable warmth. Energy Policy, Special Section: Fuel Poverty Comes of Age: Commemorating 21 Years of Research and Policy 49, 69–75. https://doi.org/10.1016/j.enpol.2012.01.044

Walker, G.P., 2012. Environmental justice: concepts, evidence and politics. Routledge, London, UK.

Walker, J., Berekashvili, N., Lomidze, N., 2014. Valuing Time: Time Use Survey, the Capability Approach, and Gender Analysis. J. Hum. Dev. Capab. 15, 47–59. https://doi.org/10.1080/19452829.2013.837033

Wallace-Wells, D., 2019. The uninhabitable earth: a story of the future. Allen Lane, an imprint of Penguin Books, London, UK.

Watson, V., 2009. Seeing from the South: Refocusing Urban Planning on the Globe's Central Urban Issues. Urban Stud. 46, 2259–2275. https://doi.org/10.1177/0042098009342598

Watson, V., 2002. The Usefulness of Normative Planning Theories in the Context of Sub-Saharan Africa. Plan. Theory 1, 27–52. https://doi.org/10.1177/147309520200100103

White, S.C., 2010. Analysing wellbeing: a framework for development practice. Dev. Pract. 20, 158–172.

Willis, K., 2006. Interviewing, in: Desai, V., Potter, R.B. (Eds.), Doing Development Research. Sage, London, UK, pp. 25–33.

Wilmsen, B., 2016. After the Deluge: A longitudinal study of resettlement at the Three Gorges Dam, China. World Dev. 84, 41–54. https://doi.org/10.1016/j.worlddev.2016.04.003

Wood, N., Roelich, K., 2020. Substantiating Energy Justice: Creating a Space to Understand Energy Dilemmas. Sustainability 12, 1917. https://doi.org/10.3390/su12051917

Woodruff, C., 2001. Review of de Soto's "The Mystery of Capital." J. Econ. Lit. 39, 1215–1223. https://doi.org/10.1257/jel.39.4.1215

World Bank, 2019. Bangladesh Poverty Assessment (No. Volume II). World Bank, Washington DC, USA.

World Bank, 2014. The Asian Coalition for Community Action's Approach to Slum Upgrading. World Bank, Washington, DC, USA.

Yahya, S.S., 2002. Community Land Trusts and other tenure innovations in Kenya, in: Payne, G.K. (Ed.), Land, Rights and Innovation: Improving Tenure Security for the Urban Poor. ITDG, London, UK, pp. 233–263.

Yenneti, K., Day, R., 2015. Procedural (in)justice in the implementation of solar energy: The case of Charanaka solar park, Gujarat, India. Energy Policy 86, 664–673. https://doi.org/10.1016/j.enpol.2015.08.019

Young, I.M., 1990. Justice and the politics of difference. Princeton University Press, Princeton, USA.

Zanuzdana, A., Khan, M., Kraemer, A., 2013. Housing Satisfaction Related to Health and Importance of Services in Urban Slums: Evidence from Dhaka, Bangladesh. Soc. Indic. Res. 112, 163–185. https://doi.org/10.1007/s11205-012-0045-5

12 Appendices

Appendix 3.1: Thematic Analysis of Central Capabilities

Nussbaum (2000) pp78-80	Robeyns (2003) pp71-72	Biggeri et al. (2006) pp65-66	Vizard and Burchardt (2007) pp5-8	Alkire et al. (2009) pp16-18	Greco et al. (2015) p72	Designation Capability of having:
Women and human development	Women in Western countries	Children's labour study	Monitoring equality in Britain	Equality measurement	Malawi rural women	
Life	Life and physical health: being able to be physically healthy and enjoy a life of normal length.	Life and physical health: being able to be physically healthy and enjoy a life of normal length.	To be alive, avoiding premature mortality, to be protected from arbitrary denial of life	To be alive		**Rejected item (A life): considered too abstract or non-specific for this study**
Bodily health: Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.	Life and physical health: being able to be physically healthy and enjoy a life of normal length. Mental well-being: being able to be mentally healthy.	Life and physical health: being able to be physically healthy and enjoy a life of normal length. Mental well-being: being able to be mentally healthy.	To be healthy, attaining the highest possible standard of health, access to health information, to healthcare, to maintain a healthy lifestyle, to have a healthy environment	To be healthy	- being able to do physical work - having enough food to eat - being able to avoid diseases - being able to space births	**Good health**
Bodily integrity: being able to be secure against assault, including sexual assault, child sexual abuse, and domestic violence	Bodily integrity and safety: being able to be protected from violence of any sort.	Bodily integrity and safety: being able to be protected from violence of any sort.	To live in physical security, free from violence, free from cruel treatment, protected from physical or sexual	To live in physical security	- living free from domestic violence - feeling safe and comfortable in the village	**Physical security**

