

**Environmental Regulation:
Co-operation and the Capacity for Control**

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Co-operation and the Capacity for Control**

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For the Eldridges

Abstract

This thesis examines the contention that effective regulation has as much to do with the *capacity for co-operation* between inter-dependent actors as it has to do with the state's *capacity for control*. This contention, and the alternative conception of regulation that it implies, is significant because it is associated with a tension that runs through many areas of public policy: does cooperation between the public and the private, or between the regulators and the regulated, lead to effective collective action or to regulatory capture?

Following a conceptual examination of the nature of regulation and implementation, the thesis considers the explanatory value of two different perspectives on cooperation and collective action: the rational choice perspective, which suggests that the behaviour of economically responsive actors is shaped by the incentives for cooperation that stem from their inter-dependence, and the institutional perspective, which contends that as particular forms of behaviour emerge, evolve and become institutionalised, so the implementation process becomes embedded in particular institutional structures that enable the continuation of existing approaches whilst restricting the potential for change.

In seeking to examine the explanatory value of these perspectives, the thesis considers the factors shaping the implementation of two frameworks of environmental regulation, namely the frameworks of Integrated Pollution Control and Local Air Pollution Control as applied in England and Wales. Based on a comparative analysis of the factors that shape the nature and influence of each implementation process, the thesis concludes that the explanatory value of the rational choice perspective is fundamentally limited and that the value of the institutional perspective is much more complete.

On this basis, the thesis proposes an institutional perspective on regulation and implementation that recognises the significance of resource inter-dependencies and the ways in which cooperative approaches can increase the prospects for collective action whilst reducing the accountability and the manageability of the implementation process. As is discussed, this conclusion has significant implications for broader debates on regulation and governance.

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More broadly, a number of other friends and colleagues have offered support, encouragement and constructive comments over the years. In the early stages of the research, discussions with Joseph Murphy, Ben Vivian, John Lovering and Susan Andreatta helped me to refine the research topic and to engage with different literatures. More recently, Henry Rothstein and Michael Huber have offered comments on various drafts that have allowed me to enhance the focus and fluency of the argument and to emphasise the key points.

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Links with Previous Research

The rationale for this thesis emerged from the conclusions of preceding research on the implementation and impact of different forms of environmental regulation in England and Wales and the Netherlands. This research, which was funded by the UK Economic and Social Research Council as Project No L323 25 301 501, was conducted by the author of this thesis, who designed the research project, was grant holder and principal investigator, and Joseph Murphy, who was the research assistant. The results of the ESRC research project are presented in Gouldson and Murphy (1998).

Conceptually, the ESRC project considered the nature of debates on ecological modernisation and the influence that different regulatory styles can have on the development and diffusion of new technologies and techniques. Although it touched upon the influence of cooperative regulatory styles, it did not consider the factors that gave rise to cooperation in the implementation process or the extent to which cooperation led either to collective action or to regulatory capture. By focusing specifically on these factors, the thesis develops entirely new lines of conceptual enquiry from those examined in the preceding ESRC project.

Empirically, the ESRC research project had four components: it considered the influence of two types of environmental regulation (mandatory and voluntary) in two settings (England and Wales and the Netherlands). In accordance with the conceptual framework developed by the author, data in each of these four areas was collected both by the author and by Joseph Murphy. The subsequent data set included raw data that related to the aims of this thesis. Consequently, approximately one quarter of it (i.e. only that relating to mandatory regulation in the form of Integrated Pollution Control (IPC) regulations as applied in England and Wales) was drawn upon as secondary data within this thesis. However, this data was up-dated and extended through a series of follow-up interviews with both the regulators and the regulated firms associated with IPC. To enable a comparative approach to be adopted, a second framework of mandatory environmental regulation (i.e. the framework of Local Air Pollution Control (LAPC) regulations adopted in England and Wales) was selected where primary data was collected and analysed by the author specifically for the purpose of this thesis.

Therefore, although this thesis draws upon some secondary data, the text presented within this thesis is entirely new and the conceptual and empirical analysis entirely original.

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List of Abbreviations

BAT	Best Available Techniques
BATNEEC	Best Available Techniques Not Entailing Excessive Cost
BPEO	Best Practicable Environmental Option
BPM	Best Practicable Means
CIEH	Chartered Institute of Environmental Health
DoE	Department of the Environment
DETR	Department of the Environment, Transport and the Regions
DEFRA	Department of the Environment, Food and Rural Affairs
DTI	Department of Trade and Industry
EA	Environment Agency
EHO	Environmental Health Officer
EMS	Environmental Management System
EPA	The 1990 Environmental Protection Act
EQO	Environmental Quality Objective
ETBPP	Environmental Technology Best Practice Programme
GG Notes	General Guidance Notes
HMIP	Her Majesty's Inspectorate of Pollution
IPC	Integrated Pollution Control
IPPC	Integrated Pollution Prevention and Control
LA	Local Authority
LAPC	Local Air Pollution Control
NRA	National Rivers Authority
PG Notes	Process Guidance Notes
PPC	Pollution Prevention and Control
SEPA	Scottish Environmental Protection Agency
VOC	Volatile Organic Compound
WRA	Waste Regulatory Authority

PREFACE

Introduction

The traditional conception of regulation, as embodied in the very terminology of 'command and control', implies that the regulators somehow have the capacity to control the activities of the regulated. However, numerous theoretical analyses and empirical studies have challenged the validity of this conception, arguing that the power and resources of the public sector are limited and that hierarchical relationships between the regulators and the regulated are much less influential than has often been assumed.

Against this backdrop, this thesis sets out to examine the contention that effective regulation has as much to do with the *capacity for co-operation* between inter-dependent actors as it has to do with the state's *capacity for control*. This contention, and the alternative conception of regulation that it implies, is significant because it is associated with a tension that runs through many areas of public policy and regulatory decision-making. For some, co-operation between the regulators and the regulated can enable problems to be effectively resolved through collective action (Olsen, 1965; Axelrod, 1984, 1997; Ostrom, 1990; Glasbergen, 1998; Lahusen, 2000). However, for others 'the very conditions that foster the evolution of co-operation are also the conditions that promote the evolution of [regulatory] capture and indeed corruption' (Ayres and Braithwaite 1992, p55). It is apparent therefore that cooperation between the regulators and the regulated can lead to conflict between different measures of policy performance: although it can increase the administrative viability and the efficacy of regulation, it can also reduce the accountability and therefore the political acceptability of regulatory decision-making processes.

In seeking to examine the significance of these issues, this thesis focuses particularly on the implementation process and on the relationships between the regulators and the regulated that are at the heart of this process. The focus on implementation is adopted as although regulations are *designed* during the formulation stage, the realities of regulation are *made* during the implementation stage (Rees, 1990; Gouldson and Murphy, 1998). The focus on interactions between the regulators and the regulated is adopted as these continue to be the main actors that are engaged in the implementation process at the 'street-level' (Lipsky, 1980) despite calls for the adoption of more participatory regulatory decision-making processes (see Ayres and Braithwaite, 1992; Gunningham and Grabosky, 1999). Finally, the focus on the interactions between the regulators and the regulated is adopted as many macro-level issues are played out in the micro-level interactions that shape the implementation process. By studying these issues

at the micro-level therefore, this thesis aims to inform broader debates about the capacities of the state, the nature of public policy and the methods of policy analysis.

Conceptual Focus and Hypotheses

In seeking to understand the origins and influence of co-operation in the implementation process, the thesis considers the relevance and explanatory value of certain economic theories of cooperation and collective action. These theories were selected as the conceptual basis for the thesis because they argue that resource inter-dependencies generate incentives for cooperation. On this basis, the thesis hypothesises that:

- i) that implementation processes will be shaped not only by the ability of public sector regulators to resort to the hierarchical application of legal authority but also by the extent to which regulated actors derive influence in the implementation process from their access to a broader range of resources;
- ii) that various resource interdependencies will emerge in the implementation process which mean that compliance depends upon co-operation and the exchange of resources as regulatory objectives effectively become 'collective action problems';
- iii) that cooperative interactions within the implementation process will be institutionalised within different forms of network that will influence both the outputs (i.e. the practical nature of the demands made by regulators) and outcomes (i.e. the ways in which the regulated firms responded to these demands) of the implementation process;
- iv) that because of these inter-dependencies, the implementation process will display some of the advantages of co-operation (i.e. increases in administrative viability and an enhanced ability to secure compliance through collective action) and some of the disadvantages of regulatory capture (i.e. reduction of standards and loss of accountability).

In examining the empirical validity of these hypotheses, the thesis also seeks to test the explanatory value of two contrasting perspectives on the basis for cooperation and collective action in the implementation process. On the one hand, the rational choice perspective contends that resource inter-dependencies generate the incentives that shape the strategies that are adopted within the implementation process. This perspective, which reflects the principles of neo-classical economics, is associated with a relatively simple chain of causality whereby resource inter-dependencies generate the incentives that shape the strategies that are adopted by the different actors. This suggests that the strategies that are adopted by the different actors are

responsive to different resource allocations and incentives and therefore that the implementation process can be readily changed by altering the nature of these factors. On the other hand, the institutional perspective contends that these inter-dependencies, incentives and strategies are shaped by the broader institutional context within which the implementation process takes place and by the presence of various institutionalised forms of behaviour. As a result, this perspective, which is closely aligned with the principles of new institutional economics, implies that various 'feedback loops' might generate self-reinforcing forms of behaviour. This suggests that actors can become *embedded* in particular institutional structures and trajectories and that the implementation process will be hard to change. These different perspectives are significant not only because they might help to explain the presence or absence of cooperation within existing approaches to implementation therefore. They are also significant because they can inform the extent to which cooperation within the implementation process can be encouraged if it is seen to enable collective action or discouraged if it is associated with regulatory capture.

The Structure of the Thesis

Within the discussion that follows, Chapter 1 establishes the basis for the analysis by examining the nature of regulation and the significance of the implementation process in more detail. Chapter 2 then examines the central tenets of different economic theories of cooperation and collective action and their relevance to discussions on regulation, implementation and compliance. On the basis of this conceptual discussion, attention is then focused on the extent to which inter-dependence and the need for co-operation can help to explain the nature and influence of the implementation process empirically. Chapter 3 introduces the empirical focus for this thesis, namely the systems of Integrated Pollution Control (IPC) and Local Air Pollution Control (LAPC) that have been applied in England and Wales since 1990. After discussing the rationale for studying the implementation processes associated with these regulatory frameworks empirically, the chapter revisits the hypotheses outlined above in order to establish more detailed questions for empirical research. It then outlines the methodological issues associated with such empirical research and discusses the particular approaches to data collection and analysis that were applied within the thesis.

The results of the empirical analysis are then presented in a way that reflects the perspectives of both the regulators and the regulated actors that are associated with the implementation of these regulatory frameworks. Chapter 4 presents the perspective of the inspectors within the specialist national agency who are charged with implementing IPC regulations while Chapter 5 presents the perspective of the managers of the large industrial facilities that are affected by these

regulations. Similarly, Chapter 6 presents the perspectives of the inspectors within the generalist local authorities that are responsible for the implementation of LAPC while Chapter 7 presents the views of the managers of the small and medium sized firms that are affected by these regulations. Thus, there are a number of comparative dimensions to the empirical study as it contrasts the approaches to implementation adopted by specialist/generalist and national/local agencies as they seek to influence the behaviour and performance of large/small firms.

Chapter 8 analyses the findings of the empirical analysis to consider the basis for and the influence of co-operation in each of the two case study regulations. On the basis of the comparative review, the discussion considers the explanatory value of the different theoretical perspectives and the validity of the different hypotheses. While no specific claims are made about the wider relevance of this case-based empirical study, Chapter 9 discusses the wider implications of an institutional perspective on regulation and implementation. These relate both to the role that command and control regulations can play as part of a broader policy mix and to the ways in which cooperative approaches to regulation can be applied as part of a broader strategy for governance.

CHAPTER 1

Regulation and its Reform

Structure

- Definitions of Regulation
- The Rationality of Regulation
- The Search for Better Regulation
- The Nature and Influence of the Implementation Process
- Related Research on the Implementation of Environmental Regulation
 - *The Nature of the Implementation Process*
 - *The Influence of the Implementation Process*
- The Rationale for Further Research on the Implementation Process

Definitions of Regulation

Regulation can take on many forms, and different interpretations of what constitutes 'regulation' abound. Baldwin, Scott and Hood (1998, p3), for example, distinguish between three forms of regulation. At its broadest, regulation encompasses all mechanisms of social control, an interpretation which sees regulation by governments as being but one element in the broader framework of social governance. A somewhat narrower interpretation holds that all forms of direct state intervention in the economy are forms of regulation. This view acknowledges the role of regulation in steering economic development and accepts that regulation is as much to do with facilitating and enabling desirable forms of social and economic activity as it is to do with restricting and controlling undesirable forms of activity. The narrowest and perhaps the most traditional interpretation is that regulation involves the introduction, application and enforcement of rules, typically by a public agency, commonly in the form of rule-based command and control regulations. Therefore, Baldwin, Scott and Hood (1998) argue that as the general framework of social governance provides the context for government activity, so the wider policy framework provides the context for the introduction and application of specific rule-based command and control regulations.

Within the broader context, this thesis is primarily concerned with the narrowest interpretation of regulation, namely the nature of command and control regulation. There are various interpretations of what constitutes command and control regulation. Selznick (1985, p363) states that command and control regulation involves 'sustained and focused control exercised by a public agency over activities that are valued by a community'. Similarly, Ball and Bell (1995, p88) consider that mandatory regulation involves 'the application of rules and procedures by public bodies so as to achieve a measure of control over activities carried on by individuals and firms'. In each instance, command and control regulation is based upon legislation which assigns the public sector the formal authority to exert some degree of control over regulated activities in the private sector by establishing controls. These controls come either in the form of an imperative 'you must' or of a prohibitive 'you must not'.

While the legislative basis for regulation is of course significant, the implementation process is central to any discussion on regulatory practice as the practical substance of any regulatory framework is defined by the nature of the interactions between the regulators and the regulated actors (Rees, 1990). Thus, broadening the definitions of regulation introduced above to take the significance of the implementation process into account, Gouldson and Murphy (1998, p41) define command and control regulation as being:

a system of direct control over market organisations and activities, operated by government and its representatives, which has a legal basis and is operationalised through a range of implementing structures and procedures.

As can be seen, these conceptions of command and control regulation associate it with some degree of public sector control *over* private sector activities. These conceptions are associated with a hierarchical notion of the implementation process that implies that regulatory agencies must have the capacity to control the behaviour of the targets of regulation if compliance is to be effectively achieved. Before moving on to assess the validity of this hierarchical conception, the discussion will first consider the factors that shape the design of regulation and that motivate and guide the search for better forms of regulation.

The Rationality of Regulation

The classical justification for regulation is that it should be introduced to protect the public interest from the consequences of market failure. Thus, regulations in various forms may be adopted in an attempt to limit monopoly power or to curb predatory pricing, to encourage

continuity of service over time and through space, to compensate for inadequate access to information and for unequal bargaining power and to respond to the under-provision or the over-consumption of public goods and to the imposition of externalities (Breyer, 1982, 1990; Kay and Vickers, 1990; Baldwin, 1995a; Majone, 1996; Baldwin, Scott and Hood, 1998).

Whilst it is generally assumed that regulations should serve the collective public interest if they are to be effective, in practice it is widely acknowledged that governments commonly fail to search for, adopt and apply those approaches to regulation that would serve the public interest in the optimal way. Hanf and O'Toole (1992, p164) for example argue that:

Recent years have constituted an era of sober realism among those who specialise in the study and practice of governance. Grand hopes and bright visions have given way to reports of multiple policy failures, pernicious unintended consequences, and persistent budget problems... Not so long ago, the standard image was that of the 'can-do', nearly omnipotent state. More recently, the picture has altered to one of an overloaded and perhaps chronically weakened system of governance, one which [has] but a limited ability to direct the course of the broad-scale action needed to address policy difficulties.

These limited capacities for effective governance, and more particularly for effective regulation, are widely held to be the consequence of a range of factors that bound the rationality of the policy process and that influence the nature of regulatory decision-making in ways that may not always further the public interest. These factors manifest themselves in a range of ways. At the most basic level, problems that might create a justification for regulatory intervention may not be recognised due to limited scientific understanding and imperfect information. Particularly where governments are reluctant to intervene in the absence of an 'objective scientific understanding' of cause and effect relations, government intervention can become dependent upon and may therefore lag behind advances in scientific understanding (Weale, 1992; Boehmer-Christiansen and Skea, 1990). This is critically important if scientific and technical systems are always one step away from the understanding which would control their current impacts while always being on their way to creating new and possibly more complex problems (Christoff, 1996). Because regulation often lags behind advances in scientific understanding, it has been argued that regulation has a tendency to be reactive and crisis-oriented rather than proactive and precautionary (Janicke, 1997).

Even where problems are recognised and a case for government action is established, the time, resources and capacities needed to identify and evaluate all of the impacts of each of the

possible alternative responses to a problem are rarely if ever available (Simon, 1957; Peters, 2001). Under such conditions, the intended and unintended consequences of particular decisions can seldom be accurately predicted, the functional merits of alternative approaches cannot normally be fully compared and an overall optimum can rarely be identified. Furthermore, particularly under conditions of uncertainty, regulatory decision makers tend to be risk averse and to resort to conventional modes of operation where possible (Rees, 1990). Thus, the potential to explore innovative forms of intervention is often limited, especially where such approaches might require radical changes to administrative structures and institutionalised modes of behaviour. Consequently, regulatory decision-making tends to display a degree of continuity and even path-dependency that limits the potential use of those forms of regulation that are difficult to assimilate into pre-existing structures or trajectories.

Because of the presence of these factors that 'bound' the rationality of regulatory decision-making, it is widely accepted that decision makers tend to pursue only incremental change and to seek a satisfactory rather than an optimum solution (Simon, 1957; Lindblom, 1959, 1979). This is particularly the case where policies have multiple or competing objectives that can lead to fragmentation and conflict both within and between policy areas that often can only be resolved through contestation or compromise. When faced with such a situation, policy makers commonly establish only vague and ambiguous policy objectives whilst delegating responsibility for the pursuit of these poorly articulated objectives to implementing agencies. Indeed, at the extreme, regulations can be adopted largely for symbolic purposes, for example when regulations are adopted by governments that subsequently fail to establish the structures, or assign the resources, that are needed for effective implementation.

It is this recognition that the design of regulatory frameworks is commonly sub-optimal that drives the search for better regulation. This search can be based upon initiatives that are designed to raise the capacity of the state and improve the rationality of the decision-making process. However, the search for better regulation is commonly complicated by the presence of many different and sometimes competing rationalities and interests within the policy process. As the arguments of institutional rational choice theory contend, regulatory decision making is likely to be influenced not only by the results of any rational analysis that does take place, but also by the institutional context for decision making and by the interactions between those organisations and individuals who take decisions and the wide range of interest groups that seek to influence decision making so that it better reflects their political and economic interests (see Simon, 1957; Downs, 1967; Perlman, 1976; Dunleavy, 1980, 1991). Institutional contexts, incentive structures and power relations therefore become significant factors in the regulatory decision making process.

The Search for Better Regulation

The search for better regulation is variously taken to include the search for forms of regulation that are politically acceptable and administratively viable and that generate effective, efficient and equitable outcomes through accountable and in some instances participatory decision-making process (see Jacobs, 1991; Baldwin, 1995a; Gunningham and Grabosky, 1999). Reflecting the discussion above, it is unlikely that any one approach will satisfy all of these objectives simultaneously and that trade-offs have to be made between the different measures of policy performance. As a result, debates on regulation and its reform are often based on contestation between different actors with contrasting views on what might constitute 'successful' regulation.

