

THE LANGUAGE OF CLIMATE CHANGE POLICY

By Raphael Calel

Introduction

Although the Copenhagen Accord failed to establish a Post-Kyoto infrastructure for international efforts to reduce greenhouse gas emissions, countries around the world are moving ahead with domestic pledges and policies to cut carbon. Sweden, Denmark, Finland, and Ireland already have domestic carbon taxes; Britain has just introduced a major energy efficiency scheme for buildings and announced plans to introduce an airplane tax; the EU Emissions Trading Scheme is being extended to include the aviation sector; Japan is moving ahead with plans to introduce a domestic cap-and-trade programme; several cap-and-trade bills have been circulating on the floor of the US Congress, and former Australian prime minister Kevin Rudd was recently ousted after reneging on promises of a comprehensive cap-and-trade scheme. The success of all these efforts depends crucially on compliance. If emitters do not comply with new regulations, it hardly matters what environmental policies are pursued. When choosing the instruments of environmental policy, therefore, it is essential to consider what level of compliance they will garner.

The literature that examines this question usually compares the costs of compliance or monitoring across different environmental policy instruments, it being understood that lower costs lead to greater compliance. This note explores a different route to increasing compliance. A policy instrument determines what language the regulator, the emitter, and the public use to communicate about environmental and economic priorities. The language of environmental policy also determines the complexity of the messages being communicated. Different policy instruments may then invoke different attitudes toward non-compliance. One should not discount the potential these attitudes have in influencing efforts to comply with new environmental regulations. This exploratory note compares the 'languages' of three major policy instruments: direct regulation, carbon tax, and cap-and-trade.

A Very Short Introduction to Environmental Policy Instruments

Before considering the 'languages' of different environmental policy instruments, it is helpful to briefly recount the basic features of the main regulatory instruments: direct regulation, carbon tax, and cap-and-trade.

Direct Regulation

This term describes the traditional form of regulations, with which most of us are familiar. It involves the government mandating certain actions, whether achieving a specified emissions target or installing some low-emission technology, and then penalising non-compliance. Penalties are usually administered through the court system.

Carbon Tax

This is a tax on every ton of carbon emitted. The level of the tax is chosen specifically such that demand will fall to the desired level. In other words, the government sets a price on emissions, and market forces are left to determine the level and distribution of emissions. The magnitude of the tax will therefore depend on how sensitive the supply of emissions is to the price.

Cap-and-Trade

Under a cap-and-trade scheme the government issues emissions allowances up to the desired level of emissions. In effect, this fixes the total quantity of emissions. Each emitter then has a quota on how much he is allowed to emit. The crucial feature of a cap-and-trade scheme is that these allowances are tradeable. If it is very expensive for a firm to reduce emissions to the level of his allocated quota, he can try to purchase additional allowances from another firm, thereby

increasing his quota. If it is relatively cheap for this other firm to reduce its emissions, it would gain from this deal, and would reduce emissions below its allocated quota. The total quantity of emissions is unchanged.

Direct regulation remains the mainstay of environmental policy, but economic instruments such as taxes and cap-and-trade schemes are gaining in popularity, especially on the issue of climate change (see examples in the introduction). These short descriptions indicate the general form of the main instruments of environmental policy, but omit exactly how these instruments ensure compliance from emitters. Discussions about compliance most often focus on reporting requirements, regulatory inspections, and enforcement actions. However, these characteristics of an environmental policy regime are to a large degree independent of the specific instrument used. This suggests that the level of non-compliance does not depend on the policy instrument itself, but rather on the accompanying regime. The next section challenges this proposition. I explore the notion that the choice of policy instrument itself influences how societies communicate about non-compliance, and may thereby affect different levels of compliance.

The Language of Climate Change Policy

On the surface, it seems obvious that different environmental policy instruments are associated with different 'languages'. Non-compliance with a direct regulation is to 'violate environmental law'; non-compliance with a carbon tax is 'tax evasion'; non-compliance with a cap-and-trade scheme is to 'have a short position on emissions permits'. Although these terms describe the same behaviour, they differ in complexity and social stigma. These differences may well evoke different responses from the public, from the regulator, and most importantly, from the emitter.