Nussbaum (2000) pp78-80	Robeyns (2003) pp71-72	Biggeri et al. (2006) pp65-66	Vizard and Burchardt (2007) pp5-8	Alkire et al. (2009) pp16-18	Greco et al. (2015) p72	Designation Capability of having:
			abuse, to use public spaces securely			
Affiliation: A. Being able to live with others, to engage in various forms of social interaction; to be able to have the capability for justice and friendship.			Knowing you will be protected and treated fairly by the law	Knowing you will be protected and treated fairly by the law	- being free from oppression	**Legal protection**
Senses, imagination and thought: A. Being able to use the senses, to imagine, think, and reason – cultivated by an adequate education, including literacy and basic mathematical and scientific training.	Education and knowledge: being able to be educated and to use and produce knowledge.	Education — being able to be educated.	To be knowledgeable To understand and reason To have the skills to participate in society, attaining highest possible standard of know-ledge, to be fulfilled intellectually, access education and training.	To be knowledgeable, to understand and reason, and to have the skills to participate in society	- being able to educate the children - having knowledge	**An education**
Practical reason: Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. **Affiliation: B.** Having the social bases of self-respect and non-humiliation; being able to be treated as a	Respect: being able to be respected and treated with dignity.	Respect: being able to be respected and treated with dignity.	Of being and expressing oneself Having self-respect. Develop and maintain self-respect and self-esteem	Being and expressing yourself, and having self-respect	- living without shame - having control over personal matters - being respected	**Dignity and self-respect**

Nussbaum (2000) pp78-80	Robeyns (2003) pp71-72	Biggeri et al. (2006) pp65-66	Vizard and Burchardt (2007) pp5-8	Alkire et al. (2009) pp16-18	Greco et al. (2015) p72	Designation Capability of having:
dignified being whose worth is equal to that of others.						
Control over one's environment: B. Material. Having property rights (land and objects) on an equal basis with others; having the right to seek employment on an equal basis with others.	Paid work and other projects: being able to work in the labour market or to undertake projects, including artistic ones.	Freedom from economic and non-economic exploitation — being able to be protected from economic and non-economic exploitation.	To undertake paid work, to work in just and favourable conditions, not to be forced to work without pay			**A livelihood and fair pay**
Senses, imagination and thought: B. Being able to use imagination and thought in connection with experiencing and producing self-expressive works and events of one's own choice, religious, literary, musical, and so forth. Guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences.	Leisure activities: being able to engage in leisure activities.	Leisure activities: being able to engage in leisure activities.	To engage in productive and valued activities, to have rest and leisure,	To engage in productive and valued activities		**Involvement in valued and enjoyable activities**
	Religion: being able to choose to live or not to live according to a religion.	Religion and identity — being able to choose to live, or not to live, according to a rel-igion and identity.				**Freedom for religious observation**
			To enjoy a comfortable standard of living including:	To enjoy a comfortable standard of living including:		**Decent clothing**

Nussbaum (2000) pp78-80	Robeyns (2003) pp71-72	Biggeri et al. (2006) pp65-66	Vizard and Burchardt (2007) pp5-8	Alkire et al. (2009) pp16-18	Greco et al. (2015) p72	Designation Capability of having:
			clothing, housing	clothing, housing		
Bodily health: Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.	Shelter and environment: being able to be sheltered and to live in a safe and pleasant environment.	Shelter and environment: being able to be sheltered and to live in a safe and pleasant environment.	Ditto	Ditto	- living in a decent house	**Decent housing**
Control over one's environment: A. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association.	Political empowerment: being able to participate in and have a fair share of influence on political decision-making.	Participation — being able to participate in public and social life and to have a fair share of influence and being able to receive objective information.	To participate in decision-making To have voice and influence	To participate in decision-making, have a voice and influence	- avoiding social exclusion and discrimination	**A political voice**
Play: Being able to laugh, to play, to enjoy recreational activities.	Social relations: being able to be part of social networks	Social relations: being able to be part of social networks	To enjoy individual, family and social life	To enjoy individual, family and social life		**A family life and a social life**
Affiliation: A. Being able to live with others, to engage in various forms of social interaction; to be able to have the capability for both justice and friendship.	Social relations: being able to be part of social networks and to give and receive social support.	Social relations: being able to be part of social networks and to give and receive social support.			- being able to join community groups	**Freedom to be with anyone (affiliation)**
Control over one's environment: B. Material. Having property rights (land					- having control over personal matters	**Control over one's assets**

Nussbaum (2000) pp78-80	Robeyns (2003) pp71-72	Biggeri et al. (2006) pp65-66	Vizard and Burchardt (2007) pp5-8	Alkire et al. (2009) pp16-18	Greco et al. (2015) p72	Designation Capability of having:
and objects) on an equal basis with others; having the right to seek employment on an equal basis with others.					- having control over money - owning assets - being able to access business opportunities	
			To have choice and control over where and how you live. To enjoy your home in peace and security. (p6) To own property …. in your own right	Enjoy your home in peace and security		**Secure house occupation**
Emotions. To love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by overwhelming fear and anxiety.		Love and care— being able to love and be loved by those who care for us and being able to be protected.			- having peace of mind - being satisfied with life - being happy	**Rejected item (Emotions): considered too abstract or non-specific for this study**
Other species	Mobility: being able to be mobile. Time-autonomy: being able to exercise autonomy in allocating one's time.	Mobility — being able to be mobile. Time-autonomy — being able to exercise autonomy in allocating one's time and undertake projects.			**Social security:** - being able to rely on safety nets - being able to cope with shocks - being able to access services	**Rejected items not of primary relevance to this study**