While the different actors commonly offer different prescriptions, the search for better regulation has commonly been based on the perceived weaknesses of traditional approaches to regulation. Majone (1996) for example suggests that the framework of public policy has become increasingly complex as new forms of regulation have been introduced to both encourage and facilitate economic change and to respond to the negative impacts of such change and that this increased complexity has reduced the effectiveness of command and control forms of regulation. Gunningham and Grabosky (1999, pp4-5) go further and argue that those approaches to regulation that rely on the application of command and control instruments are seriously sub-optimal as they 'are not effective in delivering their purported goals; or efficient in doing so at least cost; nor do they perform well in terms of other criteria such as equity, administrative viability or political acceptability'. Thus, they suggest that command and control regulations often perform badly in almost every respect.

Whilst some of these weaknesses are likely to have been associated with the manner of their application, Gunningham and Grabosky (1999, p9) argue that the limits of command and control 'can only be overcome by invoking a broader vision of regulation and by the pursuit of broader policy mixes, utilising combinations of instruments and actors and taking advantage of the synergies and complementarities between them'. In response to criticisms such as these, many programmes of regulatory reform have sought to explore the potential of less intrusive and less centralised forms of government intervention through the application of a broader range of policy instruments (see for example Sigler and Murphy, 1988; Ayres and Braithwaite, 1992). Indeed, much has been made of the potential benefits of applying economic and information-based instruments, voluntary agreements and other enforced forms of self-regulation alongside more flexible and less interventionist forms of command and control regulation (Ayres and Braithwaite, 1992; Baldwin, Scott and Hood, 1998; Ogus, 1999).

Aside from calls for the application of a wider range of policy instruments, there have also been calls for a broader and more inclusive and cooperative conception of the regulatory process based on the direct involvement not only of government, business and other 'targets' of regulation but also of a range of other interested actors and stakeholders (Ayres and Braithwaite, 1992; Gunningham and Grabosky, 1999). In this way it is argued that regulation can become more responsive to the conditions faced by the private sector and to the concerns of the various stakeholders. Whilst some have argued that such inclusive processes are desirable, not least because they can offer some protection against the prospect of regulatory capture, others have argued that they are becoming an effective necessity. Ayres and Braithwaite (1992), for example, argue that as governments are limited by political and fiscal constraints they may need to secure the support and harness the resources of the private sector to realise public objectives. Similarly, Hancher and Moran (1989) suggest that as private organisations have commonly acquired important attributes of public status through their contribution to social objectives, they should be invited into the public 'regulatory space' to influence the policy process and regulatory decision making. In essence, Hancher and Moran (1989) recognise the significance of *inter-dependence* between the regulators and the targets of regulation and hence the need for cooperation in regulatory decision-making processes. Through such open, inclusive and cooperative approaches to regulation then it is argued that the draw-backs associated with the centralised and hierarchical imposition of command and control regulations can be reduced, that the capacities and resources of the private sector can be harnessed to improve the efficacy and efficiency of regulation, and that the regulatory process can be made more participatory and accountable (Ayres and Braithwaite, 1992; Gunningham and Grabosky, 1999; Rydin, 1999).

These calls for the introduction of a broader range of instruments and a more inclusive and cooperative approaches to regulation are compatible with the view that regulatory reform has been and should be associated with a broader reappraisal of the nature of government. Rydin (1999, p61), for example, suggests that a transition is taking place as traditional forms of government, based on hierarchical relationships between tiers of state, a strong element of top-down control and a firm boundary between the state and outside organisations, are being replaced by broader forms of governance which recognise and utilise the proliferation of quasi-governmental agencies and the growing formal role of non-state organisations within the policy process. Similarly, Osborne and Gaebler (1992, p24) suggest that traditional forms of 'government' should be seen as just one instrument in the broader framework of 'governance' or social regulation. This proposed shift from traditional conceptions of government to broader notions of governance is closely related to the view that regulation should not only impose restrictions on the undesirable aspects of private activity through hierarchical control, but that it

should also seek to enable and facilitate more desirable forms of private activity through public-private partnerships or cooperation.

While these contributions have undoubtedly been influential, throughout the debate on regulation and its reform most of the emphasis has been placed on the design of regulations and on the combination of policy instruments to be adopted. Although authors such as Ayres and Braithwaite (1992) and Gunningham and Grabosky (1999) emphasise the significance of inclusive or participatory forms of regulatory decision-making, within the wider discourse relatively little emphasis has been placed on the central role that the implementation process plays in shaping the performance of policy. But it is possible that the performance of existing frameworks of command and control regulation might yet be enhanced by building a better understanding of the influence that different approaches to implementation can have on the outcomes of the implementation process and therefore on regulatory performance.

The Nature and Influence of the Implementation Process

While a theoretical distinction can be drawn between the political process of policy formulation and the bureaucratic process of policy implementation, in practice it is widely acknowledged that a clear distinction between the formulation and implementation phases is unlikely to exist (Barrett and Fudge, 1981). While the implementation process can be 'preconditioned' from above, for example through the precise drafting of legislation or the rigid programming of implementation activities, the agencies and officials that are charged with realising regulatory objectives continue to shape the practical substance of regulations by exercising discretion in the way that they interpret, apply and enforce the generic principles of regulation in specific situations (Rees, 1990). Indeed, when faced with limited resources, regulators can use their discretion and the flexibility that it implies to find ways of operationalising regulations within practical constraints. Consequently, an analysis of the influence that discretion plays in the informal interactions that are at the heart of the implementation process is central to an understanding of the practical nature of regulation.

Any actor in the implementation process is able to exercise discretion when the effective limits on their power leave them free to make a choice among possible courses of action or inaction (Davis, 1969). Discretion can be exercised both by the implementing agency as a corporate body and by the 'street-level bureaucrats' within the agency who enact policy on a day-to-day basis (Lipsky, 1980). It can be exercised in the way that the key principles and objectives of a regulation are interpreted, prioritised and delivered. It can influence the provision of assistance

or support and the level of sanction that is applied in cases of non-compliance. It can also allow actors to change the substance of regulation or the style of its delivery. Discretionary elements in the implementation process therefore establish the potential for implementing agencies and individuals to change their strategies or styles as a response to the conditions or incentives that they encounter.

Discretionary elements can be deliberately incorporated into legislation to allow implementing agencies to take decisions at a level and with a degree of specificity that is not available during policy formulation. As Hill (1993) notes, it may be that those top-level decision makers involved in policy formulation do not want, or are not able, to set clear policy goals but would rather leave responsibility for defining the practical nature of policy to those who are expected to implement it. By incorporating discretionary elements into the design of regulations, top-level decision makers can also allow regulations to take into account the diversity and the variability of the conditions that are encountered by both regulators and the targets of regulation (Richardson *et al*, 1982; Ayres and Braithwaite, 1992; Gunningham and Grabosky, 1999). To this extent discretion may be desirable in the implementation process as it allows regulators the freedom to 'fine tune' regulations to fit with specific circumstances and to find the most effective ways of meeting regulatory objectives.

While the exercise of discretion in the implementation process may generate some benefits, it can also reduce the democratic basis for decision-making, the accountability of the regulatory agency and the rationality, transparency, predictability, consistency and fairness of regulatory decision-making (Baldwin, 1995b). Many of these concerns stem from the fact that the exercise of discretion in the implementation phase is likely to demand that public interest decisions are taken by non-elected civil servants in an unaccountable process of negotiation with the parties that they regulate. This process of negotiation may not be open to external scrutiny or legal challenge, particularly where negotiations are based upon complex, heterogeneous and dynamic criteria that are not readily monitored or communicated. Furthermore, these negotiations are likely to be based on asymmetrical access to information between the regulator and the regulated (Weale, 1992; Ogus, 1994; Smith, 1997). This commonly means that the implementing agency or individual with discretionary powers has to choose between alternative courses of action on the basis of the potentially incomplete or inaccurate information that has been supplied by the party that they are regulating. This raises the prospect of regulatory capture. As Ogus (1994, p58) notes, regulatory capture may occur in a number of ways:

There are various hypothesized methods of influencing agency policy: the information required by the [implementing] agency may only be obtainable from the regulated

industries; lack of expertise in the subject-matter may mean that the agency has to recruit its officials from those industries; and the industries may threaten the agency with costly, or even trivial, time wasting appeals should it fail to be 'cooperative'.

It has also been suggested that, intentionally or otherwise, implementing agencies and the individuals within them may be more lenient in their interpretation of the requirements of regulation if they aspire to eventual employment with the bodies they regulate, if such a style of enforcement is more pleasant as it incurs the least resistance or if they are reluctant to impose sanctions on offenders with high social status (Richardson *et al*, 1982; Makkai and Braithwaite, 1995). Regulated organisations may also be able to influence or resist the demands of regulatory agencies as a consequence of the political leverage that they derive from their economic power (see Blowers, 1984).

Thus, as well as establishing the potential for the efficacy and efficiency of policy to be enhanced over time, the exercise of discretion can also generate uncertainty, allow arbitrary decision making and increase the prospect of regulatory capture. To explore these issues further, this chapter now reviews the central findings of previous research on the implementation of environmental regulation in order to identify and examine the factors that have influenced the nature of the implementation process in different contexts.

Related Research on the Implementation of Environmental Regulation

- The Nature of Different Approaches to Implementation

Many of the arguments that are outlined above are reflected in research on the implementation of environmental regulation. Richardson, Ogus and Burrows (1982) for example argue that the implementation of environmental regulation necessarily involves the exercise of discretion and that this discretion affects the forms of control introduced by regulators. They suggest that the flexibility that such discretion allows may be welcome, not least in avoiding the problems associated with legalism, or the mechanical application of rules without regard to their purpose. However, they also propose that the exercise of discretion may engender uncertainty and arbitrariness in decision making and that it may not be exercised in a way that furthers the declared regulatory objectives. In this respect, they suggest that those who are required or who are able to exercise discretion in the implementation process seldom possess all of the information needed to select the optimum course of action, and that they may be 'improperly

influenced' by interested parties so that they interpret and apply regulatory requirements leniently to accommodate the concerns of the targets of regulation.

Related to this, Hawkins (1984) highlights the potential for regulators to adopt different styles of regulation when he suggests that the implementation and enforcement of environmental regulation can be based either on compulsion, coercion and the imposition of sanctions or on conciliation, compromise and the promotion of compliance. Other authors such as Vogel (1986), Majone (1996) and Hutter (1997) have shown that some approaches to environmental regulation, particularly in the United States, have tended to be based on compulsion and the adoption of sanctions-based strategies. However, Hawkins (1984) suggests that styles of implementation and enforcement are generally conciliatory and compliance-based and that they commonly follow 'a loosely structured but none the less organised process relying heavily upon negotiated conformity, with a gradual increase in pressure being applied to the uncooperative...' (1984, p7). He suggests that since effective compliance-based strategies are likely to be more concerned with preventing harm than with punishing breaches of the law, they are likely to be associated with a lack of formal legal action. However, he also recognises that rather than communicating regulatory success, a lack of legal action is commonly associated with perceptions of regulatory failure and with suspicions of regulatory capture.

The studies by Richardson, Ogus and Burrows (1982) and Hawkins (1984) are both significant as they suggest that a close and co-operative working relationship between regulators and the targets of regulation has the potential to enhance the efficacy of regulation. Importantly, however, they also recognise that such approaches to implementation can reduce the efficacy of regulation by increasing the prospect of regulatory capture whilst also reducing the transparency and the accountability of regulatory decision-making processes. Thus, it is apparent that there may be conflict between different criteria for evaluating policy success, for example in instances where co-operation between regulators and the targets of regulation enhances the efficacy and efficiency of regulation but at the expense of the accountability or equitability of regulatory decision making processes.

These findings are closely related to those of Hutter (1997), who argues that those compliance-based approaches to implementation and enforcement that are seen to be effective by some may be seen to be ineffective and unaccountable by others. In this respect, she draws a distinction between theories of regulation that are based on accommodation and consensus and those that are based on adversarialism and conflict. She suggests that consensual theorists argue that regulations are introduced to further the public interest in a way that accommodates the demands of competing interest groups. Accordingly, regulations are seen to be the result of a

pluralistic process of negotiation and compromise, and as such are neither as demanding as those that are primarily concerned with the social and environmental benefits of regulation would want, nor as lenient as those that are primarily concerned with private costs of compliance would prefer. By contrast, conflict theorists argue that regulations reflect the views of the dominant interests in society who are able to exert influence to ensure that regulations do not seriously affect their interests.

Hutter (1997) suggests that these different views of the nature of regulation are reflected in different interpretations of the implementation process, where conflict theorists argue that regulation can be weakened to the point of ineffectiveness, while consensual theorists believe that improvements can be effected, although not always on the scale that some would have wished. Thus, judgements about the success or failure of regulation are likely to be influenced by the perspective taken by those who adjudicate. Nonetheless, despite their different perspectives, both of the theories outlined by Hutter (1997) accept that implementation is an inherently negotiated process and that the practical substance of environmental regulation is determined by the nature of interaction between regulators, the targets of regulation, and in some, but not all, instances, other third parties. The discussion by Hutter therefore reinforces the view that there may be competing rationalities in the policy process and that no single optimum may exist. Instead, particularly where there are multiple or competing objectives for policy and even more so where the articulated objectives for policy are vague or ambiguous, there may be different perspectives on what constitutes successful regulation.

Ayres and Braithwaite (1992) attempt to go beyond the distinctions between both the sanctions-based and compliance-based strategies and the theories of regulation based on consensus and conflict that have been outlined above. They suggest a need to introduce 'responsive' approaches to implementation and enforcement that recognise the wide range of potentially contradictory motivations that typically influence the behaviour of particular sectors, firms, departments and individuals. Particularly in relation to the different motivations affecting individual decision-makers within regulated firms, they argue that 'business executives have profit-maximising selves and law-abiding-selves, at different moments, in different contexts, the different selves prevail' (p19). They contend that compliance-based strategies based on persuasion will be exploited by the targets of regulation when they are motivated by economic rationality, while sanctions-based strategies based on punishment will undermine the good-will of the targets of regulation when they are motivated by a sense of responsibility. They also argue (p20) that:

a strategy based mostly on punishment fosters an organised business subculture of resistance to regulation... Punitive enforcement engenders a game of regulatory cat-and-mouse whereby firms defy the spirit of the law by exploiting loopholes, and the state writes more and more specific rules to cover the loopholes.

Consequently, they suggest that a 'pyramid' of different approaches to implementation and enforcement should be adopted that would subject the targets of regulation to gradually escalating forms of regulatory intervention if they continually refuse to respond to regulatory demands. They argue that such a pyramid of implementation and enforcement would begin by exploiting the benefits of self-regulation and would then move on to explore the potential of enforced self-regulation before resorting to command and control regulation. Where command and control regulation was deemed to be necessary, implementation and enforcement would initially involve the exercise of discretion. Non-discretionary or legalistic approaches to implementation and enforcement would only be adopted in extreme circumstances. Ayres and Braithwaite (1992) therefore argue that responsive approaches to implementation and enforcement would allow regulators to respond to the different motives and forms of behaviour that are likely to be exhibited at various times and in different contexts by the targets of regulation. This is significant because they challenge the view that particular approaches to implementation should be adopted and maintained over time.

By suggesting that non-discretionary or legalistic approaches to implementation and enforcement should only be adopted in extreme circumstances, Ayres and Braithwaite (1992) place considerable faith in the merits of co-operation, flexibility and the exercise of discretion in the implementation and enforcement process. However, they also recognise that attempts to foster such co-operation between regulators and the targets of regulation can lead to corruption and capture. They suggest that while the traditional response to the possibility of corruption and capture has been to introduce measures to limit discretion and to maintain the relational distance between regulators and regulated, these measures also restrict the potential of regulators to realise the benefits of co-operation. By way of a response, they call for the empowerment and wider involvement of public interest groups in the regulatory process so that the benefits of co-operation and flexibility can be exploited but in a process that is inclusive, transparent and accountable. Thus, they suggest that public interest groups should be involved in regulatory processes and that such groups should either be able to sanction non-compliance directly, or, as is perhaps more likely, to sanction regulators who fail to punish non-compliance. Ayres and Braithwaite (1992) also argue that the behaviour of the public interest groups who act as the 'guardians' of a co-operative regulatory process needs to be made accountable through the

publication of information on the regulatory process and its outcomes and by establishing opportunities for other interest groups to replace them if they do not perform adequately.

Significantly, therefore, Ayres and Braithwaite (1992) argue that while there may appear to be competition between different performance measures, as may be the case where co-operation between regulators and the targets of regulation enhances the efficacy and efficiency of regulation but at the expense of the accountability of regulatory decision making, the relations between different performance measures need not be fixed. This raises the possibility that new approaches to implementation can improve the performance of regulation when it is judged from a range of different perspectives using a variety of different criteria for evaluation.

- The Influence of Different Approaches to Implementation

These conceptual distinctions between various approaches to implementation and enforcement, and the related concerns about the relative significance of co-operation, corruption and capture, are reflected in practice in many instances. Vogel's (1986) study of the different approaches to the implementation and enforcement of environmental regulation adopted in the UK and the USA in the period up to the 1980s has provided a reference point for much of the subsequent comparative research on the nature and influence of different regulatory structures and styles. This may be because the approaches to implementation that Vogel describes appear to lie at opposite ends of a spectrum. As Vogel (1986, p21) states:

On balance, the American approach to regulation is the most rigid and rule-oriented to be found in any industrial society, the British the most flexible and informal. The United States makes more extensive use of uniform standards for emissions and environmental quality than does any other nation; the British, with a handful of exceptions, employ neither... The United States makes virtually no use of self-regulation to improve environmental quality; the British rely on it extensively. Regulatory authorities in America take companies to court more frequently than those of any other country; prosecution in Great Britain is rare. The thrust of American environmental regulation has been to restrict administrative discretion as much as possible; in Britain regulatory officials remain relatively insulated from both parliamentary and judicial scrutiny... [However] the most striking difference between the environmental policies of Great Britain and the United States has to do with the relationship between business and government... no other business community is so dissatisfied with its nation's system of environmental controls as the American business

community. In Great Britain, by contrast, the relations between the two sectors have been relatively co-operative.

Thus, Vogel (1986) identifies a range of different criteria that can be used to characterise different approaches to regulation and to implementation. Despite the notable differences in the approaches to regulation adopted in the UK and the USA, and whilst recognising that it is difficult to make cross-country comparisons of regulatory performance, Vogel (1986, p23) goes on to suggest that the results of regulation are broadly similar in both countries:

Britain's emphasis on voluntary compliance has not proved any more – or less – effective in achieving its objectives than the more adversarial and legislative approach adopted by policy makers in the United States. American regulatory policy has been more ambitious, but as a result, it has produced greater resistance from business. British regulatory authorities demand less, but because their demands are perceived as reasonable, industry is more likely to comply with them.

