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Perspective

The politics of accelerating low-carbon transitions: Towards a new research agenda

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ABSTRACT

Meeting the climate change targets in the Paris Agreement implies a substantial and rapid acceleration of low-carbon transitions. Combining insights from political science, policy analysis and socio-technical transition studies, this paper addresses the politics of deliberate acceleration by taking stock of emerging examples, mobilizing relevant theoretical approaches, and articulating a new research agenda. Going beyond routine appeals for more 'political will', it organises ideas and examples under three themes: 1) the role of *coalitions* in supporting and hindering acceleration; 2) the role of *feedbacks*, through which policies may shape actor preferences which, in turn, create stronger policies; and 3) the role of broader *contexts* (political economies, institutions, cultural norms, and technical systems) in creating more (or less) favourable conditions for deliberate acceleration. We discuss the importance of each theme, briefly review previous research and articulate new research questions. Our concluding section discusses the current and potential future relationship between transitions theory and political science.

1. Introduction

Technological systems with the potential to reduce global carbon emissions have been expanding rapidly, driven partly by impressive developments in areas such as solar panels, wind energy, and electric cars [1–3]. This progress, however, remains too slow to keep global climate change within the two degree limit set by the Paris agreement, let alone its 1.5° "aspirational" target. This situation has created an urgent debate over whether and how the necessary changes can happen quickly enough [4], to which many scholars offer pessimistic answers. Smil [5], makes a particularly compelling historical argument that transitions in energy systems are "long and arduous."

If they are to succeed at mitigating climate change, therefore, the pace of transitions to low-carbon energy systems must somehow differ from historical precedent. This will require an *acceleration* of the pace of change. There is some reason for hoping that such an acceleration could be plausible. Past energy transitions have been triggered by a largely emergent combination of policy efforts, economic shifts, technological developments, and other factors. While currently ongoing low-carbon transitions also benefit from emergent technical, economic and cultural developments, however, they are also being actively pushed by policymakers on an international level, in a way unlike any other energy transition on historical record [6,7]. Sovacool's [8] list of 10 rapid energy transitions, some of which went from a 1 percent to 25 percent market share in just a few years shows that this kind of acceleration can achieve impressive impacts. This has provoked significant debate, on whether Sovacool's relatively small-scale examples can have a bearing on the global energy transitions necessary to mitigate climate change [9–12].

A cursory survey of climate mitigation policies, however, suggests that the kinds of aggressive efforts necessary to dramatically accelerate transitions to low-carbon energy are not yet being seen in practice. Governments around the world have not only refrained from making serious efforts to deliberately accelerate low-carbon transitions; they continue to actively support fossil fuel industries, for example through fossil fuel subsidies and support for road and aviation infrastructure

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[13,14]. The literature on socio-technical transitions provides a simple explanation for this, namely that entrenched incumbent systems enjoy political power and therefore policy influence [15,16].

It follows that an important question in the debate over the pace of future transitions—be they climate or sustainability focused—concerns whether, how, and to what extent governments can create and/or do exploit the political conditions to escape the *political* lock-in of the status quo, and deliberately accelerate the pace of change. The politics of low-carbon transitions have already been widely studied [12,13,15,17,18]. The crucial issue of the *politics surrounding their deliberate acceleration*, however, remains under-examined. This important topic was the subject of a workshop held at the University of Manchester in July 2017, at which scholars from the two most relevant communities (political science and innovation/transition studies) discussed the politics associated with the deliberate acceleration of socio-technical transitions. During this workshop, and in the course of subsequent discussions, three themes emerged that are relevant for the further development of scholarship in the deliberate, political acceleration of transitions.

1) **The role of*coalitions*in creating the political conditions for transitions.** Incumbent systems are protected by powerful coalitions that can significantly oppose and obstruct low-carbon transitions. But there may also be coalitions in support of them, which could be strengthened by state action.
2) ***Feedbacks*and stability**. Policies create feedback effects, which can be either positive, locking in those policies, or negative, choking them off. Policymakers might be able to build positive feedback into the design of policies.
3) ***Context dependence.*** Complex dependencies on local factors such as governance structures, culture, or economic systems can lead to significant variety in the kinds of strategies that are successful in different political jurisdictions.