Appendix 3.2: Theme Comparison with UN Declaration of Human Rights

Designation Capability of having:	UN Declaration of Human Rights Several Articles in the document do not translate easily into expression as a human capability.
A life	**Article 3:** Everyone has the right to life, liberty and security of person.
Good health	**Article 25:** Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care
Physical security	**Article 3:** Everyone has the right to life, liberty and security of person.
Legal protection	**Article 6**: Everyone has the right to recognition everywhere as a person before the law. **Article 7:** All are equal before the law and are entitled without any discrimination to equal protection of the law **Article 10**: Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal, in the determination of his rights and obligations and of any criminal charge against him.
An education	**Article 26:** 1. Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.
Dignity and self-respect	**Article 5**: No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.
A livelihood and fair pay	**Article 23**: 1. Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment. 2. Everyone, without any discrimination, has the right to equal pay for equal work. 3. Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection.
Involvement in valued and enjoyable activities	**Article 24:** Everyone has the right to rest and leisure
Freedom for religious observation	**Article 18:** Everyone has the right to freedom of thought, conscience and religion
Decent clothing **Decent housing**	**Article 25:** Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing
A political voice	**Article 19:** Everyone has the right to freedom of opinion and expression. **Article 21**: Everyone has the right to take part in the government of his country, directly or through freely chosen representatives.

Designation Capability of having:	UN Declaration of Human Rights Several Articles in the document do not translate easily into expression as a human capability.
A family life and a social life	**Article 27:** Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. **Article 24:** Everyone has the right to rest and leisure
Freedom to be with anyone (affiliation)	**Article 20:** Everyone has the right to freedom of peaceful assembly and association.
Control over one's assets	**Article 17**: 1. Everyone has the right to own property alone as well as in association with others. 2. No one shall be arbitrarily deprived of his property.
Secure house occupation	**Article 17** 1. Everyone has the right to own property alone as well as in association with others. 2. No one shall be arbitrarily deprived of his property.

Appendix 4.1: Research Instrument: Expert Interviews (initial)

Date	Start time	End time	Location
Name	Organisation	Position	

My research concerns the positive and negative outcomes of Bangladesh's energy system for people in Dhaka and how energy practices in the slums affect slum dwellers.

I am going to ask you some questions about the urban energy sector in Dhaka and in the slums of Dhaka. The academic literature on energy in Dhaka paints a picture of a system with many supply and demand challenges. I hope to gain a better understanding of the situation by accessing your expert knowledge. My questions start at the national and city scale, and then to the situation in the slum settlements.

Please feel free to state that you do not have expertise to answer a question or that you would prefer to not answer a question. It is fine if we only cover a selection of these questions.

Question	Notes
What challenges in urban energy supply does Bangladesh face that are worse than, or different to, other countries in Asia?	
Some authors point to a huge projected shortfall in Bangladesh's power supply over the next 15 years. How do you think that will play out?	
Many authors write about the existing power shortage in Dhaka. What is the impact of this on Dhaka's residents do you think?	
As you understand it, what is the governance system for electricity in Dhaka? Do you believe that the system works well? What are the challenges and constraints?	
What are the main elements of inequity in Dhaka's energy system, if any?	
In relation to informal settlements, especially illegal bostees, the academic literature describes a system where slumlords arrange a quasi-legal connection to a central pole and then deliver electricity to residents at high prices. Is that how you understand the system works in those environments? If not, could you describe the energy practices? Why is the system like this do you think?	
What do you think are the main issues associated with cooking fuel for slum dwellers?	
What would need to change for energy supply to be better for Dhaka and Dhaka's slums? What are the main barriers to improvement?	

Appendix 4.2: Participant information and sign in sheet: FGD Leadership group

Leaders Group 1

⌂UCL

Focus Group Discussion: participant information, consent and sign-in

Bostee leaders

Participant information

Hello, my name is Mark Jones/Wendy Truer. I'm from Australia. This is my interpreter Younus/XXXXX. I am researching energy use in the bostee and you are invited to take part. Before you decide, it is important for you to understand about the research and this discussion. I am investigating how your electricity and cooking fuel work and how they affect people's lives. This is a group discussion with the bostee leaders for some background information, which will take about one hour. I will ask some questions about the bostee and all opinions are welcome.

Taking part is voluntary and you can leave any time you like without you giving a reason and without any negative consequences. Taking part will not benefit you directly but I have a small gift for you at the end. I hope that my research can help the government and others to eventually improve things for people like you.

My research will be published in a journal or a book. Also, I will try to write newspaper articles about the bostee. All the information that I collect during the course of the research will be kept confidential. Your comments are confidential, and your name is not recorded. You will not be able to be identified in my report. This session is being audio recorded but the translator and I are the only people who will hear the recording.

You can email or call the translator or me afterwards if you have any questions.

FDG Participant consent

Please acknowledge that you have understood what you have just been told by initialling or ticking the sign-on sheet. (nobody will ever see this sheet apart from myself).

Sign-in table

Participant	Initials
Participant 1	
Participant 2	
Participant 3	
Participant 4	
Participant 5	
Participant 6	
Participant 7	
Participant 8	
Participant 9	
Participant 10	

FDG Demographic data

I am now going to collect some anonymous data, so I have a record of the type of people involved. Your name is not connected to this information.

Mark Jones, Bartlett Development Planning Unit   13 May 2019

Appendix 4.3: Participant information and sign in sheet: FGD valued capabilities (example)

Female FDG
8 . 6 . 2019
Area 2.