Therefore, it is possible that contrasting approaches to implementation can generate different regulatory outputs (meaning the practical demands that regulators impose upon the targets of regulation) and that the relationship between these outputs and the outcomes (meaning the ways in which regulated actors respond to these demands) of regulation is not fixed. This is significant because it suggests that the performance of different regulatory frameworks cannot be assessed by focusing only on the stringency of the demands that are made by regulators and that effective policy need not only be found where there are demanding standards that are rigidly enforced (Hawkins, 1984). Instead, it highlights the significance of the way that the targets of regulation respond to the practical outputs of the regulatory process and the prospect that the *process* of implementation, as well as its outputs, can affect the outcomes and impacts of policy. This may be the case where the implementation process serves to persuade the targets of regulation to behave in different ways, thereby avoiding the need for the regulators to impose requirements that compel them to behave differently. Consequently, as well as beginning to classify different approaches to implementation, Vogel's (1986) study suggests that any assessment of regulatory performance must consider the implementation process, its outputs and outcomes if it is to accurately evaluate regulatory performance.

Despite some important changes in the formal substance of environmental regulation in the period since Vogel's study, in the UK some authors have argued that there has been a considerable degree of continuity, particularly in relation to the styles of implementation and enforcement (see Smith, 1997; Skea and Smith, 1998). For example, the picture that Vogel

painted of a flexible, co-operative, secretive and compliance-based approach to the implementation and enforcement of environmental regulation in Britain in the period up to the 1980s is seen by authors such as Allott (1994), Smith (1997) and Skea and Smith (1998) to have been sustained into the 1990s.

In an empirical assessment of the implementation of Integrated Pollution Control regulations, a central pillar of the wider framework of environmental regulation in the UK, Smith (1997) argues that there have been attempts to change both the structure and the style of environmental regulation. He suggests that this framework of environmental regulation sought to introduce more formal regulatory procedures, to encourage the regulator to adopt a more arms-length relationship with regulated firms and to facilitate external scrutiny by ensuring public access to information on regulatory demands and industrial performance. However, reflecting the interpretations of the conflict theorists described by Hutter (1997), Smith (1997) argues that despite its stated intentions, the regulator was unable to break with tradition and to move away from the close, co-operative relationship that had historically characterised the implementation and enforcement of environmental regulation in the UK. The primary reason posited by Smith for this continuity in the style of implementation and enforcement is that the regulator depends on regulated firms for the information it needs to interpret and apply the qualitative principles introduced by the IPC framework. He also suggests that these information dependencies were made more acute by organisational constraints within the regulatory agency and by the lack of political support for effective implementation and enforcement. Consequently, he argues that despite its intention to maintain an arms-length relationship, the regulator was drawn back into an informal process of interaction and negotiation with regulated firms that ultimately allowed industry to set the pace and direction of the controls introduced by IPC. The result of this informal process of interaction and negotiation, according to Smith (1997, p211), is that IPC has suffered an 'implementation deficit' and that it has not been effective in realising its original intentions.

This is significant because it highlights the negotiated and inter-dependent nature of the implementation process and the influence that the targets of regulation can have not only on regulatory structures and styles but also on the practical outcomes of the regulatory process. It is also significant because, when compared to a related study by Gouldson and Murphy (1998), it highlights the relevance of Hutter's distinction between the perspectives of capture theorists, who emphasise the extent to which the targets of regulation are able to exert influence to set the direction and the pace of the changes required by regulators, and consensual theorists who emphasise the achievements of regulation whilst acknowledging that it could more fully realise its objectives.

The results of the study by Gouldson and Murphy (1998), which also considered the implementation of IPC, countered to some degree the central conclusion of Smith (1997) that the style of implementation and enforcement has rendered the regulations weak and ineffective. Focusing on both the implementation and the impact of environmental regulation, Gouldson and Murphy (1998) considered the influence of IPC both on the imperatives and on the capacities for environmental improvement in regulated companies. In relation to the former, they also found that the demands established by IPC through a co-operative and flexible process of interaction and negotiation between the regulator and regulated firms tended to be weak. In this respect they supported the findings of Smith (1997) and reflected aspects of the conflict theorists' interpretation of the implementation and enforcement process as described by Hutter (1997). Critically, however, Gouldson and Murphy (1998) also found that co-operative interactions between the regulator and regulated firms enabled a process of interactive learning to take place that increased the capacity of regulated firms to improve their environmental performance. They suggest that many companies had subsequently drawn upon these capacities, particularly to exploit economically beneficial areas of environmental improvement. Consequently, they argue that through co-operation, flexibility and discretion, IPC had effectively promoted environmental improvement to some degree but that it had done so by raising the capacity of regulated companies to improve their environmental performance rather than by imposing demanding imperatives. In this respect, as well as reflecting aspects of the conflict theorists' view, the study also reflects aspects of the consensual theorists' interpretation of the implementation and enforcement process as described by Hutter (1997).

Thus, Gouldson and Murphy (1998) suggest that the major impacts of environmental regulation may come about not only as a consequence of the imposition of controls, the stringency of which has been the measure against which the performance of many regulatory frameworks has been assessed. Instead, they suggest that environmental regulation may exert influence as a consequence of co-operative interactions between the regulator and the targets of regulation that can build capacities and encourage and enable regulated firms to work towards the regulatory objectives. However, Gouldson and Murphy (1998) also recognise that the accountability of such a co-operative, flexible and discretionary approach to implementation and enforcement can be restricted if opportunities for third party involvement are limited, as is likely to be the case where key regulatory decisions are taken on the basis of informal case-by-case negotiations. Significantly, they also suggest that the ability of the regulator to encourage or demand sustained environmental improvement through such an approach may be fundamentally restricted if industry were to withdraw its support for further improvement, as may be the case

once the economically attractive opportunities for environmental improvement run out (see Murphy and Gouldson, 2000).

The two studies by Smith (1997) and Gouldson and Murphy (1998) are significant because the comparisons between them serve to highlight the inter-dependence of regulators and the targets of regulation and the influence that the process of interaction between them can have on the outcomes and the impacts of regulation. The study by Gouldson and Murphy (1998) also emphasises the significance of the factors that shape the capacities of the targets of regulation to respond to the outputs of regulation. While Smith (1997) argues that the targets of regulation already control the pace and the direction of change, Gouldson and Murphy (1998) suggest that there is some consensus between regulators and the targets of regulation but that this consensus may break down once the capacity of the targets of regulation to respond to the demands of regulation in a way that is economically acceptable to them has been exhausted. Thus, following Hancher and Moran (1989), both studies suggest that at some point regulatory activity may be confined to those 'regulatory spaces' where there is a coincidence of public and private interests.

This review of the existing research on the implementation of environmental regulation has highlighted the significance of two main factors. First, it has emphasised the influence of the implementation process on the outputs and outcomes of regulation. Second, it has stressed the importance of interaction between regulators and the targets of regulation during the implementation process and the influence that various inter-dependencies may have on the process of interaction. Therefore, it has emphasised the need to understand the origins of different approaches to implementation and to analyse the influence of different approaches on the outcomes and the impacts and therefore on the performance of environmental regulation.

The Rationale for Further Research on the Implementation Process

Within the context of broader debates on regulation and its reform, the discussion in this chapter has recognised that:

- the implementation process exerts a defining influence on the practical substance of regulation;
- the public sector's capacity for control is often limited and that the relationship between the regulators and the regulated is likely to be shaped as much by inter-dependence as by hierarchy;

- the activities of regulatory agencies and individuals cannot be fully 'preconditioned' or programmed from above; instead regulators have to exercise discretion as they choose between the different strategies and styles that might be adopted;
- the approaches that are adopted by regulators can vary between those flexible and cooperative approaches to implementation that seek to promote compliance and those legalistic and adversarial approaches that seek to sanction non-compliance;
- the different approaches to implementation have different strengths and weaknesses; cooperative approaches have the potential to increase the administrative viability, efficacy and efficiency of regulation but only at the expense of the equitability, accountability and the political acceptability that can be secured through legalistic approaches;
- trade-offs may need to be made between different measures of policy performance and that the value that is placed on the different criteria varies according to perspective; consensual theorists emphasise the benefits of cooperation while conflict theorists focus on the potential for regulatory capture.

While this conceptual discussion and empirical review provides a useful foundation for a study of the factors that shape the nature and influence of the implementation process, the existing research in this area has yet to offer a detailed explanation of:

- the nature and extent of any inter-dependencies that exist between regulators and regulated actors in the implementation process;
- the extent to which these inter-dependencies establish incentives for cooperation in the implementation process;
- the factors that shape the ways in which the actors respond to these incentives;
- the ways in which cooperation affects the outputs and outcomes of regulation.

Before the thesis establishes the different hypotheses to be tested and the methodologies to be applied within an empirical assessment of these issues, the next chapter will examine the conceptual basis for co-operation in the implementation process in more detail.

CHAPTER 2

Co-operation and Implementation

Structure

- Introduction
- Theories of Co-operation and Collective Action
- Networks as Institutionalised Forms of Cooperation
 - *Policy Networks*
 - *Economic Networks*
- Co-operation and the Implementation of Environmental Regulation
- The Research Thesis

Introduction

Following the preceding discussion on regulation and implementation, this chapter seeks to build a fuller understanding of the origins and influence of co-operation in the implementation process. Whilst recognising that a wide range of theories on cooperation exist in both the natural and the social sciences, this thesis focuses on the extent to which resource inter-dependencies generate incentives for cooperation. As a result, the discussion focuses on those economic theories that examine the potential for inter-dependent actors to exchange their resources in order to realise their collective objectives. Despite this focus, the discussion also touches upon some of the sociological and behavioural issues relating to co-operation as these are seen to constitute an important part of the institutional context for co-operation.

The discussion starts by examining the central tenets of different economic theories of co-operation and collective action. Rather than addressing these theories chronologically, the discussion divides the different theories into two separate but related groups: those that adopt a rational choice perspective that reflects the principles of neo-classical economics, and those that adopt an institutional perspective that is more closely aligned with the principles of new institutional economics. The differences between these theoretical perspectives are significant because the neo-classical perspective suggests that the actors that interact within the implementation process are likely to be economically responsive and thus susceptible to change while the institutional perspective suggests that their behaviour tends to be socially embedded

and therefore more resistant to change. Consequently, each perspective has a different view not only of the origins of cooperation in the implementation process but also of the extent to which it can be promoted where it is seen to enable collective action or prevented where it is seen to engender regulatory capture.

The discussion then moves on to consider the extent to which an analysis of the influence of co-operation in the implementation process can be informed by an examination of the policy networks and economic networks concepts. Like the theories of co-operation and collective action, these concepts focus on the influence of inter-relations between inter-dependent actors. However, the networks concept adds to the explanatory value of the theories of cooperation and collective action as it focuses on the influence of different forms of interaction and exchange as institutionalised within different forms of network.

Once the discussion has considered the relevance of these theories to the implementation of environmental regulations, the chapter concludes by proposing a range of hypotheses that are to be tested within the empirical study that follows.

Theories of Co-operation and Collective Action

In an attempt to develop and test an evolutionary theory of co-operation, Axelrod (1984) examines the basis for co-operation by analysing the results of different computer simulations based on the Prisoner's Dilemma. In common with the starting point for the wider literature on game theory, these simulations assume that two isolated but inter-dependent actors have a choice between cooperating with each other or defecting and pursuing their individual interests. Thus, Axelrod (1984) suggests that the pay-offs for the various combinations of decision are structured as follows:

		Actor A	
		Cooperate	Defect
Actor B	Cooperate	3;3	5;0
	Defect	0;5	1;1

(Benefits A; Benefits B)

Given these incentive structures, in a one-off interaction the best outcome that either actor can achieve is that they defect while the other actor cooperates. Even if this outcome is realised once, however, it is unlikely to be a sustainable outcome as the other actor is likely to withdraw their co-operation if the interaction is repeated. While this has often been taken to imply that the dominant strategy will be one of mutual defection, through his simulations Axelrod (1984)

found that under some conditions co-operation between self-interested actors could emerge and become stable even in the absence of a central authority such as a coercive government. On the basis that co-operation between actors is seen to be desirable in many instances, particularly when compared to mutual defection or sustained adversarialism, Axelrod's (1984) theory of co-operation is often held to be highly optimistic.

To qualify his optimism about the prospects for co-operation, Axelrod (1984, p173) identifies two particular preconditions; firstly that co-operation between actors is based on reciprocity, and secondly that what he terms 'the shadow of the future' is important enough to make this reciprocity stable. Thus, when faced with the incentive structures outlined above, the theory indicates that co-operation is most likely to emerge when actors adopt a reciprocal strategy based on 'tit-for-tat' so that an actor cooperates when the other actor cooperates and that they defect when the other actor defects. When the interactions between the actors are repeated, and where the outcome of future interactions is seen to be important, the theory suggests that actors will tend towards co-operation. This is the case because with some experimentation and learning, and with ready access to information, it will become apparent that co-operation is in their longer-term mutual interest despite the possibilities for individuals to realise short-term benefits through defection. Once established, the theory also suggests that co-operation can become stable and self-policing, particularly where each actor is reluctant to be the first to defect and where each shows a degree of forgiveness towards the defections of the other as in such instances any conflicts that do break out tend to diminish rather than escalate.

The theory proposed by Axelrod (1984) therefore emphasises the significance of the incentive structures that face each individual actor and of the need for repeated interactions that allow strategic behaviour to emerge. In common with neo-classical theories of exchange, it does not argue that the actors need necessarily interact directly or forge close working relationships with each other, only that each individual actor is aware of their interests and of the behaviour of the other and that they recognise and respond strategically to any incentives for cooperation. In essence then it suggests that individual actors are flexible and responsive and that their behaviour can be easily changed by altering the incentive structures that they encounter.

Axelrod's (1984) theory of cooperation is highly relevant to studies of the policy process because it highlights the potential influence of the various incentive structures whilst emphasising the ability of the individual actors to respond to these incentives in ways that may serve either the public or their private interests. In essence then Axelrod's (1984) theory suggests that under some conditions 'co-operative regulatory spaces' are likely to emerge because it is in the self-interest of inter-dependent actors to cooperate and that these spaces can

either be enlarged through incentive-based measures designed to promote co-operation (i.e. to realise public interest objectives) or reduced through measures designed to discourage it (i.e. to protect against capture).

Although Axelrod's (1984) theory relates primarily to interactions between two actors and to the way that these strategies may spread amongst a larger community, the theory reflects aspects of an analysis of the prospects for collective action amongst groups as developed by Olson (1965). Within this theory, Olson (1965) also argues that co-operation or collective action may emerge where it is in the interests of the associated actors. He argues that there is potential for collective action where the benefits of such action can be appropriated by the actors who choose to pay the associated costs. However, particularly amongst larger groups, Olson (1965, p21) argues that while 'all of the members of the group... have a common interest in obtaining the collective benefit, they have no common interest in paying the cost of providing that collective benefit'. Thus, largely because of the potential for free-riding, Olson (1965) suggests that individually rational strategies may lead to collectively irrational outcomes (see also Ostrom, 1990).

While in some instances these issues of distribution and appropriability may be enough to preclude collective action, Olson (1965) suggests that co-operation or collective action might still emerge in large groups if there is one large actor who values co-operation so much that they are willing to bear most of the associated costs. As the other smaller actors with less of an interest in cooperating can still benefit from the co-operation even though they might not pay the associated costs, Olson (1965, p34-5) argues that 'there is a surprising tendency for the exploitation of the great by the small'. In essence then Olson's (1965) analysis suggests that any 'co-operative regulatory spaces' are likely to be less extensive where there are large groups of actors and that where they exist co-operation may be driven by one actor and exploited by others. In a regulatory setting where the regulatory agency has to cooperate with a large number of regulated actors to realise its objectives, such exploitation may be akin to regulatory capture.

The focus of these essentially neo-classical theories on the incentives for co-operation that are encountered by individual actors and on the ability of rational actors to respond to these incentives is undoubtedly important. However, these theories have been criticised for not placing enough emphasis on the influence that actors can have on the incentives structures that they encounter or on the institutions that shape these incentives. These issues are seen by many to be significant, not least because they raise the critical issue of transaction costs. North (1990, p15), for example, argues that 'although game theory demonstrates the gains from cooperating and defecting in various contexts, it does not provide us with a theory of the underlying costs of

transacting and how these costs are altered by different institutional structures'. A related criticism is made by Rydin and Pennington (2000, p160) who suggest that by under-emphasising institutional issues such approaches have 'neglected the ability of individuals, who have overcome one set of collective action problems, to build on these arrangements in order to solve further and as yet intractable problems'. In an attempt to respond to these criticisms, various approaches have sought to consider the role that institutions as well as incentives can play in furthering co-operation or collective action.

North (1990, p3) suggests that institutions are 'the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction'. However, Ostrom, Schroeder and Wynne (1993, p6) suggest that the institutions that shape the potential for collective action are constituted by the 'people and the patterns of regular, repetitive interactions among them that transform inputs into outputs'. Despite these differences in definition, both North (1990) and Ostrom *et al* (1993) recognise that institutions can both constrain and enable different forms of social and economic activity and that they play a central role in structuring the incentives for co-operation and collective action. As such Ostrom *et al* (1993, p191) argue that institutions represent a form of 'social infrastructure' that can have a significant impact on the potential for collective action. Indeed, they suggest that because of its value this infrastructure represents a form of 'social capital' that relates to the 'body of shared knowledge about how to organise people in a productive manner'.

Within these institutionalist approaches, notions of social capital are seen to be particularly significant because they suggest that interactions between individuals are no longer based upon isolated acts of exchange. Rather, interactions between individuals and within groups are likely to be influenced by the shared experiences of the various actors and by the networks of inter-relationships and inter-dependencies that bind them together and that evolve over time. Consequently, Rydin and Pennington (2000, p161) suggest that social capital encompasses such things as the extent of networks between individuals and groups, the density of relationships and knowledge of these relationships within networks and the existence of obligations and expectations regarding these relationships. They also argue that social capital relates to the level of trust between individuals and groups, to the existence of norms of routine behaviour and to the existence and use of effective sanctions to punish free-riding.

Critically, Ostrom, Schroeder and Wynne (1993) and Rydin and Pennington (2000) argue that the presence of social capital, particularly in the form of networks of inter-relations organised around a shared interest, can change the incentive structures associated with co-operation. Furthermore, because the co-operative relations that generate social capital can increase the

potential for further co-operation, co-operative behaviour can become self-reinforcing. In this way, trajectories or path-dependencies can emerge that both shape and are shaped by the interactions between actors. In other words, the institutionalist approach suggests that 'co-operative regulatory spaces' may not simply *exist* but rather that *they can be created and shaped* by the co-evolution of the institutions and incentives that provide the basis for such co-operation.

In some settings the evolution of co-operation and the generation of social capital can allow problems to be solved that would have seemed to be intractable at the outset. However, as discussed above, in some settings co-operation may not be desirable, and institutions can evolve to constrain as well as to enable particular forms of behaviour. As a result, institutionalised modes of behaviour, including any cultures, traditions, habits and routines that shape the implementation process, can become *embedded* to such an extent that change is restricted even where there are incentives for change (see Granovetter, 1985; Grabher, 1993). Consequently, these new institutionalist theories suggest that change may not be frictionless and that actors may not be as free to respond to the incentives that encourage or discourage co-operation as the theories proposed by Axelrod (1984) and Olson (1965) suggest. Although these barriers to change can be expressed economically and incorporated into neo-classical models by representing them as transaction costs, new institutional economics argues that there is a much wider range of sociological or behavioural issues that influence the rationality of economic behaviour that are harder to capture accurately or meaningfully within a neo-classical analysis (see Hodgson, 1988 or North, 1990).

