



Finance and justice in low-carbon energy transitions

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HIGHLIGHTS

- Energy policy increasingly takes account of the needs of commercial finance.
- The multi-billion mobilisation of energy finance has significant justice impacts.
- There are 6 principles of ‘just’ energy finance.
- Energy policy focusses only on affordability, missing five remaining principles.

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ABSTRACT

Up to \$61trillion of power systems investment is needed to fulfil the Paris Agreement. The mobilisation of so much capital is a huge challenge. As such, energy policy is changing to meet the needs of commercial finance. However, very little has been done to question the justice implications of this capital mobilisation, and what alternatives there are to commercially-oriented finance for low carbon energy systems. This paper uses a comparative analysis of two developed economies to explore how ‘alternative’ forms of finance operate in each nation’s energy investment landscape. We find alternative finance is often set in opposition to commercial capital. Alternative finance in both nations is motivated by financial justice outcomes that are poorly understood in current energy policy. Our findings suggest that 6 principles are key to ‘just’ energy finance: affordability, good governance, due process, intra-generational equity, spatial equity, and financial resilience. Energy policy that seeks to mobilise capital, should take account of all six principles.

1. Introduction

The scale of the low-carbon energy challenge is illustrated by global investment costs. The total investment needed for the global energy system, is up to \$61 trillion if the sector is to decarbonise rapidly enough to limit planetary warming to less than 2 degrees Celsius; this requires a tripling of 2015 investment levels [1]. These sums clearly surpass state funding possibilities [2], and will need to enrol diverse forms of private capital. This research identifies the justice implications of these forms of capital, by analysing the finance landscape of two nations. The aim is to explore how finance shapes the justice outcomes of energy transitions, and how energy policy could shape these justice outcomes.

In this paper we are referring to ‘capital’ in its money form, intended to generate a surplus through investment and transformation into fixed assets seeking a return. For finance, or ‘forms’ of finance, we mean the

vehicles through which money capital is transformed into fixed assets. This can be as debt or equity; applied via loans, shares, bonds etc. ‘Institutions’ of finance can here be taken as the types of organisations orchestrating this activity. These could be pension, insurance and wealth funds (also referred to as institutional investment), commercial banks, development banks, forms of crowdfunding (i.e. peer to business equity), venture capital etc. We also must be clear on how we are defining ‘justice’. Here we use Sovacool et al’s [3] eight principles of energy justice; availability, affordability, due process, transparency, sustainability, inter-generational equity, intra-generational equity, and responsibility. These principles are the indicators of ‘just’ energy futures which we apply to energy finance using two questions: 1, what are the implications of the current finance system on just energy transitions? And 2, what principles of justice could energy finance satisfy?

Prior research has shown that states now design energy policy to mobilise new institutions of finance. They target new sources of capital

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for energy transitions [4–5]. Taking account of the justice implications of this capital mobilisation in the energy sector is critical, because in other sectors, agnostic assumptions about the influence of capital have led to poor justice outcomes [6]. Recent analyses of the financialisation phenomenon in energy, water, and rail, have exposed how the needs of international financial institutions, are increasingly prioritised over the continued operation, development, and maintenance of these systems¹. Financialisation results in private returns to investors being prioritised above possible social and environmental benefits [7,8]. Failures in this respect endanger social acceptance and legitimacy [9].

Energy system investment of up to \$61 trillion by 2060 implies an urgent need to mobilise far greater and more diverse forms of capital, yet little has been done to explore how energy finance can secure both low-carbon transitions, and avoid poor justice outcomes and social damage. To address this gap, our research investigates the justice dimensions of different forms of energy finance, using eight principles of energy justice [3].

The paper is structured as follows. Section 2 explores existing research on energy finance. We then explore how ‘alternative’ finance broadly defined, is growing substantially across various markets. We use Hall and Soskice’s varieties of capitalism work to analyse the background conditions giving rise to particular forms of financial actors in each nation. Section 3 summarises the methods used. Section 4 presents the UK and German case summaries, detailing the justice implications of different energy finance trends. Section 5 analyses the case data to propose 6 principles of just energy finance.

2. Energy finance

2.1. Accelerating low-carbon energy investment

There is a clear gap between the volume of capital needed to enable low-carbon transitions, and the current level of investment [1]. To meet climate change commitments, capital allocation to low-carbon investments must accelerate [2]. The majority of research by energy finance scholars focusses upon this acceleration falls into three fields: 1) state-facing policy prescription, 2) investor-facing risk perception and de-risking research, and 3) sociology and political economy analyses of finance in energy transitions. Each field has different theoretical starting points and economic assumptions about the behaviour of energy investors and therefore how and where capital is allocated. [10,11].