Area 2
Women

Focus Group Discussion: participant information, consent and sign-in

Capabilities discussion

Participant information

Hello, my name is Mark Jones/Wendy Truer. I'm from Australia. This is my interpreter Younus/Sakura. I am researching energy use in the bosteeand you are invited to take part. Before you decide, it is important for you to understand about the research and this discussion. I am investigating how your electricity and cooking fuel work and how they affect people's lives. This is a group discussion about what is important in your life, which will take about one hour. I will ask some questions and all opinions are welcome. I am conducting about ten group discussions like this across the bostee to collect a full range of opinions.

Taking part is voluntary and you can leave any time you like without you giving a reason and without any negative consequences. Taking part will not benefit you directly but I have a small gift of fruit for you at the end. I hope that my research can help the government and others to eventually improve things for people like you.

My research will be published in a journal or a book. All the information that I collect during the course of the research will be kept confidential. Your comments are confidential, and your name is not recorded. You will not be able to be identified in my report. This session is being audio recorded but the translator and I are the only people who will hear the recording.

You can email or call the translator or me afterwards if you have any questions. If you have any complaints about the process, you can speak to the community leaders who will directly pass that on to my university.

FDG Participant consent

Please acknowledge that you have understood what you have just been told by initialling or ticking the sign-on sheet. (nobody will ever see this sheet apart from myself).

Sign-in table

Participant	Initials
Participant 1	⌒
Participant 2	レ
Participant 3	レ
Participant 4	レ
Participant 5	レ
Participant 6	レ
Participant 7	
Participant 8	
Participant 9	
Participant 10	

FDG Demographic data

I am now going to collect some anonymous data, so I have a record of the type of people involved. Your name is not connected to this information.

Appendix 4.4: Research Instrument: FGD Leadership group

Date	Start time	End time	Location
Facilitator	Translator	Conditions	

Use separate 'Information, consent and sign-in' sheet before commencement.

Participants

Age	M/F	Occupation	Years here	HH size

Do you have any questions?Yes/no. May we proceed?Yes/no.

Item	Question/Activity	Time Guide
1	In what year did this bostee come into existence? Why did that happen? Why here? What was here beforehand?	Roughly 5 minutes per set of questions
2	Are some of the people who came here first still here? Where did they come from and why did they leave there?	
3	Was the lake always here? Is it a different size now? How and why did the size change? What is the water quality in the lake?	
4	How is the lake used now? Is the water used for any purpose? Is any material or waste dumped into the lake?	
5	What would happen if a bostee dweller tried to build a house on the open space? What will happen with the open space?	
6	Who built the new road? What is it for? How many houses and businesses were demolished? Where are those people now?	
7	Are people still coming to the bostee to live? Where are they coming from? Is there room for more people in this bostee? Is everyone who wants to live here allowed to stay? Who is excluded and why?	
8	What years were the worst fires? What happened and how many people were affected?	
9	What years were the worst evictions/demolitions? What happened and how many people were affected?	
10	Who helps people like you? Who hurts people like you?	
11	Are people in this bostee poorer or richer than people in other slums in Dhaka?	
12	Are some people in this bostee richer than most other residents? Where do the richest people in the bostee live? Do the richest people in the bostee help those in trouble?	
13	Can you tell me the worst things about living in this bostee?	
14	Can you tell me the best things about living in this bostee?	

Appendix 4.5: Research Instrument: FGDs on valued capabilities

Date	Start time	End time	Location
Facilitator	Translator	Conditions	

Use separate 'Information, consent and sign-in' sheet before commencement.

Participants

Age	M/F	Occupation	Years here	HH size

Do you have any questions?Yes/no. May we proceed?Yes/no.

Item	Question/Activity	Guide
1	What does the idea of 'a good life' mean for people who live in your community? What is important in life?	Open discussion for approx 10 minutes
2	What improvements in your life would make you and your family more content?	Open discussion for approx 10 minutes
3	Discuss why each of the following freedoms/opportunities is important for people like you: p.Having good health q.Having physical security r.Having legal protection s.Having an education t.Having dignity and self-respect u.Having a job and fair pay for work v.Having secure occupation of your house w.Having opportunity for activities you value and enjoy (such as art, reading, music, sport, games, hobbies) x.Having freedom for religious observation y.Having decent housing z.Having decent clothing aa.Having a political voice bb.Having a family life and a social life cc.Having freedom to be with anyone you choose dd.Having control over your assets	Reference prepared postcards (one for each). Open discussion, notionally 2 – 3 minutes on each item. People to define what each means to themselves - and why is it important?

Item	Question/Activity	Guide
4	Now we are going to discuss which of these freedoms/opportunities are most important for people like you.	Open discussion for approx 10 minutes
5	Now you are each going to select your most important three freedoms/opportunities with a blue sticker and then your second most important three with a red sticker. Don't worry about what anyone else chooses or about what other people think of your choices. • Place your three blue stickers beside the most important three freedoms/opportunities first. • Now place your three red stickers beside the next most important three freedoms/opportunities.	Guided process of voting with coloured marbles
	Let participants know the ballot result (for their interest) and then thank them for participating and issue food gifts.	

Appendix 4.6: Research Instrument: FGDs on energy practices and capability impacts

Date	Start time	End time	Location
Facilitator	Translator	Conditions	

Use separate 'Information, consent and sign-in' sheet before commencement.

Participants

Age	M/F	Occupation	Years here

Do you have any questions?Yes/no. May we proceed?Yes/no.