In essence then there appear to be two related sets of theories that might help us to explain the emergence of co-operation in the implementation process. On the one hand, the theories of co-operation and collective action proposed by Axelrod (1984) and Olson (1965) suggest that co-operation is likely to emerge where individual actors respond rationally and strategically to any associated incentives for co-operation. This implies that actors are free to change their behaviour to respond to different incentive structures and that co-operation can take place even in the absence of close working relationships between actors. This focus on individual actors and their ability to respond to economic incentives aligns these theories with broader rational choice theories and with neo-classical forms of economics. On the other hand, the theories of collective action proposed by authors such as Ostrom *et al* (1993) and Rydin and Pennington (2000) argue that co-operation is likely to emerge not only where there are appropriate incentives but also where supporting institutions have emerged over time to enable the various actors both to shape and to respond these incentives. This implies that different forms of behaviour can become institutionalised or embedded and that co-operation may depend upon the

presence of much closer working relationships between actors. This focus aligns these theories with broader institutional rational choice theories and with new institutional forms of economics as discussed by authors such as Hodgson (1988) or North (1990).

Cooperation within Networks

Like the theories of cooperation and collective action, the networks concept is based upon an acknowledgement of the significance of interaction and exchange between interdependent actors. Indeed, the concept reflects aspects of the institutional perspective discussed above as networks can be seen as the 'social infrastructure' within which cooperation and the exchange of resources takes place. Furthermore, the quality of the relationships and the body of knowledge and trust that exists within these networks is the 'social capital' that enables collective action to take place. Despite these similarities, however, the networks concept adds to the explanatory value of the theories of cooperation and collective action as it focuses on the influence of different forms of interaction and exchange as institutionalised within different forms of network. In seeking to examine the explanatory value of the networks concept further, the discussion that follows examines the relevance of both the policy networks concept as it focuses on the nature of the interactions that shape the implementation process and the economic networks concept as it considers the ways in which regulated firms engage with and respond to the implementation process.

Policy Networks

As Rhodes (1981) suggests, policy networks are likely to emerge where actors within an area of common policy interest have to exchange resources in order to realise their goals. Indeed, Hanf and O'Toole (1992, p169) state that:

The concept of the network draws attention to the interaction of many separate but interdependent organisations which act in a self-interested manner but nevertheless co-ordinate their actions through inter-dependencies of interests and resources... the term 'network' merely denotes the fact that policy making and implementation involves a large number and wide variety of public and private actors from different levels and functional areas of government and society. By stressing the 'inter-relationships' and 'inter-dependencies' of these actors, the term also draws attention to the pattern or linkages and interactions among them and to the ways in which these affect the behaviour of the individual organisations.

Despite its similarities with the theories of cooperation and collective action as examined above, the policy networks concept develops a clearer view of the range of resources that can be exchanged within the policy process. Rhodes and Marsh (1992a) for example suggest the resources that are held by different actors within a policy network may be legal, organisational, financial, political or informational. Similarly, Mol (1995) argues that particular attention should be paid to the distribution and use of legal resources or authority, economic and financial resources and informational resources.

As power, whether political, legal or economic, can be an important resource, authors such as Smith (1997) suggest that networks may depend either on the potential for mutual benefit or on the power of one or more actors to force others to participate in a process of exchange. Indeed, according to Dowding (1995), the outcomes of the process of exchange may 'emerge through power struggles of different interests, both within zero-sum and variable sum contexts, and within battles of what Marin (1990) has described as 'antagonistic co-operation''. This suggests that interactions between inter-dependent actors in the implementation process may take place 'in the shadow of hierarchy' as regulators draw upon, or threaten to draw upon, their legal authority to coerce change from the top-down. It also suggests that power can also influence the implementation process from the bottom-up as well as from the top-down as the targets of regulation draw upon their wider power and influence to influence the behaviour of regulators and to shape the nature of the implementation process.

While this emphasis on the range of resources that can be mobilised by particular actors suggests that networks are likely to emerge where there are incentives for interaction based on resource and power inter-dependencies, the policy networks concept also recognises that the ways in which actors interact and resources are exchanged can become institutionalised over time. More particularly, the concept suggests that as resources are likely to be unevenly distributed between actors, a process of bargaining is likely to emerge within the policy network that will be influenced by the relative resources of each actor, by the strategies that they employ and by the institutionalised 'rules of the game' that evolve within the network to govern the process of exchange (Rhodes, 1981). Thus, different forms of interaction, as institutionalised within different forms of policy network, are likely to emerge over time.

Marsh and Rhodes (1992) suggest that different forms of policy network can be categorised with reference to a range of characteristics. Indeed, they propose a typology that ranges from 'policy community' at one extreme to 'issue network' at the other (see Table 2.1). These distinctions between different forms of policy network are important analytically because, as

Marsh and Rhodes (1992) recognise, different network forms are likely to be associated with different policy outputs. They argue that in some instances policy networks can enable both the inter-organisational and the inter-personal interactions that are necessary if the objectives of a particular policy are to be realised whilst in others the existence of a policy network can act as a major constraint on policy change. Thus, again reflecting the importance of the institutional dimension, they argue that different forms of policy network can emerge and evolve, for example in response to changes in knowledge, ideology, institutional form or economic and market conditions, to both enable and constrain the ability of different communities to realise policy objectives. If these different forms of network can be categorised with the help of variables such as those outlined in Table 2.1, the influence of different forms of interaction can become easier to analyse. However, it is important to recognise that given their potential for change any characterisations of different network forms maybe specific to a particular time and place.

Table 2.1: Forms of Policy Network

Dimension	Policy Community	Issue Network
Membership		
a) Number of participants	Very limited number, some groups consciously excluded	Large
b) Types of interest	Economic or professional interests dominate	Encompasses range of affected interests.
Integration		
a) Frequency of interaction	Frequent, high quality interaction of all groups on all matters related to policy issue	Contacts fluctuate in frequency and intensity
b) Continuity	Membership, values and outcomes persistent over time	Access fluctuates significantly.
c) Consensus	All participants share basic values and accept the legitimacy of the outcome	A measure of agreement exists but conflict is ever present.
Resources		
a) Distribution within network	All participants have resources, basic relationship is an exchange relationship	Some participants may have resources, but they are limited and basic relationship is consultative.
b) Distribution within participating organisations	Hierarchical, leaders can deliver members	Varied and variable distribution and capacity to regulate members.
Power	There is a balance of power between members. Although one group may dominate, it must be a positive sum game if the community is to persist.	Unequal powers, reflects unequal resources and unequal access. It is a zero sum game.

Source: Marsh and Rhodes (1992).

While this focus on the nature of a particular policy network adds to the explanatory value of the theories of cooperation and collective action as it suggests that networks are the embodiment of different forms of interaction, it is also important to acknowledge that networks can be analysed at different levels. Rhodes (1990) for example suggests that the concept of the policy network can be used to consider inter-personal relations at the micro-level, relations between

interest groups and government at the meso-level and relationships between the state and civil society at the macro-level. Similarly, Hanf and O'Toole (1992) suggest that the policy networks concept has been developed and can be applied in an attempt to analyse the interactions between individuals, institutions and organisations at various levels of the policy process. However, Dowding (1995) suggests that analysis that emphasises the character of the network rather than its constituent parts can only be descriptive, as by adopting such an emphasis it cannot analyse the reasons why networks exist or evolve. Consequently, he argues that for explanatory purposes empirical analysis should focus on the character, resources and strategies of the actors that interact within the network. However, as the facets of the different actors are likely both to shape and to be shaped by the nature of the network within which they interact, it is apparent that any empirical analysis needs to consider both the network and its constituent parts if it is to have explanatory value.

The insights provided by this examination of the policy networks concept therefore relate closely to the theories of cooperation and collective action in that both focus on the incentives and institutional structures that shape the interactions between inter-dependent actors. However, the policy networks concept adds to the analysis by suggesting that an empirical analysis of the interactions that shape the implementation process needs to consider the character, resources and strategies of the actors as well as the nature of the network itself and its underlying incentives and institutions. By helping to characterise and categorise different network forms, the concept increases the ability of an empirical analysis to illuminate the influence that different forms of interaction can have on the outputs of the implementation process. However, while the policy networks concept can inform and help to structure an analysis of the implementation process, it does not offer any insight into the factors that might shape the ways in which the targets of regulation respond to the outputs of the implementation process. With this in mind, the discussion will now consider the relevance of the economic networks concept.

- Economic Networks

The economic networks concept argues that the response of economic actors to the various competing and sometimes conflicting demands that they encounter is shaped not only by their own character, resources and strategies but also by the nature of the socio-economic context within which they operate. More particularly, it emphasises the significance of interaction between interdependent economic actors within an area of common economic interest (Axelsson and Easton, 1992; Grabher, 1993). Again therefore it is closely related to the theories of cooperation and collective action discussed above and to the policy networks concept.

In recognising the importance of socio-economic context and inter-relations in economic life, the economic networks concept argues that interdependent actors within an economy may derive mutual benefit from reciprocal relationships that extend beyond what Grabher (1993, p5) terms 'isolated acts of exchange'. The concept therefore suggests that, particularly through sustained interaction that fosters trust, mutual understanding and open communication, or in other words social capital, economic actors can build upon the resources that are available internally to realise various benefits through external interaction. These benefits may be derived for instance by transferring information and understanding between actors, by reducing uncertainty, by gaining access to new resources and exploiting the potential of new combinations of resources and by realising external economies of scale whilst retaining a degree of flexibility and avoiding the diseconomies of scale that may be associated with formal integration.

While participation in economic networks is commonly motivated by the need to gain access to complementary resources, Morgan (1995, p55) argues that access to information and understanding may be a particularly important benefit from interaction:

When firms are faced with a whole series of new challenges – like accelerating technological change, more globalised markets, high quality competition and exacting environmental regulations – it is hardly surprising that certain theorists are beginning to argue that knowledge is the most important resource and that learning is the most important process.

Indeed, referring particularly to the arguments of evolutionary economics, Morgan (1995, p55) goes on to suggest that 'neo-classical theory takes as resolved some of the largest and most pressing questions in economic development, like how firms come to know what they know, i.e. how firms learn'. He suggests that within such an evolutionary approach, learning can be seen as an interactive social process and that while interactive learning between firms is particularly important, there is also a role for a wide range of other actors from government, finance houses, education and training institutions, technology transfer agencies and trade associations particularly at the local and regional levels. This emphasises the possibility that different networks will coexist and that they will interact at different levels. However, while authors such as Morgan (1995) have highlighted the importance of interactive learning within diverse networks at the local and regional levels, other authors have questioned the extent to which firms actually exist and operate within local and regional networks, emphasising instead the significance of networks that are not so spatially contained (Amin, 1993; Curran and Blackburn, 1994).

Although there is some debate about the spatial distribution of economic networks, the arguments of Morgan (1995) that are outlined above are reflected in the wider literature on innovation and technical change (see for example Dosi, 1988; Freeman, 1992; Rothwell, 1992; OECD, 1992; Soete and Arundel, 1995). This is significant because the capacity to respond to regulation is commonly synonymous with the capacity to develop or adopt new technologies and techniques. While it is often assumed that this capacity is shaped by the character, resources or strategies of an individual actor, as has been stated, the economic networks concept argues that an actor's capacity to respond to regulation by innovating depends on the resources that are available within the wider economic network within which that actor exists and operates. Indeed, the concept suggests that as there is potential for positive feedback between the various actors in the innovation process, the capacity of the network as a whole to innovate may be greater than the potential of its individual constituent parts.

Thus, the economic networks concept suggests that sustained interaction between actors within economic networks can enable actors to learn and to develop a response to new threats and opportunities such as those represented by regulation. However, Grabher (1993, p24) argues that as well as enabling change these networks can 'be petrified and perverted into coalitions against economic, political and cultural innovation'. Therefore, as well as enabling and supporting innovative responses to regulation, Grabher (1993) suggests that economic networks can create inertia and foster path-dependencies which restrict the potential for change. Institutionalised economic networks may therefore both enable and constrain the response of economic actors to the various demands that they face. However, while the concept suggests that economic actions are shaped by institutional structures, it does not stray to the other extreme by suggesting that the economic actions are determined solely by the nature of the socio-economic structures within which economic activity takes place. Instead, the concept reflects Granovetter's (1985) argument that while economic action is not free from the influence of social relations, neither is it so constrained by ongoing social relations that actors lose all independence. Thus, again reflecting some of the institutionalist perspective on the theories of cooperation and collective action discussed above, the concept suggests that actors retain some influence over the structures, including the incentive structures, that both shape and are shaped by their behaviour.

Like the policy networks concept therefore, the economic networks concept appears to have some analytical value. Based particularly on the results of a long history of research on the influence of inter-organisational relationships in industrial and technological development (see for example Freeman, 1991), there is now some consensus that the economic networks concept

can be used to inform such an analysis at a number of levels. Easton (1992) for example suggests that studies related to the economic networks concept have focused on single organisations and the extent to which they gained access to resources through a multiplicity of relationships, on the influence of the dyadic relationships between buyers and sellers in supply chains and on the influence of direct and indirect relationships and the consequent interconnectedness of organisations. Various studies have also focused on the nature of the economic network as a whole and on the influence that different network forms can have on the behaviour and performance of particular firms or groups of firms (see Hakansson, 1989; Axelsson and Easton, 1992; Grabher, 1993). At a higher level of aggregation, other studies have focused on the significance of networks in local and regional development and on the relationship between economic networks and national innovation systems (see Morgan, 1992; Lundvall, 1992; Nelson, 1993; Curran and Blackburn, 1994).

Despite the diversity of approaches that have been adopted in studies related to the economic networks concept, Easton (1992, p3) argues that the economic networks concept provides a distinct approach to research in its own right:

It shares with other approaches a belief that the existence of relationships... among firms engaged in economic exchange provides a compelling reason for using inter-organisational relationships as a research perspective. It differs from other approaches mainly in terms of its scope... The focus of research is, ultimately, the network itself and not the firm or the individual relationship, although firms and relationships must be studied if networks are to be understood.

This reflects the observation made in the discussion on the policy networks concept, namely that an analysis should consider both the nature of the network and the character, resources and strategies of the actors that interact within it. Indeed, to explore the characteristics and the implications of different network forms, Hakansson (1987) suggests that research on economic networks should consider the activities, resources and perspectives of the different actors within a particular network. He also argues that research attempting to examine the origins and influence of different network forms should consider the functional inter-dependencies and the structures of knowledge and power that bind different networks together over time. Relatedly, Grabher (1993) suggests that different networks can be characterised according to the degree of reciprocity and inter-dependence that exists between actors, to the nature of the ties that bind actors together and to the distribution of power within the network.

This analysis of the economic networks concept has suggested that the concept is highly relevant to studies that seek to build an understanding of the ways in which the targets of regulation engage with and respond to the implementation process. Like the policy networks concept, many of its insights are closely associated with the theories of cooperation and collective action as discussed above as it also focuses on the incentives and institutional structures that shape the interactions between inter-dependent actors. However, the economic networks concept highlights a range of issues and variables that have not been considered previously. In particular, it highlights the potential significance of interactive learning between actors operating in different networks. Again reflecting aspects of the debate on the insights provided by the policy networks concept, the economic networks concept suggests that analysis should consider the nature of individual firms, the relationships between firms and the nature and influence of different forms of economic network. Finally, like the policy networks concept, the economic networks concept suggests that different network forms can be categorised according to a range of criteria so that the influence that different forms of interaction have on the ways in which actors engage with and respond to the implementation process can be better understood.

Co-operation and the Implementation of Environmental Regulation

The theories of cooperation and collective action, and related analysis on the ways in which inter-dependent actors can come together within different forms of network, are directly relevant to an analysis of the origins and influence of cooperation in the implementation of environmental regulation. Axelrod (1984) for example applies his broader theory on the evolution of co-operation specifically to issues relating to the implementation of environmental regulation. He argues (1984, p154) that there is a basis for co-operation in the implementation process because '...even the most effective governments cannot take the compliance of its citizens for granted. Instead it has strategic interactions with the governed, and these interactions often take the form of an iterated Prisoner's Dilemma'. Depending on the nature of the incentive structures, this may be taken to suggest that governments lack the power and the resources to impose their will from above and therefore that co-operation emerges by default. However, Axelrod (1984, p156) suggests that co-operative approaches to implementation might also emerge by design as they have some inherent advantages for regulators, for firms and for society at large:

The company's choices at any point are to comply voluntarily with the rules or to evade them. The agency's choices are to adopt an enforcement mode in dealing with that

particular company which is either flexible or coercive. If the agency enforces with flexibility and the firm complies with the rules, then both the agency and the firm benefit from mutual co-operation. The agency benefits from the company's compliance, the company benefits from the agency's flexibility. Both sides avoid expensive enforcement and litigation procedures. Society also gains the benefits of full compliance at low cost to the economy. But if the firm evades and the agency uses coercive enforcement, both suffer from the punishing costs of the resultant legalistic relationship. The firm also faces a temptation to evade if the agency is using a flexible enforcement policy that is unlikely to penalise evasion. And the agency faces a temptation to use the strict enforcement mode with a complying company in order to get the benefits of enforcing even unreasonably expensive rules.

According to this analysis, the pay-offs or incentive structures that are encountered, and the associated categorisation of the nature of the implementation process, can be depicted in the structure of the following Prisoner's Dilemma:

		Regulatory Agency	
		Co-operative	Non-co-operative
Regulated Firms	Co-operative	Co-operative relations (3,3)	Top-down control (5,0)
	Non-co-operative	Bottom-up capture (0,5)	Adversarial relations (1,1)

(benefits for regulators; benefits for firms)

Thus, Axelrod (1984) suggests that co-operation in the implementation process can be incentivised, or in other words 'cooperative regulatory spaces' can be created, where regulators offer some flexibility in return for some commitment to compliance from regulated firms. Reflecting much of the wider theory on the policy process, this suggests that the implementation process is likely to be based on a degree of negotiation between actors rather than on the top-down imposition of controls. By its very nature, this negotiation means that the outcomes of the co-operative approach, expressed in terms of the presumed regulatory objective of environmental improvement, are likely to be lower than those that might be achieved if the regulator were able to adopt and maintain a hierarchical, non-co-operative approach. Indeed, Axelrod (1984, p157) acknowledges that in the short-term at least standards are likely to be reduced because of the need to secure the co-operation of regulated firms:

To set a tough pollution standard... would make the temptation to evade very great. On the other hand, to set a very lenient standard would mean more allowable pollution, thereby lessening the payoff from mutual co-operation which the agency would attain

from voluntary compliance. The trick is to set the stringency of the standard high enough to get most of the social benefits of regulation, and not so high as to prevent the evolution of a stable pattern of voluntary compliance from almost all of the companies.

This process of negotiation, and the implicit acknowledgement that regulated firms have power and influence and therefore can play a role in the standard setting process, is central to the accusation that co-operation within the implementation process is synonymous with regulatory capture. However, adding a critically important temporal dimension that is often overlooked, Axelrod's (1984) analysis indicates that *regulatory agencies can only secure the benefits of a top-down hierarchical approach to implementation in the short term as in the medium term regulated firms are likely to respond by adopting a non-co-operative approach*, thereby triggering the emergence of adversarialism within the implementation process. In order to secure medium-term benefits that exceed those that are associated with adversarialism, the analysis suggests that regulatory agencies have to compromise in some way in order to tempt regulated firms into the 'co-operative regulatory space'. Thus, the analysis indicates that the short-term optimum for the regulator simply isn't available in the medium term. Instead, the co-operative approach represents the second best option in a world where both parties cannot secure their individual first best option because of their interdependencies. This is a critically important observation as it challenges the central assumptions of those that assume that regulations can be and should be implemented hierarchically and that any departure from such an approach approximates capture.