Public opinion

First, consider the role of the general public in regulating the level of compliance. The public assumes several important roles, including those of shareholders, of consumers, and of one of the most important sources of information for regulators. This last role is, perhaps, the most intriguing. Non-implicit third parties often participate in monitoring and enforcement. In a laboratory setting, third parties punish those who violate the rules, even if this comes at a personal cost (Fehr and Fischbacher, 2004; Carpenter and Matthews, 2005). In everyday law enforcement, third party reports account for as much as 40% of all crimes known to the police (U.S. Department of Justice, 2003). These seem to be ingrained social norms, and the choice of instrument can encourage or discourage such behaviour.

There is considerable research on public attitudes towards crime and tax evasion (Andreoni et al., 1998), but virtually nothing on non-compliance in cap-and-trade schemes. Even with this literature, it is very difficult to make informative comparisons between the different instruments. Almer and Goeschl (2009), however, analyse a unique data set from Germany, and offer us some indirect suggestive evidence. They find that the fear of public prosecution for environmental crimes is a much stronger deterrent for companies than the size of the fine. Prosecution evokes an explicit sense of 'violating environmental law', while the size of the fine relates to how far 'short' of compliance the company is. Companies seem to operate under the impression that the former is much more damning than the latter. This is perhaps indicative that there is stronger social stigma associated with non-compliance under direct regulation than under cap-and-trade schemes or taxes. Environmental policy that uses the right language might then appeal to pre-existing social norms. The policy maker, with the choice of instrument, can encourage the general public to play a greater role in environmental policy. Encouraging the public's tendencies to report and retaliate reduces the regulator's own monitoring costs and increases compliance.

Environmental policy can also facilitate reporting. Liverani (2009), reviewing the behavioural aspects of climate change policy, observes that increasing the 'visibility' of behaviour allows policy makers to better harness the power of pre-existing social norms. In this case, the norm is to report observed rule violations. Making non-compliance more visible is, in large part, a matter of reducing the complexity of non-compliance. A carbon tax or a cap-and-trade scheme would

change behaviour of emitters only at the margin, and every emitter can adopt a different emissions abatement strategy. From an economic perspective, this is a major advantage of such instruments. From the viewpoint of third parties, however, 'non-compliance' becomes a very difficult word to understand and translate into observable reality. It will be substantially more difficult to spot a rule-breaker when all emitters are permitted to undertake different measures. 'Non-compliance', however, becomes a much less nebulous concept under a uniform regulatory standard. When all emitters are mandated to take the same actions, rule-breaking may be easier for third parties to spot.

Direct regulation also has the advantage that, when a third party identifies what it believes is a violation of the regulation, it is in fact more likely to be an actual violation. Under taxes and cap-and-trade schemes, standards become tailored to each emitter. A third party does not exactly know what behaviour would constitute a violation of the rules for any particular emitter, and it is therefore more likely that a report is made in error. Reports are then more likely to be dismissed after a proper investigation has been conducted. It is good, of course, that the regulator does not take enforcement action on erroneous third party reports, but if the regulator is perceived to not enforce the rules, this undermines the 'retributive motive' for third party reporting (Shavell, 1993). A member of the public then has less of an incentive to report an observed rule violation in the first place. A uniform regulatory standard reduces erroneous reporting, increases the motivation for third parties to report observed rule violations, and reduces the regulator's monitoring costs. On balance, this may outweigh the efficiency gains associated with individually tailored schemes (Goeschl and Jürgens, 2010).

Of course, one may question whether it is feasible that members of the public will spot rule-breaking in the case of greenhouse gas emissions, or if they do, whether they are able to identify the rule-breaker. If they cannot, these potential advantages of uniform direct regulatory measures evaporate. Nevertheless, when designing climate change policy, it will be helpful to think about how to increase the 'visibility' of non-compliance. Creating technology standards or banning specific technologies or practices may be one way to do this. Violations of such regulations may be much easier for a member of the public to observe than the quantity of emissions.

Regulatory effectiveness

Consider next how the language of climate change policy affects the regulator itself. Just as we may individually rank in our minds the severity of the language – to 'violate environmental law', 'tax evasion', and 'being short on emissions permits' – the people working for the regulator will also do this. Consider whether a person working in the regulator's office may be more motivated to prosecute non-compliance if the language used to describe it is more severe.