Electricity

Item	Question/Activity	Guide
1	Who is the electricity supplier to bostee households? Who connects each household? House owner/land owner/maastan/electricity company?	(3 mins)
2	Who do people pay? Where do people pay? At home to a collector? At an office? Who checks what electricity you use?	Physical process of payment. (3 mins)
3	Is the electricity safe for bostee families? Have there been fires caused by the electricity? Have there been electric shocks or electrocutions? Are there many blackouts? What do you use for lights in a blackout?	(5 mins)
4	How does the present electricity **help** families with each of the following freedoms/opportunities? How does the present electricity **limit** each of these freedoms/opportunities? a.Having good health b.Having an education c.Having a job and fair pay for work d.Having dignity and self-respect	Reference prepared postcards (one for each). Open discussion, notionally 5 minutes on each item. Define what is helped by the electricity and what is limited by the quantity/quality of electricity?
5	Which of the above would improve for families if they had more appliances?	Open discussion approx. 5 mins

Item	Question/Activity	Guide
	(such as more lights or fans or a TV/computer/refrigerator) How would it improve?	
6	Is there anything else to say about the electricity?	

Cooking Fuel

Item	Question/Activity	Guide
1	Is all cooking in the bostee houses with firewood? What else is used? Does anyone burn anything else for cooking (eg cardboard, dung, plastic, clothes)? Do any houses (or clusters) have gas cooking? Will gas come to this bostee one day do you think?	(5 mins)
2	Is all firewood purchased at the firewood shops in the bostee? Do people collect firewood or other items for burning themselves?	(2 mins)
3	Is the use of firewood safe for bostee families? If not safe, what are the main concerns? Have there been big fires caused by the firewood?	(5 mins)
4	Do people share cooking fires with other families? So is the firewood shared?	(2 mins)
5	Do women or men light the fires? Do women or men look after the fires?	(2 mins)
6	How does the firewood **help** families with each of the following freedoms/opportunities? How does the firewood **limit** each of these freedoms/opportunities?	Reference prepared postcards (one for each). Open discussion, notionally 5 minutes on each item. Define what is helped by the cooking fuel and what is limited by the quantity/quality of cooking fuel?
	a.Having good health	
	b.Having an education	
	c.Having a job and fair pay for work	
	d.Having dignity and self-respect	
8	Which of the above would improve for families if they had gas instead of firewood? How would it improve?	Open discussion approx. (5 mins)
9	What happens when people do not have enough firewood for their cooking?	Open discussion approx. (3 mins)
10	Is there anything else to say about the cooking fuel?	

Issue food gifts to participants

Appendix 4.7: Research Instrument: Bostee survey (main)

Date	Start time	End time	Sector location	
Interviewer ID		Accompanied (yes/no)	By (Mark/Wendy/other)	

Use separate 'Information, consent and sign-in' sheet before commencement.

Do you have any questions?Yes/no. May we proceed?Yes/no.

Personal Data (single respondent)

Gender	Age	Marital status	Number in household	Number of rooms in house
Years in this bostee	Renter/owner	Household income (optional)	Religion (optional)	Other

Vocation (of male and of female household heads)

Rickshaw puller	Garments industry	Home keeper	Construction labourer	Driver
Shop owner	Shop worker	Recycling material	Other (nominate)	

History

Did you grow up in Dhaka? If not, then where?	Where did you live before here?
Why did you leave there?	Why did you come to this bostee?

Household electrical appliances (numbers)

Lights	Fans	Television	Radio/stereo	Refrigerator
Mobile phone	Other appliances	Which are shared?	Electricity cost/ month	Who do you pay?

Cooking

Use gas	Use firewood	Use other fire fuels (what are they)	Fireplace shared with other families	Fuel cost/ month
			Yes/no	

Electricity: Health

Thinking of the quality of your electrical service, what is the impact on your family members' health?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Electricity: Education

Thinking of the quality of your electrical service, what is the impact on your family members' education?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Electricity: Livelihood

Thinking of the quality of your electrical service, what is the impact on your family members' livelihood?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Electricity: Dignity and self-respect

Thinking of the quality of your electrical service, what is the impact on your family members' dignity and self-respect?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Are any of the above experiences different for men, women and children?

Cooking fuel: Health

Thinking of the quality of your cooking fuel, what is the impact on your family members' health?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Cooking fuel: Education

Thinking of the quality of your cooking fuel, what is the impact on your family members' education?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Cooking fuel: Livelihood

Thinking of the quality of your cooking fuel, what is the impact on your family members' livelihood?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Cooking fuel: Dignity and self-respect

Thinking of the quality of your cooking fuel, what is the impact on your family members' dignity and self-respect?

Very positive	Positive	Neutral	Negative	Very negative
Why did you give that answer?				

Do all of the above affect only women or also men and children?

Change questions:	
What changes to the electricity practices in the bostee would make life better for people like you?	
What changes to the cooking practices in the bostee would make life better for people like you?	

Protests and complaints

If you were unhappy with your electricity or electricity cost, can you complain?	Yes/no
What would happen if you complained about your electricity or electricity cost?	
If you were unhappy with your cooking fuel or cost of your cooking fuel, can you complain?	Yes/no
What would happen if you complained about your cooking fuel or cooking fuel cost?	
Can people in the bostee complain as a group?	Yes/no
What would happen if there was a group protest?	

Fairness

Is the electricity arrangement here fair to your family?	Yes/no
If not, why do you say it is not fair?	

