Inequality in energy and climate policies: Assessing distributional impact consideration in UK policy appraisal

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A B S T R A C T

The decarbonisation of the UK economy requires a myriad of policies that inherently produce winners and loser across society. This study investigates how such distributional impacts are considered in the appraisal process for UK energy and climate policies. Using a scorecard developed to capture the guidance on policy appraisal and distributional analysis, 79 impact assessments were evaluated. The majority of these impact assessments either did not or only partially considered the impacts of policies on vulnerable groups in society, with only eight assessments containing more detailed distributional analysis. Moreover, a bias seems to exist as to which areas of energy and climate policy provide well-founded analysis and which do not. With further insights gained from interviews with relevant actors, this research concludes that political motivation, analytical difficulties and a lack of awareness of the prevalence and importance of distributional impacts are at the root of this insufficient consideration. Possible alterations to the current IA framework are presented, which aim to more firmly embed the distributional impact assessment in the appraisal process.

1. Introduction

In the fight against climate change, the UK government has committed to ambitious emission reduction targets in order to contribute to international efforts to avert the dangers associated with global warming (CCC, 2016). Achieving these will require an energy transition on an unprecedented scale and while the exact figures are hard to determine, enabling a low-carbon energy system alone is estimated to incur significant additional costs (or investments) of around 1–2% of the UK GDP (Pye et al., 2015). A successful decarbonisation strategy therefore depends on the political support and public acceptance and awareness of this system change (Watson et al., 2007). Societal expectation is for the energy transition to include considerations of energy security, affordability, personal freedom, social justice and fairness (Parkhill et al., 2013); policy-makers thus need to consider many aspects when designing and implementing policies in order to avoid opposition and garner buy-in.

However, as energy and climate policies intend to reconfigure consumption and production patterns (Kirström, 2006), they are likely to produce winners and losers within society by distributing benefits and costs unevenly (Li et al., 2016), which could diverge from people's expectations for social justice and fairness. For example, when

analysing the effect in 2013 of the impact of energy and climate policies, either implemented by or planned for, on households' energy bills, significant differences between different income deciles were revealed (DECC, 2014a). The potential for disproportionate impacts on the most vulnerable groups in society require that distributional impacts (DIs) receive particular attention by policy-makers when designing policies.

An important way to mitigate such DIs is by recognising them in the policy appraisal process. According to Deighton-Smith et al. (2016), the assessment of DIs usually focuses on one of two aspects: a more macro-oriented approach evaluating which groups in society are affected the most (e.g. consumers vs. businesses) and an "equity-perspective" (p. 20), which specifically sheds light on how the most disadvantaged groups in society are affected by a given policy. This paper focuses on the latter with the macro-oriented approach to distributional analysis deemed as insufficient, reflecting an emerging body of work highlighting the need for climate and energy policy to consider issues of fairness and justice when designing policies (Walker, 2010; Jenkins et al., 2016).

Policy appraisal is the procedure in which policies and their underlying options are evaluated ex-ante with respect to the costs, benefits and impacts that may arise as a result of the intervention. In the UK, the

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appraisal of policies is typically undertaken with an Impact Assessment (IA), a practice first established in the early 2000s in order to make UK policy-making more evidence-based (Cabinet Office, 1999). It was also considered crucial for sustainable development and better regulation (HM Government, 2005; Russel and Turnpenny, 2009). The Better Regulation Framework Manual (BEIS, 2015) is the primary guidance manual for government departments undertaking IAs. It defines the criteria that trigger the requirement for an IA and lays out the procedure policy-makers then have to follow using a specific toolkit. This includes the identification and description of all potentially affected groups and impacts. An important notion in this context is *proportionality*. It guides the choices concerning the required level of analytical detail, such as whether impacts should be quantified, monetised or whether a qualitative discussion suffices. This manual is complemented by the Green Book (HM Treasury, 2011), which has been dubbed "the bible on appraisal" (Turnpenny et al., 2014, p. 249) and illustrates the various tools that are available when assessing the effects of a proposal. This includes the cornerstone of any appraisal, cost-benefit analysis (CBA), and multi-criteria analysis (MCA), which is to be used when no quantitative assessment is possible. Completed IAs are then scrutinised by the Regulatory Policy Committee (RPC) who provide advice on whether the analysis and evidence is of sufficient quality to proceed with the proposal (RPC, 2014).

How DIs are to be assessed as part of an IA is primarily defined in the Green Book (HM Treasury, 2011), which mandates a thorough identification and quantification of the "distribution of costs and benefits of intervention across different groups of society" (p.91) based on the following possible dimensions: gender, ethnic group, age, geographical location, disability and income. Furthermore, in order to accurately display the distributional implications of the most prevalent dimension, income, an equity-weighting CBA approach is recommended, which aims to differentiate the *diminishing marginal utility of consumption* among different strata by use of distributional weights. While this aims to provide a more accurate representation of the net present value (NPV), the challenge of estimating such weights is acknowledged and policy-makers are instructed to invest proportionate resources and effort. The guidance material thus appears to offer only limited assistance to policy-makers on how to assess DIs. This distributional deficit in guidance was also determined by Walker (2007), however not only for IAs, but across a large number of policy appraisal methods in the UK. It is therefore not surprising that an OECD report (Deighton-Smith et al., 2016) identified a lack of distributional analysis within IAs across a wide range of jurisdiction, including the UK. Robinson et al. (2014) confirms these findings for US policy appraisal.