More tangibly, the complexity of regulatory language is likely to have an important impact on how effectively the regulator pursues non-compliance. Under a cap-and-trade scheme or emissions tax, emitters choose their own level of emissions. In effect, the regulatory standard is tailored to each emitter, and this minimises the overall cost of abating emissions. From a monitoring and enforcement perspective, however, the regulator may need to construct an inspection and enforcement strategy that is as complicated as the individualised regulatory standards. A uniform emissions standard, then, may be simpler to enforce. Arguedas and Rosseau (2010) construct an analytical model to study the relationship between the policy instrument and a regulator's monitoring strategy. They find that when a uniform standard is sufficiently stringent, the optimal monitoring strategy is to inspect every emitter with the same probability. This strategy is both exceedingly simple and implements a cost-efficient outcome. The regulator's costs may be lower, as well as the social costs of compliance.

Another difference between environmental policy instruments is the likely length of the period between non-compliance and regulatory enforcement. The delay of enforcement is important whenever there is uncertainty about what the policy will be in the future, and climate change policy is undoubtedly a realm of great policy uncertainty. If enforcement is delayed, emitters may

choose not to comply, in the expectation that environmental policy will have changed by the time the date of enforcement arrives. With a cap-and-trade scheme, the date of enforcement is at the end of a commitment period, usually of 5-7 years in length. If emitters are allowed to borrow emissions permits from future commitment periods, the date of enforcement may be postponed even further. With emissions taxes, enforcement is likely to follow at the end of the fiscal year, and with direct regulation, enforcement is immediate upon discovery of non-compliance. Choosing an emissions tax or direct regulation, then, moves the date of enforcement forward, and hence increases the credibility of the policy (Fankhauser and Hepburn, 2010). This encourages greater compliance.

Finally, it is worth considering how an instrument affects the regulator's ability to monitor and enforce regulations over time. Emissions of several greenhouse gases are difficult to measure directly and accurately. Monitoring of emissions often takes the form of estimating emissions based on knowledge of the production processes and the purchases of inputs into production. Victor (1991) points out that economic instruments (cap-and-trade and emissions taxes) encourage every emitter to adopt his least costly abatement strategy. This reduces the overall cost of abatement, but it severely impairs the regulator's ability to estimate emissions based on indirect measures. Thus, these policy instruments undermine the regulator's ability monitor and enforce climate policy targets over time. In the absence of effective enforcement, emitters are unlikely to comply. Direct regulation may not allow emitters to minimise abatement costs, but it allows the regulator to stay on top of emissions targets, and ensure the environmental integrity of climate change policy.

Emitter's qualms

Finally, consider the emitters themselves. There are only two brief points to make here. Firstly, all the ideas about harnessing the power of social norms applies just as well to people working for an emitter as for the regulator or a member of the general public. There is an extensive literature on how to encourage whistle-blowers, and a common conclusion is that the policy must appeal to the motivations of potential whistle-blowers (see, for instance, Hayes and Kapur, 2008). Whistle-blowers, of course, have internalised the same social norms as the rest of society. To quote Liverani (2009):

“some policies based on economic incentives might do more harm than good by weakening the effect of social norms. Pricing pollution or emissions might give polluters the impression that they *can* pollute. Similarly, imperfectly enforced regulation, or perceptions that formal rules can be eluded, can break down the power of social norms in favor of more self-interested behavior and weaken cooperation.”

Secondly, emitters are motivated to reduce emissions by the reactions they expect from the general public and the regulator if they do not comply. As the arguments above have suggested, direct regulations in the form of uniform emissions or technological standards are relatively effective in harnessing social norms and encouraging punishment of rule-breakers. Out of the economic instruments, emissions taxes appear to out-perform cap-and-trade schemes in this respect. The choice of instrument is a way for the general public and the regulator to communicate their environmental and economic priorities to emitters. Using direct regulatory measures becomes a way to communicate that greater weight is placed on ensuring the environmental integrity of climate change policy.

Conclusion

This note has drawn together some recent research on the topic of instrument choice. Although there is little explicit discussion of the language of climate change policy, it emerges from the body of research that the different languages associated with different environmental policy instruments may affect the level of compliance. The social stigma and complexity of identifying a rule-breaker differs with each instrument.