Scholz (1984, 1991) develops Axelrod's theory further, again focusing particularly on the implementation of environmental regulation. Like authors such as Hutter (1997), he suggests that two distinctive implementation or enforcement strategies can be observed or advocated – one based on deterrence, the other based on co-operation. According to Scholz (1984) the deterrence strategy suggests that firms will comply if the benefits of non-compliance are less than the prospective costs as defined by the chances of cases of non-compliance being detected multiplied by the likely cost of formal and informal sanctions. Under such a strategy, the basis for which clearly reflects the neo-classical tradition, it is assumed that regulators can force compliance by adjusting the prospective costs and benefits of non-compliance, for example by increasing their monitoring activities, by improving public access to information or by more readily resorting to legal action in cases of non-compliance. As an alternative to this essentially economic view of regulation, Scholz (1984, p180) suggests that a co-operative strategy can be adopted which 'assumes a willingness to obey legitimate laws and stresses the need for reasonable enforcement and persuasion rather than coercion'. He argues that such a co-operative strategy recognises the need for flexible enforcement and the difficulty of applying abstract

rules to complex situations. Indeed, he suggests (p183-184) that, because of their flexibility, co-operative approaches to implementation and enforcement can have a number of generic benefits:

Co-operative enforcement helps overcome the unavoidable problems of under-inclusive or over-inclusive regulations by allowing a firm to ignore technical violations in situations where compliance would contribute little to reducing harms. In return, corrective measures beyond minimal legal requirements are elicited in situations where harms can be reduced in a more cost-effective way... To the extent that firms cooperate by finding more efficient methods to achieve the ends specified in the standards and agencies cooperate by acknowledging tradeoffs and accepting effective, low cost, *ad hoc* methods in lieu of legally required ones, co-operation can achieve better outcomes for the agency at less cost for the firm... In addition to the advantage of cost-saving trade-offs, co-operative firms and agencies avoid the high legal costs incurred when coercive agencies battle evasive firms. And firms are more likely to share information on newly discovered problems not covered by regulations if agencies are likely to help solve the problem rather than promulgate simple rules and enforce them legalistically. Finally agencies can shift scarce monitoring and prosecutorial resources from co-operative firms to bad firms, thereby increasing, through deterrence, the level of compliance among bad firms.

Because of these putative benefits, Scholz (1984, p181) suggests that co-operation in the implementation process should be viewed 'not as an altruistic strategy but... as a strategy which helps both individuals and enforcers to achieve a higher utility in the long-run by abstaining from temptations to maximise short term gains'. In this sense, like Axelrod (1984), Scholz (1984, 1991) also adds a temporal dimension to the analysis by comparing the short-term gains that might be available through defection with the longer-term benefits of a more co-operative approach.

Whilst recognising that there may be barriers to co-operation, stemming for example from the lack of trust or from instability in the relationship between regulators and regulated firms, Scholz (1984) also indicates that third parties can exert an influence on the implementation process and on the incentive structures associated with it. Significantly, he argues that the beneficiaries of health, safety or environmental policies, such as trade unions or environmental groups, might oppose the emergence of co-operation in the implementation process even if this co-operation leads to more effective implementation and to improved policy outcomes. He suggests that this is because regulatory agencies have to be granted long-term discretionary

powers if co-operation is to emerge. As third parties may lack trust in the regulatory agency, Scholz (1991, p132) suggests that 'the potential gain to beneficiaries from granting necessary discretion to the enforcement agency may be offset by a greater risk that the agency will be captured by business interests' and that beneficiaries 'may prefer short-term gains to uncertain long-term gains that depend on future agency actions'. As a result, he argues (p132) that 'if beneficiaries always assume that their opponents will soon control the enforcement bureaucracy... it appears unlikely that they would ever trust the bureaucracy with the long-term discretion required for effective (co-operative) enforcement'. This is an important point as it suggests that the potential for cooperation does not only depend upon the relationship between regulators and regulated firms but also on the interests and resources of third parties.

These arguments relate closely to Ayres and Braithwaite's (1992) view that public interest groups should be invited to participate in the implementation process to protect it against capture. As long as the position of being an 'empowered public interest group' is contestable, Ayres and Braithwaite (1992) argue that regulated firms must capture all of the contesting public interest groups as well as the regulators if they wish to subvert the co-operative approach to policy. However, public choice theory suggests that such an approach depends upon the presence of various competing interest groups, all of which must have an incentive to participate in the various stages of the implementation process (see for example Dunleavy, 1991). Where the implementation process is flexible and iterative, these interactions are likely to be complex and sustained. As Ayres and Braithwaite (1992) acknowledge, the incentives and the institutional structures that might motivate and enable third-party involvement in the intricacies of the implementation process therefore remain a central issue. Thus, authors such as Gouldson and Murphy (1998) have suggested that cooperation in the implementation process can be protected against capture not necessarily through the participation of public interest groups in the implementation process but through the provision of transparency and the publication of clear performance measures that can be widely scrutinised.

Many of the issues discussed above are reflected in the literature on the role that networks can play in the implementation of environmental regulation. Smith (1997) for example suggests that networks emerge in the implementation process as a response to various resource interdependencies. He also suggests that different forms of network can be characterised and analysed according to their membership, the pattern of resource distribution and interdependence between members and the extent to which common values and rules of the game emerge which mediate the interactions between these members. Using the policy networks concept to analyse the implementation of Integrated Pollution Control (IPC) regulations in England and Wales, Smith (1997) argues that the interactions between the regulators and the

regulated firms were based upon a range of resource inter-dependencies: as regulators had the authority to allow firms to operate and the organisational resources to enforce standards, firms had the information needed to set standards and the financial and organisational resources to make improvements. Because of these inter-dependencies, he suggests that a tightly bound and highly cooperative network, or more particularly a policy community, emerged in the IPC implementation process that was based on the exclusive membership of inspectors and the managers of regulated firms.

In relation to the influence of this form of network, Smith (1997) argues that the balance of power favoured the regulated firms as the inspectors were unable to exercise their full authority without access to the information that was held by the firms. As a result, he suggests that the particular form of policy network that emerged in the IPC implementation process generated weaker policy outputs (meaning the stringency of the demands made by the regulators). Although the interactions and outputs that were associated with this approach to implementation were viewed with suspicion by actors within the wider issue network, Smith (1997) argues that the extent of resource inter-dependence within the policy community meant that the regulated firms were able to restrict the potential for change by drawing the regulators back into the cooperative approach. As such, he associates this approach to implementation with regulatory capture as he argues that it leads to lower standards and to unaccountable decision-making processes that were unresponsive to broader public concerns. Critically, however, Smith (1997) does not consider whether this cooperation between the regulators and the regulated generated more effective policy outcomes (meaning the ways in which the firms responded to regulatory demands) by enabling collective action problems to be resolved. In the case of IPC, this may have been the case if cooperation in the implementation process encouraged or enabled the wider adoption of the best available technologies and techniques for pollution control.

Reflecting Hutter's (1997) distinction between the conflict theorists and the consensual theorists as presented in Chapter 1, it seems therefore that the different analyses of the influence of cooperation and collective action in the implementation of environmental regulation generate contrasting findings. On the one hand, authors such as Ayres and Braithwaite (1992) and Smith (1997) suggest that in the absence of third party involvement cooperation between regulators and regulated actors leads to capture through reduced standards and unaccountable and unresponsive decision-making processes. On the other, authors such as Axelrod (1984) and Scholz (1984, 1991) argue that cooperation is required if the implementation process is to be administratively feasible. Whilst acknowledging that cooperation can require negotiation and compromise in the short-term, they also argue that it can lead to more effective and more efficient outcomes in the medium term as it enables collective action problems to be solved.

Questions about the balance between cooperation and capture in the implementation process that remain largely unanswered in the broader literature will be examined within this thesis therefore.

The Research Thesis

On the basis of the conceptual discussion that has been presented within this chapter, a number of hypotheses can be put forward that will be tested within the empirical investigation that follows. These hypotheses are:

- i) that implementation processes will be shaped not only by the ability of public sector regulators to resort to the hierarchical application of legal authority but also by the extent to which regulated actors derive influence in the implementation process from their access to a broader range of resources;
- ii) that various resource interdependencies will emerge in the implementation process which mean that compliance depends upon co-operation and the exchange of resources as regulatory objectives effectively become 'collective action problems';
- iii) that cooperative interactions within the implementation process will be institutionalised within different forms of network and that these networks will influence both the outputs and outcomes of the implementation process;
- iv) that because of these inter-dependencies the implementation process will display some of the advantages of co-operation (i.e. enhanced capacity for collective action leading to higher standards) and some of the disadvantages of regulatory capture (i.e. reduced standards and loss of accountability).

As well as testing the validity of these hypotheses, the thesis also seeks to examine the explanatory value of two contrasting perspectives on the basis for cooperation and collective action in the implementation process. On the one hand, the rational choice or neo-classical perspective contends that resource inter-dependencies generate the incentives that shape the strategies that are adopted within the implementation process. On the other, the institutional perspective contends that these inter-dependencies, incentives and strategies are shaped by the broader institutional context within which the implementation process takes place and by the presence of various institutionalised forms of behaviour. These different perspectives are significant as they are associated with different views of the implementation process; one with a responsive view of the world where behaviour can be altered by changing incentive structures,

the other with a more socially embedded view of the world where institutionalised modes of behaviour emerge which can be very difficult to change.

In order to examine the validity of these hypotheses and the associated theoretical perspectives, the discussion has suggested that an empirical analysis should consider the character, resources and strategies of the different actors, the origins and influence of interactions at the inter-personal and inter-organisational levels and the significance of interaction between different networks in specific settings. This implies that a contextually specific, multi-level empirical analysis is needed. With these issues in mind, the thesis will now consider the nature of the empirical cases to be considered and the methodological basis for such an empirical investigation.

CHAPTER 3

Empirical Focus and Methodological Approach

Structure

- The Rationale for the Empirical Study
- Research Questions
- Qualitative Approaches to Policy Analysis
 - *The basis for qualitative research*
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The Rationale for the Empirical Study

In order to examine the validity of the hypotheses and the explanatory value of the conceptual perspectives that were introduced in the previous chapters, the thesis needs an empirical focus that will allow it to examine the nature and influence of those interactions that are at the heart of the implementation process. For various reasons, both practical and conceptual, the empirical analysis focuses on the implementation of environmental regulation in the UK.

The focus on environmental regulation is adopted because many of the recurrent themes in the wider debate on regulation and its reform are reflected in the interactions between government, business and the wide range of other stakeholders with an interest in environmental protection. The focus on the UK is adopted partly through practical necessity. However, in many areas of regulation in the UK, regulatory agencies and the street level bureaucrats within them commonly exercise the discretion that is awarded to them by adopting a particularly cooperative regulatory style (see Vogel, 1986). Thus, the influence of the implementation process and the significance of cooperation within this process are likely to be more pronounced in the UK than in many other settings. While this may make the issues that are at the heart of the thesis easier to study, it may also mean that the findings of the empirical research are particularly UK oriented. However, it is contended that some important aspects of the UK's experience with cooperative

approaches to implementation are likely to be reflected in other settings but in a different context and possibly in a less exaggerated form.

Within the broader field of environmental regulation in the UK, two distinct but closely related regulatory frameworks provide the basis for a comparative study. These frameworks of regulation, which were introduced in England and Wales in 1990 under the Environmental Protection Act (EPA), are:

- i) the framework of Integrated Pollution Control (IPC) regulations which affects larger and more environmentally significant industrial processes and is implemented by the Environment Agency for England and Wales.
- ii) the framework of Local Air Pollution Control (LAPC) regulations which affects smaller and less environmentally significant industrial processes and is implemented by a large number of local authorities.

At least in terms of their formal design, the IPC and LAPC systems have a range of notable similarities. Both systems were adopted at the same time in the same country. They are both examples of technology-based command and control regulations, each relying on the interpretation of a flexible principle that obliges regulatory agencies to determine whether a particular industrial process meets those emissions standards that could be realised through the adoption of the 'Best Available Techniques Not Entailing Excessive Cost' (BATNEEC). Although guidance is issued for each regulator on what may constitute BATNEEC for a particular industrial sector, the practical demands established by both the IPC and the LAPC systems are represented within the operating conditions and emissions limits that are set, to some extent on a discretionary basis, following the case-by-case interpretation of this flexible principle. The interactions that are at the heart of the implementation process are therefore particularly influential in both regulatory frameworks.

Despite their similarities, however, the IPC and LAPC systems are implemented by different regulatory agencies that seek to influence the behaviour and performance of different target groups. The IPC system, which regulates emissions to air, water and land from larger and more environmentally significant industrial processes, is implemented by the national Environment Agency for England and Wales. This specialist agency has a statutory responsibility to protect the environment and to protect against floods and other natural hazards. By contrast, the LAPC system, which regulates the emissions to air only from smaller and less environmentally significant industrial processes, is implemented by individual local authorities that have responsibility for the protection of various aspects of the local environment and for a wider

range of functions including the promotion of economic development and the provision of land-use planning controls. Thus, despite some notable similarities, there are some significant differences in the nature of the implementing agencies, the breadth of the regulations and the character of the target actors that are associated with the IPC and LAPC systems.

These similarities and differences provide the basis for a comparative empirical review that will analyse the origin and influence of any cooperative interactions that emerge within each of the implementation processes. The similarities mean that a wide range of contextual factors and the central regulatory principles are common to both regulatory frameworks. The differences mean that the analysis can consider the origins and the influence that the interactions between the different regulatory agencies and the regulated firms can have on the outputs and outcomes of each implementation process. A fuller discussion of the origins and content of the IPC and LAPC regulatory frameworks, as well as a brief discussion on the relevance of contemporary developments in European Union policy, is presented in Appendix A.

Research Questions

Given the conceptual basis for the thesis, the associated hypotheses and the nature of the two regulatory frameworks that are to be assessed empirically, we can begin to identify a range of more specific research questions including:

- i) What is the broader institutional context within which the implementation process takes place?
- ii) What are the characteristics of the different actors that operate at the heart of the implementation process?
- iii) What resources do the different actors have access to and what role do these resources play within the implementation process?
- iv) What strategies do the different actors adopt within the implementation process?
- v) Are the strategies adopted by the different actors shaped by any resource inter-dependencies and, if so, what form do these take?
- vi) What are the incentive structures associated with different forms of inter-dependency?
- vii) What institutional factors determine the ability of the central actors to interact in different ways and to recognise, shape and respond to these incentive structures?
- viii) What influence do third parties have on the interactions between actors or on the incentive structures that shape these interactions?

- ix) What influence do these interactions and any associated institutional factors have on the practical demands associated with the implementation process and on the ways in which regulated actors respond to these demands?
- x) What factors shape the responsiveness or embeddedness of particular approaches to implementation?

Qualitative Approaches to Policy Analysis

- The basis for qualitative research

In order to answer these questions, a qualitative approach to policy analysis is adopted. Qualitative research attempts to view the world from the perspective of those who are being studied and to provide a detailed description of the context within which events and processes take place that is consistent with the perspectives of the participants in that social setting (Bryman, 1988). Because of its focus on the perspectives of those being studied and its emphasis on the significance of the context within which social processes take place, qualitative research attempts to provide a detailed 'contextual backdrop' against which events and situations can be analysed and explained. Thus, qualitative approaches are of particular relevance to the study of social relations when context is important and when individuals need to be viewed in their natural setting (Flick, 1998; Creswell, 1998).

Qualitative approaches also have particular value for research that delves in-depth into social complexities and processes and for research that attempts to examine the significance of social inter-connection (Bryman, 1988; Marshall and Rossman, 1989). They are also well suited to research that seeks to explore real as opposed to stated organisational goals and for research that seeks to understand where and why policy and practice do or do not work (Marshall and Rossman, 1989). Given its focus on the influence of the interactions and interdependencies that shape the implementation and impact of regulation, and on the significance of the context within which these social processes take place, the qualitative approach is well suited to the focus and objectives of this thesis.

Although the qualitative approach is not normally associated with a positivistic search for universal theories and objective facts, there are concerns about the reliability and validity of qualitative research. These concerns relate particularly to the extent to which qualitative research should be informed in advance by existing theories and to the ability of researchers to

collect, analyse and present data in a way that faithfully reflects the perspectives of those that they are investigating.

In relation to the extent to which qualitative research should be informed by existing theories, Bryman (1988, p66) argues that in order to perceive, interpret and present the perspective of those that they are investigating faithfully, many qualitative researchers reject the imposition of 'prior and possibly inappropriate frames of reference on the people they study'. This is particularly evident in qualitative approaches that adopt the grounded theory approach which gives preference to the data and field under study as against *a priori* theoretical assumptions and models (Glaser and Strauss, 1967; Strauss, 1987; Flick, 1998). However, in the thesis it is argued that the theories of cooperation and collective action and the policy and economic networks concepts can inform a study of the extent to which the interactions between the interdependent organisations shape the implementation and impact of regulation. Thus, whilst it is acknowledged that the selection of these conceptual issues may have narrowed the focus of the research and limited its ability to reflect the perspectives of the participants with complete freedom, it is also argued that these concepts can provide the basis for a more focused and incisive empirical study.

- Data collection techniques and data reliability

In relation to the methods used to generate data, the semi-structured interview is adopted as the main technique for primary data collection. Lofland (1971, p76) suggests that semi-structured interviews seek 'to elicit rich, detailed materials that can be used... to find out what kinds of things are happening rather than to determine the frequency of predetermined kinds of things that the researcher already believes can happen'. Flick (1998, p76) argues that the widespread adoption of semi-structured interviews as a technique for qualitative data collection is linked to 'the expectation that the interviewed subjects' viewpoints are more likely to be expressed in a relatively openly designed interview situation than in a standardized interview or questionnaire'. Relatedly, Gilbert (1993) suggests that semi-structured interviews are valuable where the subject matter is complicated or sensitive, as is likely to be the case where interdependent actors are asked to talk openly about their beliefs, strategies and perceptions of each other. Semi-structured interviews are also useful where some flexibility is required to allow the interviewer to clarify responses, to seek more detailed responses and to explore the inter-connectedness of particular issues and the complexities of social interaction. Thus, semi-structured interviews appear to be an appropriate technique for collecting data on the perceptions of the actors that participate in the processes that shape the implementation and impact of regulation.

However, the reliability and validity of data collected through semi-structured interviews can be eroded by the biases of both interviewers and respondents. In relation to the potential effects of interviewers on the validity and reliability of the data, Gilbert (1993, p148) identifies several sources of error or bias relating to 'misdirected probing and prompting, ignoring the effects of interviewer characteristics and behaviour, neglecting the cultural context within which the researcher is located and problems with question wording'. However, following Merton and Kendall (1946), Gilbert (1993) argues that these can be minimised, for instance by keeping guidance and direction from the interviewer to a minimum, by allowing the subjects definition of the situation to find full and specific expression and by bringing out the value-laden implications of responses. More fundamentally, Gilbert (1993, p138-139) argues that the attitudes expressed by respondents are not necessarily a useful indicator of what people have done or will do. Indeed, he argues that respondents in interviews may rationalise their behaviour and may only offer logical rather than emotional reasons for their action, that they may lack information or awareness on the issues being discussed, that they may be unused to describing their opinions or feelings, that they may fear being shown up or that they may show over-politeness to the interviewer, particularly by giving those answers that they anticipate the interviewer wants to hear.

