COLOPHON:

Geographies of power:
Spatial Strategies for a ‘socially just’ Energy Transition in Tamil Nadu

Masters Thesis P4 Report
MSc. Architecture, Urbanism and the Built Environment - TU Delft
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May, 2019

GEOGRAPHIES OF POWER
Spatial strategies for a ‘socially just’ energy transition in Tamil Nadu
The era of energy transition has brought to the front, the incredible potential of designing the reciprocal relationship between energy and space. The transition to renewable sources of energy like wind, solar and geothermal energy, uses space in a different way- its altered spatial qualities have blurred the boundaries between technical space (shunned by planners) and 'non-technical' space (coveted by planners). This spatial dimension of energy transition is the focus of the graduation project.

Taking the case of Tamil Nadu, India, the project proposes a re-imagination of emerging energy geographies through regional design and spatial strategies, to create a framework for a humanised socio-technical transition.

**Key words:** energy transition, spatial governance, energy landscape, energy justice, regional energy design, Tamil Nadu.

**Research Question:** How can regional design of new geographies of energy create a framework for a 'socially just' energy transition

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Abstract.

The era of energy transition has brought to the front, the incredible potential of designing the reciprocal relationship between energy and space. The transition to renewable sources of energy like wind, solar and geothermal energy, uses space in a different way- its altered spatial qualities have blurred the boundaries between technical space (shunned by planners) and 'non-technical' space (coveted by planners). This spatial dimension of energy transition is the focus of the graduation project.

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**Research Question:** How can regional design of new geographies of energy create a framework for a 'socially just' energy transition
It is undeniable that in almost 300 years, since commercial mining of coal started in Richmond, Virginia, in 1748, modern society has become increasingly dependent on and accustomed to an extractivist energy system. The human development of energy through continuous mining and burning of fossil fuels and the rapid transformation of territories set the tune for an uneasy relationship between energy and space. Belanger argues that when this space becomes place, the discussion enters the realm of human geography:


These questions point towards a re-examination of extractivist systems of the capitalocene (Moore, 2017) and fossil fuel expressionism (Sloterdijk, 2014), now armed with the concepts of critical geography. This geographic approach to energy extraction/development/transition, where the impacts of energy extraction is examined through the lens of critical geography and infrastructural ecology, is the fundamental school of thought that shaped my graduation project on ‘spatial’ energy transition in Tamil Nadu. This meant that discussions on energy poverty, post extractivism, right to services, urban political ecology and socio-spatial justice formed the core of my professional and ethical dilemmas when designing for the energy geographies of the future. Consequently the reflection chapter will elaborate in detail on some of the ethical considerations and externalities that gave shape to my project, in addition to reflecting on the course, studio, project methodology, scientific and societal relevance of the project.

Ethics or The Courage of the Katiyabaaz:

katiyabaaz
n. a Hindi word meaning ‘electricity thief’

The relationship between energy and society is co-productive; on one hand, the degree of access to energy influences our lifestyles, social behaviour, ability to afford goods that use energy (cars, appliances), improvement of living standards and status in society. Consequently, the lack of access to energy limits certain populations from achieving a higher quality of life. This ‘inability to attain a socially and materially necessitated level of domestic energy services’ or ‘energy poverty’ (Bouzarovski & Petrova, 2015), is underpinned by and produced by spatial inequality. The vicious cycle of energy poverty and spatial injustice ties together energy and space in complex, ethically ambiguous ways.

Take for example, the katiyabaaz, or electricity thief, portrayed in the critically acclaimed documentary, Katiyabaaz (Mustafa & Kakkar, 2013), on the frequent power cuts in Kanpur city, India. The documentary tells the story of Lola Singh and the group of local electricity thieves who stealthily rebel against the state utility to steal electricity for the energy-poor populations in the city. Here, the katiyabaaz is seen as a fearless, almost Robin Hood-esque figure, hauling ladders, climbing electricity poles, and creating connections where there were none. As an urbanist, from a developing context like India, I interpret this as a call for right to services, stemming from Lefebvre’s ‘right to the city (1991), which intends to break the vicious cycle of energy poverty and energy vulnerability, perpetuated by structures of spatial inequality. Can energy transition in India really be addressed without tackling the complex challenge of energy poverty...
and spatial inequality? Will the new energy paradigm of the future continue to operate on the same extractivist systems that create geographies of difference and inequality? The case of illegal land grabbing in southern Tamil Nadu is illustrative of this paradigm, where private renewable energy companies arm-twisted farmers to sell agricultural land for the development of wind or solar farms (Sethupathi & Bharathi, 2018). In both examples, one related to energy access and the other related to energy production, socio-spatial inequality is the crucial denominator. In a hyper renewable, yet extractivist energy future, I must disclose that I am on the side of the katiyabaaz.

These ethical considerations, questions and dilemmas and in time, standpoints that were taken, shaped my graduation project. I focused on justice with respect to energy production by creating a framework for a ‘just’ energy transition where the production of renewable energy occurs after careful consideration of spatial and social factors that affect, and are affected by, energy development. Through my project, I attempted to design and plan for renewable energy geographies of the future that reject the extractivist systems of the capitalocene (Moore, 2017) and fossil fuel expressionism (Sloterdijk, 2014). The current extractivist energy economy would be transition to a new economic model that respects the limits of the natural environment and creates room for alternative practices and forms of extraction without exploitation. The post extractivist energy system needs a ‘different kind of imaging and imagination, action and retroaction, forms of representation and reclamation’, to undermine neoliberal strategies of land dispossession to produce energy and the resulting uneven forms of development. (Belanger, 2018). This points towards the relevance of the project in society, as it attempts to explore and present a spatial imaging and imagination of the energy future of Tamil Nadu.

