



Environmental regulation in transition: Policy officials' views of regulatory instruments and their mapping to environmental risks

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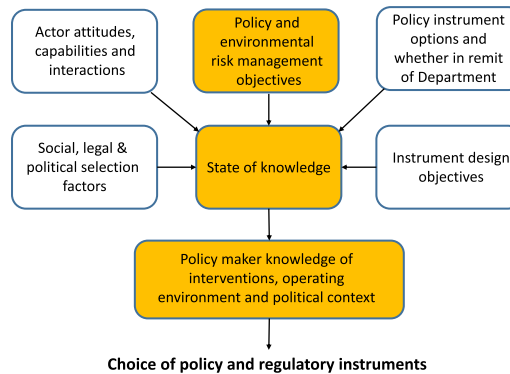
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HIGHLIGHTS

- 14 interviews with policy officials re-analysed instrument selection and environmental risk.
- Positive, negative and neutral framings illustrated how instruments were perceived.
- Low overlap between instrument category and risk significance suggests other influences in play.
- Improved knowledge exchange is recommended for risk analysis and policy communities.

GRAPHICAL ABSTRACT



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ABSTRACT

This study re-analysed 14 semi-structured interviews with policy officials from the UK Department for Environment, Food and Rural Affairs (Defra) to explore the use of a variety of regulatory instruments and different levels of risk across 14 policy domains and 18 separately named risks. Interviews took place within a policy environment of a better regulation agenda and of broader regulatory reform. Of 619 (n) coded references to 5 categories of regulatory instrument, 'command and control' regulation (n = 257) and support mechanisms (n = 118) dominated the discussions, with a preference for 'command and control' cited in 8 of the policy domains. A framing analysis revealed officials' views on instrument effectiveness, including for sub-categories of the 5 key instruments. Views were mixed, though notably positive for economic instruments including taxation, fiscal instruments and information provision. An overlap analysis explored officials' mapping of public environmental risks to instrument types suited to their management. While officials frequently cite risk concepts generally within discussions, the extent of overlap for risks of specific significance was low across all risks. Only 'command and control' was mapped to risks of moderate significance in likelihood and impact severity. These results show that policy makers still prefer 'command and control' approaches when a certainty of outcome is sought and that alternative means are sought for lower risk situations. The detailed reasons for selection, including the mapping of certain instruments to specific risk characteristics, is still developing.

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1. Introduction

1.1. Policy context

Around the world, policy makers choose a range of policy and regulatory instruments to achieve their governments' environmental and economic objectives (Hood et al., 2001; Esty and Porter, 2005). 'Regulation', in its broadest sense, includes all forms of social control, including those that harness forces beyond government, such as the influence of businesses and other actors in society (Gunningham and Sinclair, 1998, 1999; Gunningham, 2009, 2011). 'Instruments' refer to one component of regulation, such as licensing, taxes or public information campaigns. Instruments include conventional direct regulation based on licensing and inspection; economic instruments such as taxes and subsidies; approaches to changing behaviour through better information provision; and approaches negotiated between government and industry, relying on industry self-regulation and seeking to increase knowledge and capacity.

Direct ('command and control') regulation has delivered significant environmental improvements in industrialised nations. It has been applied widely for circumstances where a certainty of regulatory outcome is desired; as a back stop to prevent 'free-loaders'; where there is a need for actors to adopt measures quickly; and to secure public confidence when combined with a system to ensure implementation. However, concern it may inhibit innovation and international competitiveness (Cabinet Office, 1999; Heyes, 2009; Rennings and Rammer, 2011; Iraldo et al., 2011) has led governments to seek alternatives (Obama, 2011; Australian Government Department of Finance and Deregulation, 2013; Department for Business Innovation and Skills, 2013a, b, c) and to target regulation using risk-based approaches (e.g. Pollard et al., 2004, 2008; Hampton, 2005; Gouldson et al., 2009). In practice, instruments rarely operate in isolation; instead forming a complementary mix influencing behaviours through different levers and across multiple actors. Furthermore, the genesis of regulations may dictate the approach to be taken (e.g. European-derived legislation may require a 'command and control' approach to be taken; whereas certain economic instruments, such as taxes, can only be introduced by the treasury of the state; and other approaches may require cross-departmental agreement. With various changes occurring to the mix of instruments used, commentators observe a shift from *government* to *governance*, as alternative or mixed strategies are deployed for the protection of environmental goods and services (Jordan et al., 2005; Gouldson, 2008) and for the shared management of public risk and the associated costs (e.g. MacDonald et al., 2011).