Given the potential for DIs to disrupt the societal buy-in to the UK energy transition and the possibilities that policy appraisal offers in mitigating them, this paper analyses, for the first time, a set of UK energy and climate policy IAs with respect to their treatment of DIs and the quality thereof. It further provides an assessment of the adequacy of the current IA framework as a tool to enable equitable policies by shedding light on policy-makers' adherence to the available guidance and thus tests the aforementioned distributional deficit. In doing so, this provides insights into the challenges policy-makers face when undertaking IAs and allows for the identification of ways to improve the analysis of DIs for energy and climate policies.

Section 2 reviews the literature on the different aspects of policy appraisal and the role and application of distributional analysis within this process. Section 3 introduces the regulatory scorecard method, which is used to systematically analyse the sample of IAs to facilitate a comparison across these assessments and make statements about their quality. This is complemented by a selection of semi-structured interviews with experts to elicit additional information concerning the challenges policy-makers face. The results of the scorecard application will be discussed in Section 4, followed by a synthesis of these findings in conjunction with the insights gained from the interviews. Section 5 offers concluding thoughts on the future application of distributional analysis in policy appraisal.

2. Literature review

The existence of DIs and their measurement is well documented in the literature. For instance, studies in multiple countries including the UK, the US and Germany have shown that carbon taxes have regressive impacts on energy bills (Feng et al., 2010; Schlör et al., 2013; Frondel et al., 2015). However, there have also been studies partially (Rausch et al., 2011) or completely (Tiezzi, 2005) contradicting these findings. As both the type of policy (Böhringer et al., 2017) and its specific design (Rao, 2013) have been shown to influence the extent of DIs, it is crucial for policy-makers to consider distributional analysis when developing policies. Due to the potential of the policy appraisal process to assess and evaluate DIs prior to finalising and implementing policies (Walker, 2007) and its use by countless institutions and governments worldwide, it therefore merits a closer look regarding the possibilities it provides with respect to DI considerations.

Policy appraisal is designed to improve the exchange between governmental departments and therefore to align crosscutting topics across government. It is further described as a helpful tool to counter interest-biased policy development with its evidence-based methodology, to allow for increased public deliberation and to make policy-making more informed and rational (Turnpenny et al., 2009). Despite these possibilities, policy appraisal and IAs specifically have also faced some considerable criticism regarding the question whether IAs actually enable the aforementioned goal of more evidence-based policy-making (Russel and Turnpenny, 2009).

The literature on policy appraisal can be divided into four parts – models of appraisal, appraisal tools, effectiveness and motivation (Turnpenny et al., 2009). Owens et al. (2004) describe two models of appraisal. The *technical-rational* model, inherent to most current appraisal methods and tools in the UK (ibid.), depicts policy-making as a linear approach that seeks to determine the *best* policy by using objective empirical data. However, there are legitimate concerns in the research community that this technical-rational mode is actually able to provide sufficient evidence-based policy-making. Moreover, it tends to strongly favour economic assessments at the expense of wider impacts, such as DIs (Hertin et al., 2009). An alternative approach, the *deliberative* model, champions an iterative, more conceptual learning, in which "knowledge enlightens policy makers by slowly feeding new information, ideas, and perspectives into the policy system" (p. 1187) and elements of argumentation and deliberation among individual subjective stakeholders are crucial. While this iterative model is thought to potentially enable a stronger evidence base for policies, it has seen very little use by policy-makers (Adelle et al., 2012). Owens et al. (2004) recommends an integrated approach of the two models in order to improve policy appraisal and include new aspects, such as distributional analysis.

On appraisal tools, a body of research exists on existing and novel tools and methods available for policy appraisal, which aims to inform, guide and support the practices of policy-makers (De Ridder et al., 2007; Lee, 2006). For instance, the two-stage *integrated appraisal* (Eales et al., 2005) serves as an example of a policy appraisal method that also tries to account for impacts beyond the economic sphere, such as DIs. Furthermore, there is much literature on the myriad of tools at policy-maker's disposal to estimate these impacts, including simple tools (Nilsson et al., 2008) designed to assist policy-makers in gathering the relevant knowledge for a proposal and formal tools that employ a more thorough and analytical approach (e.g. Turner, 2007 for CBA or Pohekar and Ramachandran, 2004 for MCA). Complex computer-based modelling tools also constitute possible appraisal tools, such as the model developed by the Centre of Sustainable Energy in the UK designed to estimate DIs of decarbonisation policies (White, 2014). Reflecting on the (distributional) limitations of CBAs, Turner (2007) calls for a more combined use of these tools in order to meet today's