This thesis adopts a range of practical techniques to respond to the potential influence of interviewers and respondents on the reliability of the data collected. Initially, both the interview schedule and the interview technique were tested and refined through pilot interviews. Whilst the transparency of the research process was restricted to some degree by the need to conduct interviews in confidence, this also ensured that respondents could speak openly about their perceptions of the regulatory process, about the strategies that guide their interactions within it and about the practical influence of regulation on their behaviour. It also allowed every interview to be recorded, full transcripts of interviews to be produced and *verbatim* quotes to be used throughout the research.

Opportunities for respondent validation were also built in to the interview schedule and opportunities to comment on the contrasting perspectives of other respondents in the same group and in other groups were established. Further opportunities for respondent validation were also introduced through various follow-up interviews and conference presentations and through an interactive workshop with representatives both of the different regulatory agencies and of the different target groups. Details of the interactive workshop are included in Appendix B.

- Top-down and bottom-up approaches to policy analysis

Within the thesis, two approaches to policy analysis are combined in a form of methodological triangulation designed to increase the validity and reliability of the research process and its outcomes (Denzin, 1989). Thus, although the thesis focuses on the influence of the processes that shape the implementation and impact of regulation 'at the bottom' of the policy process, it combines aspects of both top-down and bottom-up approaches to policy analysis.

Top-down approaches to policy analysis focus on particular policies or regulations and examine the extent to which these policies or regulations realise their objectives. Typically, such approaches focus initially on a policy decision, and address questions on the extent to which the actions of implementing officials were consistent with the procedures set out in the policy decision, on the extent to which the impacts of the policy were consistent with the objectives of the policy decision and on the nature and influence of the principal factors affecting policy outputs, outcomes and impacts (Sabatier, 1986). Thus, analysis based on the top-down approach can contribute to an understanding of the extent to which the actions of those 'at the bottom' are shaped in advance by decisions taken 'at the top' (Hogwood and Gunn, 1984).

However, top-down approaches have a tendency to over-emphasise the significance of the attempts made by those 'at the top' to precondition the implementation process. In particular, they can under-emphasise the extent to which the actions of those 'at the bottom' can influence the practical outcomes of the implementation process. Top-down approaches can also over-estimate the beneficial effects of a particular policy or regulation, for example by claiming responsibility for benefits that may have been realised in the absence of the policy in question or for effects that may have been stimulated by other policies or regulations. Relatedly, top-down approaches can ignore or under-estimate both the negative side-effects or unintended consequences of a particular policy or regulation and the influence of the multitude of other market and regulatory pressures that also affect the behaviour of the target group (Sabatier, 1986).

By contrast, bottom-up approaches focus initially on a particular issue before identifying the range of actors and initiatives that influence that issue at the local level (Hjern and Porter, 1981; Sabatier, 1986). Bottom-up approaches then focus on the range of actors associated with a particular issue at the local level, examining their perceptions and their various objectives, the range of strategies that they employ to realise their objectives and the actors with whom they interact as they attempt to realise their objectives. In this way, bottom-up approaches attempt to build an overview of the perceptions, actions and interactions of different actors and to analyse

the relative influence of the different policies and of the wider range of social and economic pressures that influence their behaviour. Bottom-up approaches therefore emphasize the influence of the wider socio-economic and political context that both facilitates and constrains the activities of particular actors.

Despite its potential to examine the wide range of factors that are likely to influence behaviour at the local level, the bottom-up approach has a number of weaknesses. Bottom-up approaches can under-estimate the extent to which the goals, resources and strategies of actors 'at the bottom' can be shaped indirectly by decisions taken 'at the top' as they influence the institutional structure within which individuals operate, for example by introducing 'rules of the game' to govern their activities (Sabatier, 1986). Furthermore, as the bottom-up approach bases its analysis on the perceptions and activities of actors at the local level, Sabatier (1986) argues that it 'is unlikely to analyse the factors indirectly affecting their behaviour or even the factors directly affecting their behaviour that they do not recognise'.

Given the different strengths and weaknesses of each approach, this thesis draws upon aspects of both the top-down and bottom-up approaches to policy analysis. It is argued that the top-down approach can contribute to the analysis of the influence that the different approaches to implementation that are adopted by implementing agencies and officials can have on the outcomes of the regulatory process. However, while the top-down approach focuses on those factors that influence the effectiveness of different policies and of particular approaches to implementation, the impacts of policy are also determined by the local conditions that shape the behaviour of target groups. In this respect, it is argued that the bottom-up approach can contribute to an analysis of the wide range of factors that affect behaviour at the local level. Thus, the policy process is examined from two different perspectives. Where the results of the two different approaches to policy analysis coincide, the reliability and validity of the qualitative data are reinforced. Where the two approaches yield different results, the differences can be identified and the reasons for them illuminated and explored.

- Data analysis, analytical induction and generalizability

In relation to the analysis of the qualitative data collected through the semi-structured interviews, a process of analytic induction is employed to draw theoretical observations and explanations from the empirical data. Analytic induction is a process that attempts to build and to test theories by analysing and reanalysing data (Flick, 1998). Bryman (1988, p83) argues that analytic induction is 'a highly stringent approach to the analysis of data in that the occurrence of a single negative case is sufficient to send the researcher off to reformulate the problem'.

However, the reliability and validity of any theories generated through the process of analytic induction rests to a large degree on the ability of the researcher to derive generalizable theories from the contextually specific findings of case study research. Although it may be the job of other researchers or of subsequent research projects to test the relevance of the findings of particular cases in other situations, Bryman (1988, p88) argues that:

The concern that findings may be untypical is understandable when a subject is keen to develop a modicum of empirical generalization and possibly to make a contribution to wider theoretical developments. Further... to have an impact on social policy through the use of a case study can be diminished by the belief that the findings may be idiosyncractic.

However, Bryman (1998, p90) goes on to argue that any claims about the wider relevance of findings from case-based research should relate to theoretical propositions rather than to broader populations or universes. Thus, the primary focus of the research is not on the particular regulatory frameworks selected as cases for empirical study or on the organisations and individuals that were interviewed as part of this study but on the nature of the interactive processes within which these actors participate and on the influence that these processes can have on the outputs and outcomes of regulation. While this case-based research may have some intrinsic interest for those interested in the particular cases, therefore, where it can illustrate an issue that is of wider practical interest and theoretical relevance it should also have some instrumental value (Cresswell, 1998).

The Research Process

The research process began with a conceptual examination of the nature of regulation and implementation. This examination, which was stimulated in part by the findings of the previous empirical work conducted by the author (see Gouldson and Murphy, 1998), highlighted the potential significance of the day-to-day interactions between regulators and firms within the implementation process. In seeking to build a fuller understanding of the factors that might shape the nature and influence of these interactions, the discussion identified the existence of various inter-dependencies that had the potential to draw the regulators and the managers of the regulated firms together within cooperative networks. Consequently, as well as considering the value of the policy networks and economic networks concepts, the value of the different theories of cooperation and collective action were also examined. In this way, a more focused

set of research questions and variables to be considered within the empirical analysis was established (see above).

Having established its data requirements, the empirical study began by re-examining the body of secondary data that was already available in the form of transcripts from previous interviews on the implementation and impact of IPC. Finding that much of the required information on the factors that shaped the interactions that defined the IPC implementation process was already available, a series of follow-up interviews was conducted to up-date and expand the body of data on IPC so that it fulfilled broader data requirements. Thus, in the case of IPC, secondary data was drawn from the results of seven semi-structured interviews conducted in 1995/6 and from two follow up interviews in 1998 with staff from the regulatory agency. Similarly, secondary data was drawn from the results of interviews conducted in 1995/6 with the environmental managers of sixteen of the processes regulated by IPC and primary data was drawn from follow-up interviews with four of these firms that were conducted in 1998. For comparative purposes, LAPC was then adopted as a second case. Primary data on LAPC was collected through semi-structured interviews with managers and inspectors in seven local authority environmental health departments and with the managers of eighteen regulated firms. All interviews relating to LAPC were conducted in 1998.

Given limited resources and the need to reduce the regional differences in the socio-economic conditions that may have an influence on the implementation process, all interviews were conducted in the Yorkshire and the Humber region. This region was selected for primarily practical reasons as the author had developed numerous links with regulators and industry in the area. These links eased access to some of the actors with whom interviews were sought, most notably the managers of the small and medium sized enterprises (SMEs) that were regulated by LAPC. This was significant as securing SME participation in environment related initiatives had been highly problematic in the past. Rather than seeking to interview all of the regulated process within the region or to select a random or a representative sample, a number of industrial sectors were selected for further investigation. The selection of the industrial sectors for further investigation was influenced initially by the desire to collect data from similar sectors in each of the regulatory frameworks adopted as cases for investigation. However, it was also partially influenced by the range of regulated processes within the Yorkshire and the Humber region and by the range of regulated processes that agreed to participate in the research.

The number of interviews conducted in each of the regulatory frameworks adopted as cases for investigation was influenced initially by the need to gather data from a range of actors to gain an insight into the diversity of the perspectives that may influence the processes that shape the

implementation and impact of the regulations in question. However, following Glaser and Strauss (1967), no particular decisions were taken in advance about the number of companies to be interviewed. Instead, interviews were conducted up to the point where a substantial degree of 'theoretical saturation' had been achieved so that each new interview failed to establish the need for new categories of responses to be established.

Each interview lasted approximately 90 minutes, although interviews with the managers of some regulated firms were somewhat shorter. All interviews were taped and transcribed before working hypotheses were generated and tested in accordance with the process of analytic induction outlined above. Thereafter, the central hypotheses of the thesis were reformulated before the body of qualitative data that had been collected was re-examined to consider validity of these revised hypotheses.

Conclusions

This chapter has introduced the empirical focus for the thesis, the research questions that stem from the conceptual discussion that link it to the empirical cases and the methodological approach to the empirical study that has been selected. On this basis, the discussion now moves on to present the empirical results. Chapters 4 and 5 present the different perspectives that the main actors have of their role within the IPC implementation process while Chapters 6 and 7 adopt a similar approach but this time focusing on the perspectives that the actors have of their interactions within the LAPC implementation process. These chapters then provide the basis for a comparative analysis of the factors that shape the nature and influence of the implementation process associated with each regulatory framework that is presented in Chapter 8.

CHAPTER 4

The Case of Integrated Pollution Control:

The perspectives of the regulators

Structure

- Introduction

- The nature of the implementation process
 - *Organisational change and the creation of the Environment Agency*
 - *Pre-conditioning, guidance and the need for flexibility*
 - *Instigating change within regulated firms*
 - *Beyond the expedient regulatory response*
 - *Regulators as educators and persuaders*
 - *Arms-length and hands-on approaches to implementation*
 - *The resource intensity of hands-on approaches*
 - *The influence of stakeholders on the implementation process*

- The influence of the implementation process
 - *On technological and organisational change*
 - *On economic networks*
 - *On environmental performance*
 - *On costs and benefits*

- Relating the empirical discussion to the analytical variables

Introduction

This chapter is interested in the perspectives that the inspectors within the regulatory agency responsible for IPC have of the factors that shape the nature and influence of the implementation process. More particularly, it is interested in the perspectives that the inspectors have of the influence of a range of analytical variables:

- i) The character and resources of the various actors with an interest in the implementation process;
- ii) The extent to which any resource inter-dependencies provide incentives for different forms of interaction within the implementation process;
- iii) The strategies that the different actors adopt in response to any such incentives;
- iv) The extent to which different institutional structures shape and are shaped by these incentives, and constrain or enable these strategies; and
- v) The influence that different forms of interaction have on regulatory outputs (meaning the practical demands made by regulators) and on regulatory outcomes (meaning the ways in which firms respond to these demands).

The influence of these analytical variables, which arose from the conceptual discussion that was presented in Chapters 1 and 2, was examined within a research process based on the methodological approach discussed in Chapter 3. Therefore, the discussion that follows draws upon the results of interviews with managers and inspectors within one region of the Environment Agency, conducted between 1995 and 1997. Follow-up interviews and an interactive workshop were organised to examine the validity of the interview findings. Although they each came from the same regional office, some of the characteristics of the inspectors that were interviewed for the study are presented in Table 4.1, with the number (i.e. [5]) at the end of each quotation relating to the corresponding row in this table.

Table 4.1: Characteristics of IPC Inspectors

Inspector	Position	Experience	Predominant role
1	Area Manager	Extensive industrial and regulatory	National policy/ guidance formulation, area manager for inspections team
2	Pollution Inspector and Operations Support	Extensive industrial, medium regulatory	Guidance formulation, coordination of approaches in different areas, site inspections
3	Pollution Inspector	Medium industrial, extensive regulatory	Site inspections
4	Pollution Inspector	Medium industrial, extensive regulatory	Site inspections
5	Pollution Inspector	Extensive industrial, medium regulatory	Site inspections
6	Pollution Inspector	Extensive industrial, medium regulatory	Site inspections
7	Assistant Pollution Inspector	Extensive regulatory	Site inspections

In order to present the results of the research process in a logical way, the discussion that follows is structured to reflect the different stages of the implementation process. Thus, after examining the character and resources of the implementing agency and the inspectors within it, the discussion considers the processes associated with the interpretation of legislative principles, the setting of standards, the monitoring of performance, the enforcement of standards and the

imposition of sanctions. The chapter then considers the perspectives that the inspectors have of the influence that the implementation process has exerted on the practical demands that they make and on the ways in which the regulated firms respond to these demands.

The influence of the analytical variables can be felt recurrently during the implementation process, and therefore related issues arise throughout the discussion here. The chapter will conclude by drawing these issues together to give an overview of the impact that these variables have on the nature and influence of the IPC implementation process, as seen from the perspective of the implementing inspectors. To complete the examination of the analytical variables that shape the IPC implementation process, Chapter 5 will then examine the same issues, but this time from the perspective of the managers of the regulated firms. Chapters 6 and 7 will take a similar approach when analysing the implementation process associated with LAPC regulations. This will then allow the interactions that are at the heart of the two processes to be assessed 'in the round' within the comparative analysis that is presented in Chapter 8.

The Nature of the Implementation Process

- Organisational change and the creation of the Environment Agency

The creation of the Environment Agency in 1996 brought together the personnel and regulatory functions of the various Waste Regulatory Authorities (WRAs), the National Rivers Authority (NRA) and Her Majesty's Inspectorate of Pollution (HMIP), with its responsibilities for the implementation of IPC. Of the three groups of regulators, the NRA was generally seen to be the dominant partner. This was the case both because it was much larger in terms of staff numbers, and because it controlled a significantly greater proportion of the budget as, aside from its regulatory duties, it had a range of responsibilities relating to water management and flood defence.

In relation to regulatory styles, the NRA was staffed by inspectors with expertise relating to the natural environment rather than the industrial processes which might impact on that environment who had a history of implementing emissions-oriented, ecologically focused regulations in a relatively arms-length and sanctions-based way. HMIP, on the other hand, was largely staffed by inspectors with a background in science or engineering, who had often worked in the industries that they subsequently came to regulate. It had a history of applying technology-based regulations such as IPC in a relatively hands-on, co-operative and compliance-based way.

The merger of these previously separate regulatory bodies therefore brought different approaches to implementation together, within one new organisation. It also created an opportunity for change – for a re-evaluation of the ways in which different environmental regulations might be implemented – and gave rise to a clash of regulatory styles within the Agency. As a result, the flexible, co-operative and hands-on approach to the implementation of IPC that had been prevalent within HMIP was subjected to some considerable scrutiny and pressure. There were calls for change from a range of stakeholders with long-standing concerns about the perceived ‘cosiness’ of the relationship between HMIP and regulated firms, which generated suspicions about the potential for and presence of ‘capture’ in the implementation process. Despite these pressures, however, the flexible, co-operative and hands-on approach to the implementation of IPC remained largely intact (see below).

- *Pre-conditioning, guidance and the need for flexibility*

Within the organisational context associated with the creation of the Environment Agency, the day-to-day activities of the IPC inspectors therefore remained largely unchanged. They continued to exert a defining influence on the practical substance of IPC as they translated the generic principles of the legislation into specific requirements for each of the industrial processes that they regulated. Although their sphere of influence was limited by the existence of various guidance notes, the inspectors felt obliged to be flexible and to exercise a considerable degree of discretion, because the legislation was designed to be interpreted and applied on a case-by-base basis. This related particularly to the requirement for each site to adopt operating conditions and to meet emissions standards that were compatible with BATNEEC, the generic and deliberately flexible legislative principle that was at the heart of IPC:

The guidance notes set out the standards that are considered achievable using BATNEEC. But they are a fairly broad-brush thing. As the notes make quite clear, BATNEEC is a site-specific thing so what applies on the site and how it is achieved is an individual assessment [1].

Flexibility had therefore been formally incorporated into the design of the legislation from the outset. Indeed, there was a generally held belief that it was not feasible to standardise the regulations and that the legislation’s practical demands had to be adapted to reflect the characteristics of each regulated process:

You can't have a uniform approach. You cannot – it would not work. You have got to address the smaller operator who is probably less forward-looking than the bigger company... there is also a big difference [between] authorising something new [and] something that has been operating for thirty years [4].

Aside from the flexibility that stemmed from the pivotal role awarded to BATNEEC within the legislation, the perceived need for flexibility in implementation was further reinforced by the requirement that regulated processes 'prevent, minimise and render harmless' any releases of regulated emissions. As emissions came from a wide range of industrial processes that were operated by heterogeneous companies in diverse contexts, it was generally accepted that regulatory approaches that sought to prevent rather than respond to emissions needed to take these variations into account. Consequently, inspectors were drawn further into a case-by-base analysis of the factors that shaped not only emissions levels, but also the performance of the regulated processes themselves:

We regulate the production process rather than merely setting limits for what is coming out of a pipe. Obviously we do that in our authorisations as well, but it is the *process* that we regulate and the way that process is carried out. The limits are the last thing that is important because they are merely that which can be achieved by using the proper techniques – and it is not just technology, it is techniques in its widest sense. So you make sure the process is operating to its correct techniques and then the emissions limits just automatically follow [3].

Countering this need for flexibility was an awareness that the Agency and the inspectors within it had to interpret the requirements of IPC in an equitable and consistent way, not least because of the ability of regulated firms to communicate among themselves and to challenge the Agency if any inconsistencies were detected. In order to ensure consistency, and to help prevent appeals that might be costly and that might damage their reputation, individual inspectors shared information with each other both formally and informally:

There is a nationwide computer-based information system which you can search for particular processes and in this case I could search for say clinical waste incinerators which are authorised. I can get the name of the company, I can get the name of the inspector and I can talk to the inspector to say what are they doing and what techniques are they using. That is extremely useful because I have then got concrete evidence when I go to the company and say look, company X are doing it this way and why are you doing it a different way? [1].

Such transfers of information within the Agency also served to reduce the inspectors' dependence on the information supplied by the regulated firms. Indeed, a lot of information was publicly available thanks to legislation relating to freedom of access to environmental information. However, inspectors were constrained in their ability to put other types of information on the public register or to transfer it from site to site because of concerns within the regulated firms about commercial confidentiality. In these cases, information flows were restricted and as a result some options for environmental improvement remained unexploited:

Companies have perfected their own techniques to produce particular products and environmentally they might be a lot better than other traditional ways of doing it, but they want to keep that to themselves because it is in their commercial advantage. That puts me in a very difficult situation because I know how they make it and the environmental performance of their competitors would improve if they knew it too... [2].

Thus, the day-to-day activities of the inspectors were shaped by the resources that were awarded to them through the legislation which gave them access to legal authority, discretionary powers and to some extent access to information. However, institutional factors, relating for example to the presence of guidance and the need to respect commercial confidentiality, to promote consistency and to avoid challenges and appeals that might be costly and damage their reputation, all shaped the ways in which the inspectors used their resources in the IPC implementation process.