The European Commission (2010) has a long-established programme for regulatory reform across its Member States and has sought to progress the 'better regulation' agenda towards so-called 'smart regulation' (European Commission, 2010). The Organisation for Economic Co-operation and Development (OECD) has promoted similar reforms (OECD, 1995, 2005, 2006, 2007, 2008, 2012). Emerging economies experiencing rapid industrialisation and growth are designing effective regulatory frameworks to deliver sustainable development (see Mejia, 2009). For example, China endorsed its Plan for Energy Conservation and Emission Reduction for the 12th Five-Year Plan (Ministry of Environmental Protection People's Republic of China, 2012), which included strengthened pollution controls and reduction targets for specific sectors, as well as the promotion of environmental management labels for vehicles.

The UK Department for Environment, Food and Rural Affairs (Defra) develops environmental policy and, with its agencies, regulation across multiple and complex policy domains. Regulation is implemented by Defra's network of agencies including the Environment Agency (EA) and also its regulators in local government. Programmes of regulatory reform have been pursued by successive UK governments (Cabinet Office, 1999; HM Government, 2011, 2012). For example, the 'Red Tape Challenge' (Defra, 2012; Cabinet Office, 2013) sought to reduce regulatory burdens through a process in which policy makers, politicians and the public scrutinized existing legislation to identify 'what should be scrapped,

what should be saved and what should be simplified'. Simultaneously, the UK government sought to reduce government spending while devolving more decision-making to a local level, including through voluntary civic action (Department for Communities and Local Government, 2011).

Policy makers and regulators face the challenge of selecting suitable instruments and implementation approaches: to meet multiple objectives of reducing risk; encouraging clean growth; reducing the bureaucracy associated with regulation; and for protecting and improving environmental quality. They can be hampered in their pursuit of 'evidence based policy' (Solesbury, 2001) by a lack of evidence on which policy and regulatory instruments work, *why*, *when* and with *whom* (Taylor et al., 2012), hence our motive to explore factors influencing the effectiveness of instruments in practice, to assist policy makers in delivering better regulation.

1.2. Better regulation, by design

Regulation is in transition (Cabinet Office, 2017). For environmental protection, recognition of the need to manage organisational governance and behaviours, in addition to limiting point source and diffuse releases to the environment, has prompted a wide discussion of instrument effectiveness. Policy makers and regulators have a diverse palette of instruments (Fig. 1) to select from, for effecting change by reference to risk (see caption) and other factors (Taylor et al., 2012, 2013, 2015).

Notwithstanding the various policy units established to rethink 'better', 'smarter' and 'lighter-touch' regulation (Environment Agency, 2011; Defra, 2013; Department for Business Innovation and Skills, 2013a, b, c), there appears a mismatch between the polemic on what is desired through these initiatives and the capacity of stakeholders to deliver fleet-of-foot solutions (Jordan et al., 2003; Rothstein et al., 2006). We have previously commented on instrument selection criteria (Taylor et al., 2012); factors influencing instrument choice (Taylor et al., 2013); and business preferences for regulatory reform (Taylor et al., 2015). Important aspects for the selection of any instrument (Fig. 1) include: (i) the market failure at play that warrants intervention; (ii) the nature of the environmental hazard whether to, or from the environment, and the consequences that might ensue if that hazard is realised, taking into account the state of the environment at risk; (iii) the likelihood of the consequences being realised, given the market or regulatory controls already in place – the so-called 'residual risk'; (iv) the nature, or character of the associated harms that might ensue from residual risks, how they are expressed, through which environmental compartments (air, water, soil, biota) and with what end result(s); (v) the opportunities to intervene at source, or along the point of hazard realisation (pathway) or at the receptor; (vi) the relative influences of individual human error, organisational behaviour, technological failure, or system failure on the probability of the hazard being realised (Defra, 2011a); and, critically (vii) the desired environmental outcome. These aspects of risk thinking, as they relate to the regulatory craft (Gouldson et al., 2009; Sparrow, 2000, 2008) have become woven into policy design in many nations, not least within regulatory impact appraisal (Kirkpatrick and Parker, 2007; HM Treasury, 2003), with its attempts to quantify cost-benefit quotients for interventions by reference to their intended environmental benefits.

In our research, Taylor (2013) has commented on the adoption of risk concepts by policy officials designing interventions, notably in the context of contaminated land, soil erosion, animal and plant disease control, climate change adaptation planning, chemicals regulation, flood risk management, reservoir safety and infrastructure investment. Risk characteristics that reportedly influenced the choice of instruments included (Taylor, 2013):

- (i) the spatial characteristics of risk (13 respondents): risks that vary spatially required local assessments of risk (e.g. flooding, land contamination, diffuse pollution, biodiversity, river pollution) and possibly national coordination or international agreements

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