One of the outcomes of the project, ‘The Manifesto for the Design of Energy Geographies’, was an attempt to address the ethical dilemmas that surround energy transition and take a standpoint. The manifesto is call for an integrated geographic approach to energy production and consumption, within the paradigm of energy transition. The ‘Manifesto for Design of Energy Geographies’ is a declaration of intention to consider the spatial dimension in energy development, and integrate the disciplines of energy studies and spatial planning. It is an assertion of what energy geographies ought to be and what qualities they should have, which can act as principles and guidelines for the design of energy geographies. This was developed by aggregating ideas and spatial concepts from various theories in spatial planning, infrastructure management, political ecology, critical geography and energy studies. Through the manifesto, I defined the philosophical, and scientific foundations of the project as a whole. The manifesto proposes what ‘good’ energy geographies of the future should be like, who they should benefit, where they should be formed and defines spatial principles to achieve it.

Scientific and Societal Relevance:

The project’s position at the intersection of energy and space was important in identifying and contributing to the knowledge gap that exists between energy studies and spatial planning. The spatial patterns and developments across territories due to the human development of energy resources have been largely ignored in energy studies. Scholarly research in the spatial dimension of energy transition is relatively new; an endeavor of the past decade. The reciprocal relationship (Sijmons, 2014) between energy and space has since then caught the attention of academia, due to the increasing relevance of energy transition in our daily, societal life. However, there exists a knowledge gap between the fields of energy studies and spatial planning, despite the fact that the altered spatial qualities of renewable energy space have blurred the boundaries between technical space (shunned by planners) and ‘non-technical’ space (coveted by planners). This project primarily aims to contribute to bridging the epistemological and methodological rift between energy studies and spatial planning.

By taking the case of Tamil Nadu, India, the project also
contributed to the body of knowledge on spatial energy transition in a developing context like India, where it is important to include the challenges to energy justice and equality in the discourse. Currently, literature on energy studies in Tamil Nadu is limited to descriptive studies on energy status and energy potential calculations; and shies away from delving deeper into the spatial consequences of energy transition and its impacts on the socio-political economy. This project on spatial energy transition in Tamil Nadu, will thus contribute both to the theoretical knowledge gap and context-specific knowledge gap in this field. The design outcomes of the project aim to bridge this knowledge gap by laying down spatial strategies, solutions and policies that enable the creation of adaptive, inclusive and collaborative energy transition in regions of the Global South. The potential transferability of the concepts, research methodology and design process for use in developing countries that face the challenge of spatial energy transition highlights the scientific and societal relevance of the project. Additionally, the contribution of energy transition to the UN Sustainability Development Goals (UN SDGs) is an important marker of the societal relevance of this project (Fig 5.18). The strong focus of the project on socio-political relationships with energy and the notion of spatial energy justice is an asset to furthering the debate and discussion on ‘equality’ in society.

Methodology:

Choosing the appropriate methods for research and design was a challenge, due to limited scholarly exploration in the intersection of energy studies and spatial planning. The project was an exploratory research where new methods for the analysis and evaluation of energy landscapes had to be evolved. In the reflection, I would like to highlight two important parts of my research methodology that bears weight. The first is the multicriteria analysis on GIS, (See Chapter 6), where a spatial grid was superimposed on energy potentials to identify areas of potentiality and vulnerability. This process of mapping in Tamil Nadu has not been carried out before, and the project created a valuable set of energy atlases for the region. In addition to the above, my internship in PosadMaxwan, an urban design office in the Netherlands that specializes in energy transition enabled me gain a practical understanding of the spatial planning approach to energy transition. The energy workshops that the studio held with stakeholders of different Dutch municipalities also helped me understand the value of participatory planning approaches in the long term transition to renewable sources of energy. The knowledge gained from practice was a key reason I organized a presentation and workshop on spatial energy transition during my field trip to Tamil Nadu, India. The workshop was attended by 35 people, mostly from the design community who took part in the workshop with great enthusiasm. During the workshop, the participants discussed debate and pin down key challenges in the spatial, social, and political dimensions of energy transition in Tamil Nadu. Although the workshop could not be organized with on ground stakeholders of the transition, the workshop with fellow urbanists helped raise the question of what the role of an urban designer/planner is, in the energy transition process.

Reflecting on the Studio and Course:

The Complex Cities studio is fueled by the expertise in regionalization, spatial planning and territorial governance. Moreover, the geographical focus on cities of the Global South, faced by disparities and conflicts in the distribution of spatial resources, rapid development and weak governance, brings my graduation under the purview of the studio. The point of departure that sets apart the Complex Cities studio, is the fact that it critically questions the role of the planner or designer in increasingly complex spatial and societal conditions. This learning, un-learning and deconstruction of historic planning and spatial narratives was crucial to the development of my project. The critical outlook in the Complex Cities studio towards the role (and need) of planning points towards a continuous process of self-introspection, which is relevant to my project. Additionally, my project focuses on institutional frameworks and spatial governance systems that are needed to enable an equitable and ‘just’ energy transition, resonates with the underlying theme of the Complex Cities studio that prioritises a ‘governance approach’ to planning for the Global South. The diverse palette of research groups offered by the Urbanism department at TU Delft, and the Graduation Orientation programme provided a unique opportunity to systematically assess and arrive at a conclusion on the most suitable studio for a graduation project. The ‘Dutch approach’ to urbanism, that I learnt throughout the two years of the Masters course was crucial to the systematic development of my project, that I attribute to the structure of the Urbanism course.