These themes overlap with the 2017 Sustainability Transitions Research Network research agenda [19], which identified power, agency, and politics as a key direction for further research. In this discussion, the research agenda identifies "the *agency* of the various actors involved in transition processes" [19], and the *politics* of transitions, noting that "scholars in the transition field have started to move beyond simply analysing the content of public policies to think more systematically about the politics of policy processes and how they shape policy outputs" [19]. The role of coalitions is particularly important for the topic of agency and expands on it, broadening from a discussion of the agency of different actors, to a discussion of how actors can combine and strengthen their political agency; a key concern for those trying to build political support for marginal niche-innovations. The theme of feedbacks and stability, similarly, further develops the topic of politics as described in the research agenda, showing how the outcomes of political processes can influence future political processes, building political momentum for transitions. While our third theme of context dependence does not fit so tidily into the research agenda, it does speak to the critical importance of *structure* in influencing political outcomes.

These three themes thus address three core issues in the political acceleration of socio-technical transitions: a*gency* (of political actors), *process* (the iteration of policies and their results and feedback effects), and *structure* (the broader political, economic, cultural, and geographic context of the transition). Thus, while they were developed informally through workshop discussions between experts, they are useful as rough organising principles for different kinds of unanswered questions which recur frequently in debates over the deliberate acceleration of low-carbon transitions. These themes are neither comprehensive nor mutually exclusive (and in fact, the interconnections and cross-pollinations between them are explicitly explored in the conclusion of this article). Instead, they provide a starting point for further debate and research on the politics of transitions. The remainder of this article suggests directions for these debates and research efforts. Each of the following three sections examines the work that has already been done on one of the themes, and suggests new topics for research. The concluding section considers the implications of these discussions for low-carbon transitions more generally.

2. Theme 1: the role of coalitions

Policies aimed at the deliberate acceleration of low-carbon transitions do not always have an obvious constituency. Reforms in areas such as taxation, or social services have clear benefits for groups such as businesses, consumers, or pensioners (and often equally clear detrimental impacts for other groups, such as wealthy taxpayers). The beneficial effects of low-carbon transitions, on the other hand, are displaced in space and time from those who pay for them. Nevertheless, it is important to find ways to create supportive coalitions for the deliberate acceleration of low-carbon transitions despite this difficulty. The importance of these coalitions is easily demonstrated. Firstly, no single actor has the resources (expertise, money, legitimacy, organisation and leadership) to bring these transitions about. Secondly, within government, business, and civil society there are actors who seek to advance transitions and others who seek to impede them. Progress in accelerating change therefore depends on the formation of supportive coalitions, which we define loosely as alignments of disparate groups across government, business, and civil society, united by common interests or ideas.

Empirical studies on the politics of low-carbon transitions further support this argument, and also reveal some important features of successful coalitions [20–23]. Newell and Paterson [22] argue that they "will have to be supported (financially and politically) by powerful fractions of capital with a stake in the success of such a project." In their analysis of China and India, Harrison and Kostka [23] find that "state strategies…have focused on the need to bring different parties with otherwise divergent interests on board." Schmitz' [24] analysis of successful climate-relevant policies in Brazil, China, India, and South Africa finds that most actors who support these policies have priorities other than climate change mitigation, which might include energy security, building competitive green industries, creating jobs or ensuring future public revenue, with climate change mitigation seen merely as a "co-benefit". This implies that low-carbon transitions can draw on support from a wide constituency beyond just those with green convictions, and that the deliberate acceleration of low-carbon transitions is most politically effective when climate benefits are combined with more politically resonant issues, such as personal health, jobs, or security. This comes out clearly in examples of successful energy transitions. In the Danish transition to district heating, for example, the state cultivated a successful coalition of users, municipalities, and local cooperatives based on shared principles of energy security, low-cost heating, and cooperatism [25,26].

Another important, and largely unaddressed issue, is coalition structure. Different types of alliances, based for example on advocacy [27], or discourse [28], can emerge in different circumstances. Coalitions can also range in their level of coordination from the *strategic alliances* to mere *alignments of interest*; they can be either *consciously pursued* or *incidental* [29]; and they can range in longevity from *transitional* to *enduring*, with incidental alliances more likely to be short term. While information on the longevity of alliances is limited, short term alliances, focused on specific initiatives, could play a bigger role than assumed, and ad-hoc coalitions could be an important vehicle for accelerating low-carbon transitions.

It is also important to address and further document the political coalitions that slow down or block low-carbon transitions; a phenomenon implicit in many studies on path dependency and policy lock-in [16]. These coalitions can oppose deliberate acceleration using strategies including lobbying, exaggerating uncertainty, questioning scientific evidence, and watering down regulatory efforts. They often benefit