Gift

I have a small gift of food for you from the research team to thank you for being generous with your time. Thank you for taking part.

Appendix 4.8: Participant information and sign in sheet: Bostee survey (example)

Bostee survey: participant information, consent and sign-in

SurveyParticipant information

We areresearching how your electricity and cooking fuel work and how they affect your life. We are conducting about 160surveys like this across the bostee to collect a full range of opinions.

Taking part is voluntary and we can stop any time you like without you giving a reason and without any negative consequences. Taking part will not benefit you directly but we have a small gift of fruit for you at the end.We hope that the research can help the government and others to improve things for people like you.

All the information that we collect during the course of the research will be kept confidential.Your name is not recorded. You will not be able to be identified in the report.

If you have any complaints about the process, you can speak to the community leaders who will directly pass that on to my university.

SurveyParticipant consent

Please acknowledge that you have understood what you have just been told by initialling or ticking the sign-on sheet.

Unit

1	2	3	4	5	6	7	8	9	10

Sign-in table

Participant	Initials ✓	Participant	Initials	Participant	Initials
Participant 1	✓	Participant 16		Participant 31	
Participant 2	✓	Participant 17		Participant 32	
Participant 3	✓	Participant 18		Participant 33	
Participant 4	✓	Participant 19		Participant 34	
Participant 5	✓	Participant 20		Participant 34	
Participant 6	✓	Participant 21		Participant 36	
Participant 7	✓	Participant 22		Participant 37	
Participant 8	✓	Participant 23		Participant 38	
Participant 9	✓	Participant 24		Participant 39	
Participant 10	✓	Participant 25		Participant 40	
Participant 11		Participant 26		Participant 41	
Participant 12		Participant 27		Participant 42	
Participant 13		Participant 28		Participant 43	
Participant 14		Participant 29		Participant 44	
Participant 15		Participant 30		Participant 45	

FDG Demographic data

I am now going to collect some anonymous data, so I have a record of the type of people involved. Your name is not connected to this information.

Mark Jones, Bartlett Development Planning Unit   11 June 2019

Appendix 4.9: Research Instrument: Bostee survey (habitability)

Use separate 'Information, consent and sign-in' sheet before commencement.

Date	Start time	End time	Sector location	
Interviewer ID			Accompanied (yes/no)	By (Mark/Wendy/other)

Do you have any questions?Yes/no. May we proceed?Yes/no.

Personal Data (single respondent)

Gender	Age	Marital status	No. in household	Renter/owner

Do you agree or disagree with the following statement? *I would like to improve my present house.*

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Why did you give that answer?				

What is the worst aspect about your present house? (choose two)

Heat	Darkness	Smoke	Noise	Smells
Leaks	Other (specify)			

What physical change to your present house would best improve it for you and your family?

What are the two main reasons for you not making improvements to your present house? (choose two)

I have no money	I have no time	No point if we are to be evicted	I expect to move away soon
I am a tenant so it's not up to me		No need to improve/ happy as it is	Other (specify)

Just one more unrelated question. Do you sleep at night with your door open or closed?

Why do you sleep with it open/closed?

Gift

I have a small gift of food for you from the research team to thank you for being generous with your time. Thank you for taking part.

Appendix 4.10: Bostee Survey (habitability) sign-in sheet

Bostee survey: participant information, consent and sign-in

SurveyParticipant information

We areresearching about the quality of your house. We are conducting about 30 or 40surveys like this across the bostee to collect a full range of opinions.

Taking part is voluntary and we can stop any time you like without you giving a reason and without any negative consequences. Taking part will not benefit you directly but we have a small gift of fruit for you at the end.We hope that the research can help the government and others to improve things for people like you.

All the information that we collect during the course of the research will be kept confidential.Your name is not recorded. You will not be able to be identified in the report.

If you have any complaints about the process, you can speak to the community leaders who will directly pass that on to my university.

SurveyParticipant consent

Please acknowledge that you have understood what you have just been told by initialling or ticking the sign-on sheet.

Sign-in table

Participant	Initials	Unit	Participant	Initials	Unit
Participant 1	✓	1	Participant 21	✓	9
Participant 2	✓	1	Participant 22	✓	9
Participant 3	✓	7	Participant 23	✓	10
Participant 4	✓	7	Participant 24	✓	10
Participant 5	✓	4	Participant 25	✓	8
Participant 6	✓	4	Participant 26	✓	8
Participant 7	✓	4	Participant 27	✓	7
Participant 8	✓	4	Participant 28	✓	2
Participant 9	✓	4	Participant 29	✓	2
Participant 10	✓	4	Participant 30	✓	2
Participant 11	✓	4	Participant 31	✓	5
Participant 12	✓	4	Participant 32	✓	3
Participant 13	✓	8	Participant 33	✓	6
Participant 14	✓	8	Participant 34		
Participant 15	✓	8	Participant 35		
Participant 16	✓	8	Participant 36		
Participant 17	✓	8	Participant 37		
Participant 18	✓	8	Participant 38		
Participant 19	✓	9	Participant 39		
Participant 20	✓	9	Participant 40		

FDG Demographic data

I am now going to collect some anonymous data, so I have a record of the type of people involved. Your name is not connected to this information.