Direct policy advice to nation states on low carbon energy investment demonstrates the importance of investor heterogeneity in the innovation chain [12–14]. The research on policy measures has focussed on better Research, Development, and Demonstration (RD&D) partnerships, advocacy coalitions with financiers, mission driven public investments, demand stimulus², and (RD&D) tax system reform [15 p.531].

The second field presents the risk-return profile of investments as the key enabler for private finance [16,17] and addresses two main problems. The first deals with investor risk perception [18,19], behavioural responses to risk across investor types [20,21], and capacity to assess risk across different energy assets using various tools [22,23]. The second strand investigates either specific de-risking mechanisms such as state backed guarantees, loan concessions, or grants [24,25], subsidy and energy policy approaches to risk management using deeper market reforms [5], and investor mobilisation to challenge state

decisions on subsidy reform, in order to establish a precedent for ex-post subsidy risk management through arbitration [26].

In both policy-centred and de-risking fields, the needs of finance capital and investors are foregrounded. There is an implicit (or sometimes explicit) argument that the needs of finance capital must shape energy policy, if it is to achieve the desired levels of investment at least cost. The basic premise being that, a lower cost of capital for low-carbon generation will translate into more affordable low carbon energy for households and business [27]. Both fields have substantially improved our understanding of the needs of private capital and how energy policy can meet those needs. However, energy finance research so far has had very little to say about the ethical or justice dimensions of energy finance. It adopts either a ‘more is better’ stance, or works on matchmaking between risk profiles, investor preferences and fund structures.

The final category of existing research, the sociology and political economy of energy finance, *has* started to question whether different forms of finance and sources of capital can have wider distributional impacts than the final cost of low-carbon energy. For example, Baker claims that the interests of international finance capital in the South African energy transition subordinate socio-economic and environmental developments [28]. There is also growing understanding that energy finance is part of much wider systems of accumulation that have far reaching consequences across labour, gender, and nature/space relations [29]. This connects with literatures on financialisation, which show how various systems are subject to “the increasing dominance of financial actors, markets, practices, measurements, and narratives” [30]p. 3], with detrimental effects on wider business and societal objectives in both developed and developing contexts [31].

The investment needs of energy transitions are increasingly used as an enabler of financialisation of energy policy [5]. Polzin et al. [32] argue that a financial monoculture has emerged, which is not resilient to crises, and that designing energy policy to serve this monoculture only further exposes energy transitions to boom and bust investment cycles in the wider financialised economy. The nexus of work on sociology and political economy of energy finance deals with values, motivations, systemic effects and distributional outcomes of financialisation and explores what alternatives there might be [4,29,33,34]. However this work has hitherto lacked a coherent framework of analysis to integrate these concerns. In what follows we explore whether energy justice principles can help generate this framework. The challenge is to find a series of principles through which investigations of the sociology and political economy of finance, can make meaningful qualitative judgements about something more than the effect of various policies or tools on the cost of capital.

2.2. Energy justice and energy finance, introducing the 8 principles

Energy justice can be described as “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” [9p.436]. Three forms of justice are considered; distributional - the distribution of environmental benefits and ills and their associated responsibilities; procedural – access to decision-making procedures that ensure equitable outcomes; and recognition – the fair representation of individuals, who are free from physical threats, and offered complete and equal political rights [35,36]. Sovacool et al. [37] add cosmopolitan justice as a further form, which argues that all human beings have equal moral worth and are deserving of energy justice.

Energy justice can be a conceptual tool, an analytical tool or a decision making tool [3]. The three (or four) forms are appropriate for a conceptual discussion. However, they provide insufficient detail for supporting specific decisions, for example; how could the finance sector be shaped to enable just energy transitions? Therefore further work [37] developed an energy justice framework based on eight principles that can be applied to real-world problems: (1) availability, (2)

¹ The process by which financial institutions and markets grow in importance, size and influence within a national economy. The Financialisation of basic urban and infrastructural systems including housing, water, and other systems is explored by the FESSUD programme (<http://fessud.eu/>)

² Demand stimulus here refers to investment demand and not energy demand. It is used to show how different subsidy schemes affect investors ‘demand’ for energy projects in their portfolios.

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