Towards a Framework for Understanding Transdisciplinary Engineering in Policy Practice: Insights from the UK's Energy Ministry

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Abstract. The UK's energy ministry is an ideal site to understand transdisciplinary engineering (TE) in policy practice as effective net-zero policies require a mix of engineering and socio-political knowledge. Combining engineering expertise with other disciplinary knowledge for policy however is no easy feat and many barriers and facilitators exist at the structural, actor, and process levels. Based on two years of ethnographic data, this paper explores how the ministry's institutional set-up, experts and processes enable or hinder TE in net-zero policy practice. Using empirical examples, we explore how the ministry's policy culture and structural evolution over time influences the take-up of engineering advice in policy. We also analyse which actors within the ministry and outside collaborate and what knowledge is drawn upon. We then look at how differences in policy process influence how engineering advice is given, and how it is combined with other types of expertise. The paper ends with a framework, based on our case study, Engineering Studies, Science and Technology Studies and Expertise in Policy literature to understand TE in policy practice more broadly and its implications for experts' skills and governance structures.

Keywords. Engineering policy and practice in the public sector, Engineering advice for policy, UK government, Energy policy

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