- *Instigating change within regulated firms*

The inspectors generally believed that it was their job, through their interactions with the managers of regulated processes, to encourage, enable or force them to explore the potential of new technologies and techniques and thereby to keep up with what was being demanded under BATNEEC. This approach was commonly based on the belief that many companies were 'locked into' existing ways of operating, and that as a result they had yet fully to explore the potential of various technologies and techniques. In the eyes of the inspectors, managers' perceived reluctance to change related not only to those expensive and difficult improvement options, but also to those reasonably inexpensive and straightforward opportunities associated with waste minimisation and improved resource efficiency:

The people in production who are running the plants have a simple objective... to get X tonnes out per week, so I don't think that companies take waste minimisation particularly seriously. They all say they will do, but only so far as it is easy and convenient for them to do so, and no further. The whole thing you get back from the managers is that this plant is already BATNEEC and we aren't going to do any more. If we weren't here it simply wouldn't get done [7].

It was felt that despite the presence of various other environmental management initiatives, change simply would not happen to the desired extent without enforcement:

Regulation is the main stimulus for industry investing in environmental issues. The other initiatives are all window dressing. Voluntary efforts are either to avoid regulation or where public opinion won't let them get away with anything else... If you actually deal with these companies on a professional basis you get very cynical about their public relations statements and about their devotion to the environment... Some companies now are producing these nice glossy environmental reports, annual things, such as Company X. I don't suppose you will see anywhere in there that Company X got an enforcement notice from us last year for non-compliance with the regulations [3].

These experiences led the inspectors to believe that they had to find ways of changing companies' behaviour, and of ensuring that they afforded the environment the commitment necessary to overcome the inertia and barriers to change which were preventing them from exploring the potential of technologies and techniques which would allow them to reach compliance with IPC.

- *Beyond the expedient regulatory response*

Regulated companies' apathy or ignorance with regard to environmental issues was further reflected by their preference for expedient, short-term solutions to regulatory compliance. The inspectors felt that in the absence of their influence, regulated firms would tend towards those technologies and techniques that could be easily and immediately adopted, rather than those that would offer a more effective and efficient response in the longer term:

End-of-pipe is still the standard response from the companies... I think it is a cultural thing – it is the difficulty of going back down the line and rethinking things that have often been done in a particular way for years [3].

Reflecting the preventative dimensions of IPC, the inspectors generally saw such 'bolt-on' investments as being appropriate only after the more proactive measures to prevent or reduce the emission stream had been exploited. Indeed, they felt that industry tended to underestimate the economic benefits of some of the more preventative approaches to environmental improvement:

One reasonably simple way they can improve their environmental performance and save money is through waste minimisation. But this just isn't treated seriously by many companies. That's not just me saying that... Lots of studies have proven that waste minimisation saves money but people just aren't bothered, it is not a priority item so it never gets done [6].

By changing regulated companies' priorities – encouraging them to take environmental improvements seriously – the inspectors helped them to exploit environmentally and sometimes also economically beneficial options. However, inertia and ignorance were not the only problems: uncertainty and risk averseness were also barriers to change. To invest in a new or unfamiliar technology or process technique, with the associated disruptions and with no guaranteed results, was a big commitment for a regulated company. Indeed, this was seen to be the case even where practical, reliable information on the performance of different technologies and techniques was available, for example from other companies or from consultants. This information was often seen to be spurious or too generic, so that managers of regulated processes dismissed its relevance to them:

It is always easy when you come out and say Company A have saved X million pounds on this project because they have looked at this. But you then go to another company and they have got to start from scratch and it is very difficult for them to start thinking laterally and moving away from what they do. So it's part of our job to get the cultural change you need if they are going to rethink aspects of what they do for environmental reasons [6].

The regulators therefore sought to increase awareness, to reduce uncertainty and risk averseness and to change priorities and cultures within regulated firms. They also sought to create a basis for co-operation by arguing that the environmental improvements that they were calling for could often be achieved in ways that were economically acceptable to the regulated firms. Although these promised economic returns were sometimes perceived to be lower or more risky than those that could have been achieved had the firm invested its time and resources in other areas, they nevertheless represented a useful rhetorical resource and tool of persuasion for the

inspectors. Indeed, the environmental managers of the regulated processes were themselves able to draw upon this rhetoric, to argue within the firm for more resources to be invested in environmental improvement.

- *Regulators as educators and persuaders*

The ability of the inspectors to educate, persuade and empower was therefore a critical component in the implementation process. Their ability to adopt such an approach was of course backed up by the fact that they could resort to the application of legal authority if it did not work. However, there was a general feeling that it *did* work, which enabled them to instigate the desired changes without having to take legal action:

The way this bit of the Agency has always worked, and continues to work, is to try and persuade industry to do the right thing knowing that we have the big stick behind our back if necessary... In the past, other regulators [with emissions-based approaches] had no options. If a consent was breached they couldn't require a company to take any remedial action or anything, their only option if they wanted to take enforcement action was to prosecute. But because we actually regulate the production process and we are aware of it on a much more intimate basis we are able to identify in advance where there are problems and get things done. We don't have to serve enforcement notices or prosecutions to get that done, there are lots of ways of doing it that the public just aren't aware of [1].

The Agency itself did not always benefit from this 'invisible tool' ("This is why we get the bad publicity, because we don't prosecute many people. But we don't *need* to prosecute many people" [2]). However, approaches to implementation that were based on education and persuasion were seen to be a much more effective way of changing corporate cultures and of mobilising a commitment to compliance among regulated companies, than those that relied upon the application of legal authority alone. Improving the operator's understanding of the goals of regulation and the ways of achieving compliance would, they believed, lead to improved regulatory outcomes:

It is much better that way because they then own the 'environment' within their organisation rather than having it imposed on them. That offers better control and eventually they will start to understand the processes better and the environmental effects and over time that will result in improved performance [5].

By focusing on the operators, rather than the process, this style of regulation was more likely to achieve the preventative goals of the legislation and build a commitment to environmental improvement:

I actually see regulation much closer to management of man than I do to management of technology. The best technology in the world doesn't actually stop an accident [2].

But this style of regulation was demanding and time-consuming. In addition, it depended upon the presence of inspectors with a considerable amount of relevant experience and expertise. This did not necessarily mean that the inspectors should know more about each of the processes they regulated than the managers of those processes, merely that they should be able to look at an industrial process from a well-informed perspective and ask incisive questions:

The operator should be a deep expert in his process and certainly when I was in industry I always took the view that if I didn't know more about my job and my plants than an inspector did, who was visiting a few times a year, then I was in the wrong job... On the other hand I think that an extra pair of eyes looking at things from a different angle can be useful... [As an inspector] you can come along and ask embarrassing questions... Shall we say that sometimes companies aren't always fully aware of what's going on [1].

Under the legislation, regulated firms were obliged to investigate different compliance options and provide a case as to why their chosen approach represented BATNEEC. Inspectors' ability to ask searching questions came in particularly useful when evaluating this choice:

Companies have to demonstrate to us that they understand the technology and the process and their obligations under legislation. We have to have enough nous and expertise to judge what they are telling us. That is the skill of an inspector. It's not just technical, it's personal. You can look into their eyes and recognise when they are starting to stand on shaky ground... And then you can ask them to look into it further and present a better case as to why it's the best way forward [2].

It is apparent therefore that the Agency adopted a strategy of education and persuasion, backed up by their ability to resort to legal action when faced with companies that refused to cooperate. These strategies were adopted by experienced inspectors who often had a considerable amount of expertise in the processes they were regulating, enabling them to ask for answers to difficult questions and to supply useful information to the regulated companies. It was widely

felt that such a strategy enabled the inspectors to implement the regulations in a more effective way, and to reduce the costs of compliance for industry.

- *Arms-length and hands-on approaches to implementation*

Aside from the powers of education and persuasion, the inspectors interviewed suggested that at times they needed to adopt a supportive and hands-on approach with the companies that they were regulating. Indeed, in the early stages of the regulations such a hands-on approach was needed just to enable widespread compliance with the regulations:

I came into the inspectorate just at about the time when the arms-length approach was being shown to be not very appropriate... it was really being taken a little bit too far and industry through no fault of its own was getting into an awful mess, as regards for example putting applications together. So the decision was taken that if we were going to move forward that industry would need additional support. I am not saying all industry needed this but it seemed to be a fairly general picture - at the end of the day there isn't any value in seeing somebody getting into trouble basically because they haven't got the expertise... So I think that the decision to give that assistance and to move to a closer relationship was both positive and encouraging [4].

Thus, a hands-on approach was adopted because the regulator had a responsibility for ensuring that regulated companies collectively worked towards compliance. Where widespread non-compliance was a possibility, the regulator felt obliged to offer assistance as its own reputation depended upon its ability to operationalise the regulations successfully. However, the inspectors were also obliged to adopt an interactive and hands-on approach because of their need to get access to information:

To me the arms length approach is not a very satisfactory approach... when we tried it we weren't getting the dialogue that we need to progress things. So we moved away from the arms length approach to one based more on discussion to find out basically what have they got, what problems they have, what are they going to put forward in terms of meeting requirements... Then we put to them what we considered to be sensible as well and then they submitted that in terms of the authorisation... [6].

Although the inspectors felt that there were reasons why they had to adopt such an approach, they also felt that such an approach engendered commitment rather than resistance amongst the regulated companies:

The change from the arms length approach was a positive move... from an industry point of view it has actually got them on our side. I think that the difficulty with EPA90 was that companies actually had to write their applications and apply to operate their own processes and to pay for the privilege of doing that. Everything is negative. After some effort and assistance though companies are looking around and saying 'hang on a minute - we can get some benefit from this, we can understand what we are doing a lot more and we can probably actually save some money doing things' [5].

Furthermore, the alternative approach, which was seen to entail the adoption of an arms-length and legalistic relationship with regulated companies, was widely deemed to be unfeasible because the regulatory agency did not have the resources to engage in a large number of prosecutions:

I was taught as a manager to walk softly and carry a big stick... There isn't any point in going along and prosecuting anything in sight and the reason for that is very simple - if you went on to most sites in this country with a totally critical eye you'd find something wrong... there has to be a degree of practicality as regards our approach because we simply couldn't prosecute everybody... But we do look at situations and we make an assessment as to whether a prosecution should follow or not - so we don't prosecute everybody in sight but we do prosecute when we feel it is necessary and appropriate [1].

A co-operative and hands-on approach was adopted as the preferred approach therefore because the regulator was responsible for promoting compliance, because they needed access to information to do this and because they didn't have the resources needed to prosecute everyone. They also commonly expressed the view that by quickly resorting to legal action the inspectors could undermine the basis for the co-operative and open working relationship that they had worked hard to establish with regulated firms. Consequently, a number of stages existed between open co-operation and formal legal action:

We are not in the business of prosecuting people for the sake of it. The whole object is to get environmental improvement. When we find a firm that isn't doing what it is supposed to, it is much more likely that we will take some sort of action such as issuing an enforcement notice requiring them to come up with proposals... There is also the option of serving a notice telling them what they need do to improve. So prosecution is not always the first response [4].

Thus, the inspectors tended to adopt something resembling a 'responsive' approach to regulation. This enabled them to reserve the right to pursue legal action for the most serious breaches of compliance. However, again reflecting the influence of information asymmetries, their ability to detect cases of non-compliance was far from perfect:

If you were industry and you wanted to hide something you probably could. There is no question of that. There would probably be a gasp if they heard that comment but it is a matter of fact. If you wanted to keep something a secret I would have to look very, very hard to try and find out if you were up to something. But again you can use your initiative and your instinct to work your way through. If you go in hard handed on day one you are going to get everyone's backs up and you will not get the cooperation or the openness that you want. But if you go in with an open approach and then when you have to be hard, be hard, make an example on some issue, then you get the message across [3].

However, because of recent advances in monitoring technologies, the ability of the inspectors to detect cases of non-compliance was rapidly increasing, and therefore their dependence on the information supplied by regulated companies was decreasing:

We have now got a lot of computer-controlled data logging systems. It logs every alarm and what actions were taken so I could go in if I wanted to I can go through the alarm log... From time to time, I'll pick up the log and take them down an audit route for a particular incident. If they know that that is going to happen, if they know they are going to be audited, they make sure that it is right [3].

Although the inspectors still felt that there would be benefits from co-operating, where they were available it was apparent that these technological advances had undoubtedly increased their capacity for control.

- *The resource intensity of hands-on approaches*

Although the inspectors thought that a hands-on and co-operative approach to implementation was a comparatively effective way of promoting compliance, they also recognised that it was often seen to be a particularly resource intensive approach to implementation. As a result, they were very aware of the resource pressures associated with their activities and often expressed concern that resource cuts would undermine their ability to deliver the regulations effectively:

Well everybody will say that they are over stretched and have too many processes to regulate and too much work to do and I think that is probably true. But it is like every job you have got to try wherever possible to manage the resources that you have... we have got to be given enough time to do that job and to do it properly otherwise the whole impetus that we have started to get will be lost [1].

However, while the managers interviewed felt that the regulations could be implemented effectively with the current allocation of resources, the inspectors responsible for the day-to-day delivery of the regulations generally felt that the resources available were insufficient:

It is understaffed, the resources aren't available. We fundamentally are all under pressure to provide a service. The professionalism of the people employed in doing that, both administrative and technical, is good. I think that everyone pulls together to try and achieve a standard of professionalism but the staffing is not adequate [4].

The inspectors recognised that the cooperative and hands-on approach to implementation that they adopted demanded significant inputs of resources from the Agency in the short term, stemming particularly from the need to recruit and retain expert inspectors and from the need for each inspector to regulate a relatively small number of process. However, while they felt that this approach generated more effective and efficient regulatory outcomes in the medium term, they recognised that the efficiency gains tended to be realised not by the Agency that had invested its resources but by the regulated firms that had secured environmental improvements at lower costs. Thus, they argued that it was right that this approach to implementation was funded by the authorisation fees that were paid by the regulated companies. Such a view was reinforced by the perception that such a charging system reflected aspects of the polluter pays principle. On this basis, the inspectors argued strongly that the cooperative and hands-on approach to implementation should be maintained despite its resource intensity. However, they were also aware that this view was not always shared and that this approach to implementation was being questioned within the Agency at large. At the time of the interviews, at least, the inspectors had managed to maintain access to the resources needed to fund their preferred approach to implementation.

- *The influence of stakeholders on the implementation process*

While the interactions between inspectors and the manager of regulated firms promoted compliance in a variety of ways, throughout the implementation process the inspectors noted that public opinion tended to reinforce their influence and to increase the pressure to comply.

This was particularly the case as information relating to the implementation process was made publicly available:

Regulation is the main stimulus for companies investing in environmental techniques... it has pushed them a long way forward... but it's also the fact that it was going public as their actions, their results and their application will be documented, the authorisation and any monitoring returns would be on the public register. I think that that was another key feature that pushed firms along [6].

Thus, because of their ability to exercise discretion when deciding when to classify a firm as formally non-compliant, the regulators had some ability to mobilise stakeholder pressure. It also gave them the power to legitimise or to de-legitimise the industrial processes that they regulated:

I think industry doesn't mind being regulated... It allows them to answer some of their critics by saying 'well we are regulated and we are regulated by a body which has its terms and conditions set down by the government and therefore ultimately by yourself as a voter. We are doing everything we can with that regulator and therefore no matter how much you complain we are obeying the law'... But if we decide that they are not obeying the law, then community groups and pressure groups and so on will eventually find out through the registers and they could lose a lot of face and standing [7].

While the publication of information on environmental performance gave the regulators extra power and influence, it also put the inspectors in a difficult position as they had to mediate between the competing interests of the public and those of industry. However, while the inspectors were aware of the need to maintain public confidence in their activities, their day-to-day interactions with the regulated firms were very rarely if ever scrutinised by third parties. Even so, the potential for scrutiny that was provided by the presence of public registers was still very influential because of the value that regulated companies appeared to place on stakeholder relations and on the ability of the regulators to undermine their reputation and their perceived legitimacy.

The Influence of the Implementation Process

- On technological and organisational change

As has been stated, the inspectors interviewed felt that their approach to implementation had encouraged, enabled and occasionally forced regulated firms to overcome some of the barriers to change that had prevented them from exploring the potential of different technologies and techniques. However, in general they did not think that the regulations had necessarily stimulated the development or adoption of particularly innovative or leading edge technologies:

We are not about developing new techniques for the sake of it, what we are about is getting individual companies to use the best techniques which are available readily. It is about 'best available techniques' and what I would say is that companies can benefit from using techniques which are readily available at present without having to go to the extra effort of getting innovative techniques. I am not sure that most companies are even at a standard that is up to available techniques at present. So it is better to use proven techniques and get those implemented first, rather than looking for innovative, magic answers [6].

Instead of focusing on the options for technological change, the inspectors focused on the improvements that could be made through organisational change and the adoption of new process management techniques. As this focus enabled the regulated firms to reduce their emissions at source, it also allowed them to avoid the need to buy new equipment. Consequently, it had both environmental and economic benefits:

A lot of the changes we call for are developed in-house, within the company using its expertise of its own particular process to see what they can do - how they source raw materials, how they operate the process and so on. We wouldn't ask whether they'd bought the latest piece of pollution control equipment - we press them a bit further back and say have a look at the process first before you go out and spend a hundred thousand on new equipment lets try and minimise and prevent the actual release [7].

The scope for the environmental improvement of existing technologies to be improved by fine-tuning was closely related to the claims that the inspectors made about the availability of economically acceptable or even beneficial improvement options. However, the inspectors also recognised that the scope for environmental improvement to be made through the incremental improvement of existing technologies was not endless (see below).

- On economic networks

In seeking to shape the capacities for compliance, the inspectors felt that the regulations had influenced the extent to which firms engaged in various economic networks. Indeed, in relation to intra-firm networks, at times the regulators deliberately sought to empower the environmental managers of the regulated firms to increase their ability to attract wider support for environmental initiatives:

At the local level it may be recognised that they need to do something but they still need to persuade the accountants in the centre. I think that is where the regulation comes in – it forces their hand... You can actually help the local management along, especially if it is a multi-national company, by taking a stance where it is obviously justified and making sure they get the attention and the resources they need to comply with the regulations [5].

More broadly, the inspectors suggested that the pressure to comply with the regulations had encouraged the regulated firms to engage with a range of inter-firm economic networks. Despite their concerns about the inspectors passing on commercially confidential information, the inspectors thought that managers of the regulated firms were often quite ready to exchange information with other firms:

One can see increasingly companies agreeing to hold forums between themselves, perhaps on matters relating to IPC which a few years ago they wouldn't, but they recognise that that is a way of keeping up to date and keeping abreast with developments. They can actually get benefit out of it without jeopardising their commercial advantages. One can see those springing up more and more [7].

These inter-firm linkages were seen to be particularly beneficial for smaller companies where access to information and other resources was seen to be more limited. Indeed, in an attempt to promote compliance, the Agency had consciously sought to instigate the development of such networks:

I think the smaller company would find benefits if we locally and nationally got them all together more to talk about IPC. I think some of our central departments do this with the industry federations so that they can share their own ideas and experiences [6].

It is apparent then that the implementation process had led to the development of new networks as both the inspectors and the companies sought to increase the capacities for compliance and to reduce the costs of compliance.

