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This paper seeks to uncover and examine the complex set of governance challenges associated with transforming energy distribution networks, which play a key enabling role in a low carbon energy transition. We argue that, although the importance of such infrastructure networks to sustainability and low carbon transitions in the energy, water and mobility sectors is clear, there is relatively little understanding of the social and institutional dimension of these systems and appropriate governance strategies for their transformation. This may be because the prevalent model of infrastructure governance in the energy and other sectors has prioritised short term time horizons and static efficiencies. In this paper we draw on the social shaping of technology literature to develop a broader understanding of infrastructure change as a dynamic socio-technical process. The empirical focus of the paper is on the development of more flexible and sustainable energy distribution systems as key enablers for the UK's low carbon transition. Focusing on electricity and heat networks we identify a range of governance challenges along different phases of the 'infrastructure lifecycle', and we draw lessons for the development of governance frameworks for the transformation of energy infrastructure more generally.

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