Appendix 4.11: Research Instrument: Bostee interviews (mastaans)

Date	Start time	End time	Sector location
Interviewer ID		Accompanied (yes/no)	By (Mark/Wendy/other)

Use separate 'Information, consent and sign-in' sheet before commencement.

Do you have any questions?Yes/no. May we proceed?Yes/no.

Personal Data (single respondent)

Gender	Age	Marital status	Years in this bostee	Renter/owner

Gang activity

I am going to ask you some questions about the bad people - goons and maastans. You don't have to answer, but if you do, nobody will learn about what you say to me.

Do you see bad people, like goons or maastans in the slum?	Yes/no
Do they live here or visit the bostee?	Live here/visit the bostee
What do they want?	
What do they try to do?	
What would happen if you upset them or make them angry?	
Who is their boss?	
Are they involved with the electricity supply?	Yes/no
Can the police protect families like yours from those bad people?	Yes/no
Who are their friends?	
Do you worry about them?	Yes/no
How do they help people like you?	
How can they harm people like you?	

Appendix 4.12: Sign-in Sheet: Bostee interviews (mastaans)

Interview (mastaans): participant information, consent and sign-in

Participant information

Hello, my name is Mark Jones. I'm from Australia. This is my interpreter Younus. I am researching energy use in the bostee and I have some questions about the mastaans.

Some questions I do not like but Mr Jones is the boss of the research and he has told me to ask the questions. You do not have to answer every question.

Taking part is voluntary and stop any time you like without you giving a reason and without any negative consequences. Taking part will not benefit you directly but we have a small gift of fruit for you at the end. I hope that my research can help the government and others to eventually improve things for people like you.

All the information that I collect during the course of the research will be kept confidential. Your comments are confidential, and your name is not recorded. You will not be able to be identified in my report. This session is being audio recorded but the translator and I are the only people who will hear the recording.

If you have any complaints about the process, you can speak to the community leaders who will directly pass that on to my university.

FDG Participant consent

Please acknowledge that you have understood what you have just been told by initialling or ticking the sign-on sheet. (nobody will ever see this sheet apart from myself).

Sign-in table

Participant	Initials
Participant 1	
Participant 2	
Participant 3	
Participant 4	
Participant 5	
Participant 6	
Participant 7	
Participant 8	
Participant 9	
Participant 10	

Do you have any questions?	Yes/no.
May we proceed?	Yes/no.

Appendix 4.13: Qualitative data analysis colour coding (example)

Interviewer: Are there any benefits to staying in the slums?	
Respondents (Group): No!	
Respondent 1 (Female): We don't get anything, there is not even a single school or clinic.	Absence of social services
Respondent 2 (Female): I can't send my children to school. I used to have a tea stall which the people came and demolished, even my husband is unemployed. Now we just survive by selling Pithas (Local Cake) on the streets. We don't have any guarantee of life. Just one fine day, some people comes in says we will burn this place now. They come and threaten us to leave the bostee during the day, because they will burn it at night! Even we are fearing that the new road that is being built will cause us to be displaced.	Absence of social services Eviction Fire
Respondent 1 (Female): So where will so many of these people go?	
Respondent 2 (Female): The local Member of the Parliament had given us many hopes but look at my situation now. Before the election they had come and said that they will give rehabilitation to the destitute people. They said that they will provide a living place for the residents who have been living here more than 30 years, but nothing has been executed. They promised that the Bostee would be dismantled only after rehabilitation was provided. But they have done nothing!	Political voicelessness
Interviewer: What are the bad sides of living here?	
Respondents (Group): The frequent raids that we have to face and also the fire are the two main problems.	Fire Eviction
Respondent 1 (Female): Now, the NGOs have made us a few bathrooms and tubwells which is good. But even these have been dismantled.	Inadequate NGO reach
Respondent 3 (Female): Our biggest problem is that we are landless. We see that the Prime Minister is saying that she will make "Guccha Grams" (Villages for the Poor under the "Guchhogram (CVRP)" Project of the Government of Bangladesh) for the landless. Now, will the people who are genuinely poor actually get these houses, or the Landlords will get these? This is what we want to know from the government.	Absence of land tenure Political voicelessness
Other Respondents from the Back (Whispering Tone): "Don't say this, Don't say this…"	
Respondent 4 (Male): See my condition, I am unemployed. I eat at one person's home and stay and another's.	Employment injustices
Other Respondents: Look at his condition, he just eats if other people feed him (Respondent 4 Male). But see, he is a Freedom Fighter, but he gets nothing from the government. He is even registered as Freedom Fighter, but he doesn't get his stipends and aid as freedom fighter.	Welfare Political voicelessness