As countries around the world are moving ahead with domestic policies aimed at cutting greenhouse gas emission, it will be important to consider how to achieve high levels of compliance. Choosing an instrument that fully utilises social disapproval of non-compliance would provide policy makers with a cheap way of increasing compliance. The public's reaction to 'environmental criminals' and 'tax cheats' may well instil companies with a greater fear than non-compliance itself. People working for the regulator may find greater reserves of motivation and greater ability to safeguard the integrity of the scheme when pursuing 'law-breakers' and 'tax cheats' than 'short firms'. By the same token, people working for an emitter may themselves find it more difficult to rationalise 'breaking the law' or 'evading taxes' than 'being short on permits'. Taken together, all these factors suggest that choosing the appropriate language of climate change policy may reduce the regulator's costs and at the same time encourage companies to undertake more vigorous compliance efforts.

It is very important to highlight that nowhere does this discussion encourage a government to manipulate the public, or to abuse the emotional reactions of its electorate. It has only suggested that the choice of instrument may facilitate a government's pursuit of environmental objectives on behalf of its electorate. The policy instrument determines what language the public, the regulator, and the regulated use to communicate about environmental and economic priorities. A different instrument will communicate a different balance of priorities. This note has not advocated one set of priorities over another, but rather suggested that the choice of instrument itself, quite apart from the accompanying enforcement regime, is not neutral with respect to compliance. Each instrument invokes a different attitude toward non-compliance. This can alter both the environmental integrity and the cost of monitoring and enforcing new regulations. It would be a shame to neglect the power of language, when language, appropriately wielded, can have such a transformative impact on the cost of and compliance with climate change policy.

© Raphael Caley, 2010

MSc. Environmental and Resource Economics
Department of Economics

References

Almer, Christian and Goeschl, Timo, 'Environmental crime and punishment: Econometric evidence from the German penal code', Working Paper, Department of Economics, University of Heidelberg, 2008.

Andreoni, James and Erard, Brian and Feinstein, Jonathan, 'Tax Compliance', *Journal of Economic Literature*, 36(2), 1998, 818-860.

Arguedas, Carmen and Rosseau, Sandra 'A Note on the Complementarity of Uniform Emission Standards and Monitoring Strategies'. Conference paper presented at the 4th World Congress for Environmental and Resource Economists, 2010.

<<http://www.webmeets.com/WCERE/2010/Prog/viewpaper.asp?pid=481>>

Carpenter, Jeffrey and Matthews, Peter Hans, 'Norm Enforcement: Anger, Indignation or Reciprocity?', *IZA Discussion Paper*, No. 1583.

Fankhauser, Sam and Hepburn, Cameron, 'Designing Carbon Markets. Part 1: Carbon Markets in Time', *Energy Policy*, 38(8), 2010, 4363-4370.

Fehr, Ernst and Fischbacher, Urs, 'Third-party Punishment and Social Norms', *Evolution and Human Behaviour*, 25(2), 2004, 63-87.

Goeschl, Timo and Jürgens, Ole, 'Monitoring and Enforcement: The L.B. Jeffries Problem', Conference paper presented at the 4th World Congress for Environmental and Resource Economists, 2010.

<<http://www.webmeets.com/WCERE/2010/Prog/viewpaper.asp?pid=777>>

Hayes, Anthony and Kapur, Sandeep, 'An Economic Model of Whistle-Blower Policy', *The Journal of Law, Economics, & Organization*, 25(1), 2008, 157-182.

Liverani, Andrea, 'Climate Change and Individual Behaviour: Considerations for Policy', *World Bank Policy Research Working Paper*, No. 5058, 2009.

Shavell, Steven, 'The Optimal Structure of Law Enforcement', *Journal of Law and Economics*, 36(1), 1993, 255-287.

U.S. Department of Justice, 'Reporting Crime to the Police, 1999-2000', *Bureau of Justice Statistics, Special Report*, Office of Justice Programs, NCJ195710, 2003.

Victor, David 'Limits of market-based strategies for slowing global warming: The case of tradeable permits', *Policy Sciences*, 24(2), 1991, 199-222.