Appendix 4.14: Focussed Codes Concept Map
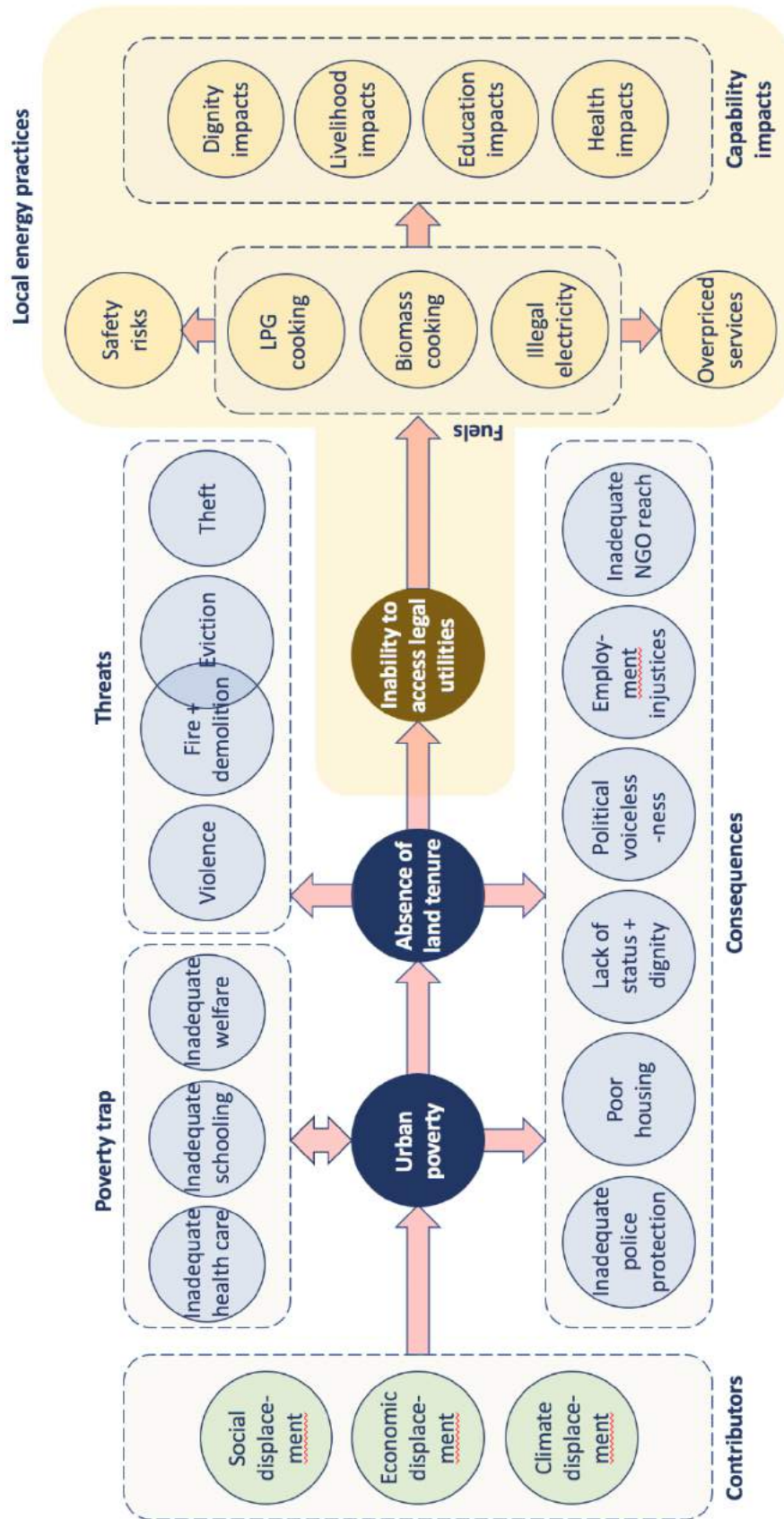
Appendix 4.15: Conference Papers and Articles

Date	Venue/publication	Format	Title
Jul 2018	University of Queensland	Lecture	A Capability Analysis of Energy Justice in Informal Settlements: Dhaka's slums as a case study
Sep 2018	University of Malmo	Conference paper	A Capability Analysis of Energy Justice in Informal Settlements: Dhaka's slums as a case study
Jan 2019	Independent University (Dhaka)	Conference paper	A Case of Climate Justice and Energy Justice: Solar energy for the urban poor of Dhaka
Jan 2019	University of Dhaka	Lecture	A Capability Analysis to Inform Energy Justice in Informal Settlements: Dhaka's slums as a case study
Jul 2019	University of Queensland	Lecture	The Causes and Effects of Energy Injustices in Dhaka's Slums
Nov 2019	UCL Urban Laboratory conference	Conference paper	The Causes and Effects of Energy Injustices in Dhaka's Slums
Dec 2019	University of Queensland Tropicality conference	Conference paper (published)	Land Tenure and Housing Quality as Drivers of Energy Justice in Slums
Forthcoming	Global Discourse: special issue: Precarious housing, health and wellbeing	Journal article	Tenure Security, Housing Quality and Energy (in)Justice in Dhaka's Slums

Appendix 5.1: Kalyanpur Population Estimate Method

Bostee leaders advise that the settlement population is **20,000**. The occupied area of the KPB site is 7.56 hectares (75,600m2), measured from the bostee map (Figure 5.5). I estimate a density of at least 620 dwellings of 9m2 each, per hectare on the basis of the diagram below (Figure A5.1). The diagram shows 837 houses in one hectare, but I subtract 25% for school, latrines, water points, shops, cafes, some larger houses. The total then for 7.56 hectares would be 4,687 households. My bostee survey (sample = 174) found an average of 4.03 persons per household. So, the population would be close to **19,000** people on these numbers.

Previous unreferenced and unverified estimates in journal articles and reports include:

- Badhan et al., (2017, p55): note a population of 40,000
- Latif et al., (2016, p74): note a population of 8,129
- Ali et al., (2016, p3): note a population of 10,000 in 2010 and 15,000 in 2015. Extrapolation of growth suggests **20,000** in 2020.

Figure A5.1: Bostee density study (A Jones)