- *On environmental performance*

All of the inspectors felt that IPC had stimulated increases in the extent to which the regulated firms were aware of their emissions and of the various ways in which these emissions could be prevented, minimised or rendered harmless. As such, the inspectors felt that the implementation process had led to some significant improvements in the capacity of regulated firms to manage their environmental risks and impacts. They also felt that they had engendered a greater commitment to environmental improvement in the regulated firms and that the firms had drawn upon their newly developed commitments and capacities by adopting the technologies and techniques that would lead to improvements in their environmental performance. Indeed, as BATNEEC was seen to be a dynamic concept, both formally as the guidance notes were periodically up-dated and informally as the inspectors continued to apply pressure for further improvements, they expected further improvements in environmental performance to be realised over time.

While the inspectors felt that organisational change and the adoption of new management techniques had helped to ensure that the emissions associated with most existing process technologies were minimised, they also accepted that IPC had not generally stimulated major process change. In the absence of such radical changes, they felt that the opportunities to generate further improvements by fine-tuning the management of existing process technologies would gradually diminish and therefore that the costs of further change would escalate. Nonetheless, because the inspectors argued that their approach to implementation had helped firms to develop their capacities for change, a dynamic setting there was an interplay between diminishing marginal returns on the one hand and increasing capacities for change on the other. The emphasis that the inspectors placed on capacity building and on educating, persuading and enabling change can therefore be seen as an attempt to reduce the costs of compliance and to delay the point at which these costs would increase.

- *On costs and benefits*

As has been stated, the inspectors felt that the changes that IPC had induced were often associated with some economic return. This was particularly the case where companies had been able to respond to the demands of the regulations by preventing or minimising their

emissions by developing new techniques rather than rendering emissions harmless by investing in end-of-pipe abatement technologies:

Those companies which look at it in the right spirit tend to see an overall benefit... There are some exceptions, there are bound to be... If we can't alter the process to prevent and there are some releases, then yes, it is pretty expensive to abate and so you have got to look at that and look at the overall benefits and costs of that matter. But I think at the moment the majority of the operators should see an overall financial benefit [1].

However, as the costs tended to be condensed in the short term while the benefits were often spread over the longer term, temporal issues were an issue. Indeed, as one inspector noted, companies often focused on the short-term costs rather than the longer term benefits, whilst also attributing some costs that would have been incurred anyway to compliance with IPC:

Expenses probably appear to be condensed in the early stages. Some of the costs one hears about one questions because what would those people be doing anyway? Reviewing the process should lead to some reductions in losses and some of the pay-backs are shorter than they think. So I am not convinced that it costs as much as they say... [3].

Nonetheless, as has been stated, there was a feeling amongst the inspectors that low cost responses to regulation would not always be available and that as the costs of compliance increased so the feasibility of their current approach to implementation might be reduced.

Relating the Empirical Discussion to the Analytical Variables

Within the discussion presented thus far, it is possible to identify the influence of the analytical variables that were identified in the preceding conceptual and methodological chapters. These variables relate to the character and resources of the different actors, to the nature of any resource inter-dependencies in the relations between the different actors, to the extent to which these generate incentives for particular forms of behaviour and to the ways in which the actors respond to these incentives by adopting different strategies within the implementation process. They also relate to the extent to the influence of the broader institutional context within which the implementation process takes place and to the ways in which these factors combine to influence the outputs and outcomes of the implementation process. In order to present a

coherent picture of the influence that each of these analytical variables exerts throughout the implementation process, the conclusion to this chapter will examine the significance of each variable as seen from the perspective of the inspectors that are charged with the implementation of IPC.

The character and resources of the implementing agency

The division of the specialist, national agency with responsibility for implementing IPC has long been associated with the application of a flexible, cooperative and compliance-based approach to implementation. Upon the inception of IPC, this approach was maintained despite challenges from other sections of the agency and brief experiments with alternative approaches. In putting this approach to implementation into practice, the expert inspectors within the agency commonly drew upon a range of resources. These related to their ability to:

- Understand and interpret the legislation in order to establish site-specific standards and to use discretionary powers as they did so.
- Ask questions that regulated firms were obliged to answer.
- Raise capacities for compliance and influence the costs of compliance by:
 - Collecting, analysing and transferring information on improvement options
 - Educating, enabling, persuading and empowering the environmental managers within firms.
- Demand that economically beneficial improvement options were exploited and apply win-win rhetoric in their interactions with the regulated firms.
- Grant or withhold flexibility relating to the times at which compliance should be achieved.
- Monitor and recognise breaches of compliance.
- Apply a 'responsive' range of informal and formal sanctions in response to non-compliance.
- Legitimise or de-legitimise sites in the eyes of stakeholders.

The nature of any resource inter-dependencies within the implementation process

Although the inspectors had access to a wide range of resources that they could draw upon in the implementation process, they also depended upon a range of resources that were held by the managers of the regulated firms. These included the managers' ability to choose whether or not to:

- Collectively ignore or resist the regulations, thereby forcing the regulator to take the initiative and to re-engage in cooperative relations in the implementation process in order to operationalise the regulations.
- Grant the regulatory agency ready access to the site-specific information that they needed to put the regulations into practice.
- Work willingly towards the compliance that the regulatory agency was obliged to promote.
- Raise the costs of implementation or threaten the reputation of the agency or its inspectors by launching appeals or by adopting strategies of non-cooperation.

The extent to which any resource inter-dependencies provide incentives for different forms of interaction within the implementation process

These resource inter-dependencies commonly generated incentives for the inspectors to cooperate with the managers of the regulated firms at various stages of the implementation process. These incentives took a number of forms:

- Cooperative approaches were perceived to be more effective and efficient, at least in the medium term, as they enabled regulators to engage in open dialogue with regulated firms and more particularly to:
 - gain access to the information held by the managers of the regulated firms;
 - raise awareness of legislation, build a commitment to compliance, change cultures, mobilise resources and raise capacities for compliance amongst regulated firms;
 - encourage, enable or oblige regulated firms to explore potential of new technologies and techniques, thereby promoting environmental improvement and securing compliance amongst regulated firms.
- It was also expected that alternative approaches would be less effective and that it would be difficult and costly to change.

The strategies that the implementing agency adopted in response to any such incentives

Given these resource inter-dependencies and the associated incentives for cooperation, the inspectors sought to promote cooperation in a number of ways. Their strategies in this respect included:

- Only offering certain resources to cooperative firms, particularly the information, expertise and flexibility that would help them to reduce the costs of compliance and raise the capacities for compliance.

- Undertaking detailed monitoring and subjecting firms to close scrutiny to enable uncooperative and/or non-compliant firms to be identified.
- Using a responsive approach to enforcement that informally sanctioned firms for minor breaches by withdrawing cooperative relations, whilst simultaneously offering to restore cooperative relations should the firms come back into compliance and threatening to impose formal sanctions should the firm that refuse to do so.

The extent to which different institutional structures constrain or enable these strategies

Although the inspectors appeared to be responsive to the incentives that they associated with a cooperative approach to implementation, these incentives both shaped and were shaped by a range of institutional factors. These factors related to the:

- Historical precedents that meant that a cooperative approach was well established, that change was seen to be difficult and that alternative approaches were portrayed as being more risky and less effective and efficient.
- Design of the legislation that established the potential for a flexible approach to implementation.
- Lack of complete preconditioning that obliged and enabled the implementing inspectors to exercise discretion in the implementation process.
- Presence of resources within the regulatory agency which allowed the implementation process to draw upon expert staff in frequent interactions with the managers of regulated firms.
- Presence of relatively trusting and open relationships between inspectors and the managers of regulated firms.
- Availability or potential for the creation of economically acceptable improvement options within the regulated firms.
- Presence of interested and influential stakeholders.

The influence that different forms of interaction have on regulatory outputs and outcomes

This approach to implementation shaped the practical nature of the demands that the inspectors made and the ways in which the firms responded to these demands. In particular, the approach:

- Gave regulated firms, particularly those that cooperated with the inspectors, some influence in the implementation process.

- Offered some flexibility relating both to the point at which sanctions would be applied as a response to cases of non-compliance and to the form that these sanctions would take.
- Encouraged or enabled the wider uptake of the technologies and techniques that enabled the regulated firms to comply with the requirements of the regulations.
- Commonly focused on those incremental and organisational changes that were expected to encounter diminishing returns in the longer term.

In summary then, this chapter has examined the perspectives that implementing inspectors have of the factors that shape the nature and influence of the IPC implementation process. Notably, it has found that the implementation process was influenced not only by the potential for inspectors to resort to the application of legal authority but also by their ability to promote compliance by drawing on a much wider range of resources. However, it has also found that the regulator did not control all of the resources that could be drawn upon to exert influence within the implementation process. As a result, the discussion has found that the implementation process was shaped by a range of resource inter-dependencies and that the inspectors adopted cooperative strategies in an attempt to overcome these interdependencies. Whilst recognising that the nature of the resource interdependencies and of the associated strategies were shaped by various institutional factors, the analysis suggested that such cooperation enabled the regulators to operationalise the regulations and to promote what they saw to be particularly effective and efficient forms of compliance. Before these findings are developed further and related back to the broader debate on regulation, the thesis will now consider the perspectives that the managers of the firms that are regulated by IPC have of the factors that shape the nature and influence of the implementation process.

CHAPTER 5

The Case of Integrated Pollution Control: The perspectives of the managers of the regulated sites

Structure

- Introduction

- The nature of the implementation process
 - *Multi-regulation*
 - *Awareness and understanding of IPC*
 - *Interpretation and standard setting*
 - *Interactive learning*
 - *Monitoring and enforcement*
 - *The influence of stakeholders*

- The influence of the implementation process
 - *On technological and organisational change*
 - *On internal resources*
 - *On economic networks*
 - *On environmental performance*
 - *On costs and benefits*

- Relating the empirical discussion to the analytical variables

Introduction

The discussion within this chapter considers the perspectives that the managers of those industrial facilities that are regulated by IPC have of the factors that shape the nature and influence of the implementation process. As in the previous chapter, this discussion is interested in the perspectives that these managers have of the influence of the range of analytical variables that arose from the

conceptual discussion that was presented in Chapters 1 and 2. To recap, these relate to the character and resources of the different actors, the nature of any resource inter-dependencies, the extent to which any such inter-dependencies generate incentives for different forms of interaction and the ways in which actors respond to these incentives by adopting different strategies within the implementation process. They also relate to the influence that different forms of interaction have on the demands that are made by regulators, and on the ways in which regulated firms respond to these demands.

Based upon the methodological approach that was set out in Chapter 3, the discussion within this chapter draws upon the results of interviews conducted in 1996 and 1997, with the managers of sixteen regulated facilities in different sectors but within the same region. A summary of the central characteristics of the facilities that were included in the study is presented in Table 5.1. Again, the number (i.e. [5]) at the end of each quotation relates to the corresponding row in this table.

The discussion that follows is again structured in a way that reflects the different stages of the implementation process. After assessing the significance of IPC in the context of the broader range of regulations affecting the facilities that are regulated by IPC, the discussion considers the processes of interaction associated with the interpretation of legislative principles, the setting of standards, the monitoring of performance, the enforcement of standards and the imposition of sanctions. The chapter then examines the perspectives that the managers of the regulated facilities have of the demands that are made by the regulators, and the ways in which the managers respond to these demands. Issues relating to the influence of the analytical variables emerge throughout the discussion, and are drawn together in the concluding section which presents a comprehensive overview of the influence that these variables have on the nature and influence of the IPC implementation process, as seen from the perspective of the managers of the regulated facilities.

The nature of the implementation process

- *Multi-regulation*

The managers interviewed explained that their industrial processes were the focus of various other forms of regulation; however, it was widely reported that IPC was the most significant and the most influential piece of regulation with which they had to comply. This was for two main reasons. Firstly, as IPC was designed to regulate emissions to air, water and land simultaneously, it

Table 5.1: Characteristics of IPC Regulated Sites

Site	Nature of regulated process	Size of site	Ownership of site	Management responsibility	Strength of culture of compliance	Nature of engagement with regulators	Access to internal financial resources	Access to internal managerial resources	Access to external resources	Predominant form of response
1	Speciality chemicals	Large	Group	Env	High	Positive	Med	High	Low	Integrated techniques and end-of-pipe
2	Bulk chemicals	Large	Group	Env	High	Positive	High	High	High	Integrated technologies and techniques
3	Materials processing	Large	Indep	Technical	High	Positive	High	High	Med	Integrated techniques and end-of-pipe
4	Energy generation	Large	Group	Env	High	Neutral	Med	High	Low	S-chain, integrated techniques and end-of-pipe
5	Materials processing	Large	Group	Env	Med	Neutral	Low	Low	Low	Integrated techniques and end-of-pipe
6	Materials processing	Med.	Group	Env	High	Positive	High	High	High	Integrated techniques and end-of-pipe
7	Textiles	Med	Group	HSE	High	Positive	Med	High	Med	S-chain and integrated technologies and techniques
8	Speciality chemicals	Med	Group	Compliance	High	Positive	Med	High	Med	Integrated technologies and techniques
9	Agro-chemicals	Med	Indep	Env	High	Positive	Med	Med	High	S-chain, integrated techniques and end-of-pipe
10	Energy generation	Med	Group	General	High	Positive	Low	Med	High	Integrated technologies and techniques
11	Dyes/colourings manufacturing	Med	Group	Technical	Med	Neutral	Med	Med	Low	S-chain and integrated technologies and techniques
12	Speciality chemicals	Med	Group	HSE	Med	Neutral	Med	Med	Low	Integrated technologies and techniques
13	Metal casting	Med	Group	Plant	Med	Neutral	Low	Low	High	S-chain and end-of-pipe
14	Textiles	Med	Indep	General	Low	Negative	Low	Low	Low	End-of-pipe
15	Agro-chemicals	Med	Indep	Compliance	Low	Negative	Low	Med	Low	Integrated technologies and end-of-pipe
16	Dyes/colourings manufacturing	Small	Indep	Site	Med	Neutral	Med	Med	Med	Integrated techniques and end-of-pipe

introduced a unified regulatory framework that was eventually delivered by a single regulatory agency. This unified approach raised the profile and the importance of IPC and made the relationship that the managers had with the regulatory agency much more significant. Secondly, the preventative emphasis of IPC meant that it encouraged the managers of regulated processes to focus on the factors affecting the environmental performance of the production process *as a whole*. In other words, IPC impacted on all of the management functions within the regulated sites. Again, this raised the profile and the influence of IPC:

IPC has been the first legislation where a regulator has come into the heart of the process and made attempts to understand it and to probe and ask questions... Also, IPC has impacted on all of the divisional managers for all of the process and so has had a far greater impact [7].

In addition, the managers suggested that the influence of IPC was exaggerated because many of its demands coincided with those established by other regulatory frameworks. This was particularly the case where the emphasis that IPC placed on reducing emissions at source better enabled regulated sites to comply with regulations relating to health and safety, or to the control of major accidents and hazards. In short, compliance with the requirements of IPC increased the capacity for compliance with other forms of regulation. Consequently, IPC was commonly seen as a significant regulatory framework and compliance with the demands of IPC was consistently awarded a high priority.

- *Awareness and understanding of IPC*

All of the managers of the regulated sites that were interviewed confirmed that they and their company had been highly aware of the presence, principles and possible implications of IPC since its inception in 1990. They also felt familiar with some of its central aspects, as it was based upon similar regulatory principles to the preceding regulations, and in its early stages it was implemented by the same regulatory agency. This continuity meant that the managers of the regulated sites were more familiar with the general principles and procedures of IPC than might have been the case had the regulations demanded a radical departure from existing regulatory structures or from established ways of thinking and acting.

Nonetheless, in the period between the adoption of IPC in 1990 and the dates by which particular sites had to reach compliance, considerable discussion and debate took place as regulated firms

sought to clarify the general principles and the likely implications of the new legislation. All of the managers acknowledged that the lead-in time associated with this schedule for implementation gave them the time to familiarise themselves with the regulations, and to begin to think through the implications for their particular process. However, the managers of the regulated sites only began to be aware of the specific implications of IPC when the process guidance notes were published. This guidance was seen to be very significant therefore:

Once the guidance came out we quickly realised that the EPA would be the most significant bit of legislation for us. And we were right – it has been the one thing that virtually all of our sites have had to take seriously.... There is a much greater awareness of environmental matters now [1].

From the early stages of the legislation, then, the managers interviewed began to recognise that IPC might eventually place significant demands on the nature and the performance of their industrial processes. However, most of the managers stressed that even with the publication of sector-specific guidance notes, they continued to be very uncertain about the specific demands that IPC would place on their particular site.

- *Interpretation and standard setting*

Uncertainty about the specific implications of IPC stemmed from the realisation that these depended upon the way that the two qualitative principles that are at the heart of the regulations (BATNEEC and BPEO) were interpreted and applied. In this regard, it was generally felt that the guidance that had been issued to assist in the managers' interpretation of these generic principles was not particularly helpful, not least because many processes were so specialist that they required tailor-made rather than off-the-peg solutions.

Aside from being too generic, some of the managers interviewed felt that the guidance was also too static, and failed to reflect the rapidly evolving nature of the technologies and techniques that might be adopted within the different sectors. Indeed, industry was not alone in thinking this:

In discussions that I have had with the regulator they think that the technology has moved on since the guidance notes were written. They always say that the guidance notes are already out of date... [8].

Given the perceived lack of specifically relevant and suitably up-to-date guidance, the managers were dependent for assistance upon their interactions with the regulator. However, in the early stages of IPC, the managers recognised that the regulator had attempted to adopt a rather formal and 'arms-length' approach to implementation. As a result, in many instances the managers were left to build their own understanding of the specific requirements of the regulations, without any meaningful guidance from central government or any substantial help from the regulator. This approach introduced a considerable amount of frustration, which in turn led to some resistance to the regulations and to a widespread inability to comply with them. However, just as the sites required information and advice from the regulator, so the regulator required information and acceptance, or at least an absence of collective resistance, from the regulated sites. Consequently, a cooperative relationship quickly re-emerged between the managers of the regulated sites and the inspectors in the regulatory agency. This was welcomed by the managers of the regulated firms:

Our inspector, when he first came here, he was rather 'I am the regulator and you are a regulated company and you have got to abide by the rules'. When he did that, I thought well, yes I can see that you should police industry to some extent but I also think that you've got to work with industry to prove the usefulness of the regulations... He's changed now - he comes in now and we are all on first name terms and it is quite a good relationship. I think things have changed for the better - we're willing to work with him now and we accept what we've got to do [2].

By engaging with the cooperative approach to implementation that eventually emerged, the managers were able to work with the inspectors to interpret the regulations and to enhance their understanding of the specific requirements that IPC would have for their particular process. To this extent, cooperation in the implementation process reduced the initial uncertainty that was associated with IPC. However, within these cooperative interactions, it was generally felt that the central principles of IPC were interpreted on the basis of subjective and informal judgements made by the inspectors:

It would be good to know how the pollution inspectors have determined BATNEEC. I think the answer would probably be that they didn't do it formally. They just had opinions with no particularly structured approach... I think that is the problem with BATNEEC - it gets very subjective... you have to weigh things up and come up with an opinion and see if the inspectors agree [12].

While there were some concerns about the consistency of the approach to implementation and the predictability of the outcome, somewhat paradoxically the perception that the standard setting process was reasonably flexible was generally welcomed:

Our inspector always comes up with a number of innovative technologies which he would expect you to have researched and looked into... Obviously with the regulator's legendary inconsistency other inspectors may have a different approach. But we're quite happy with ours, he's understood and accepted our position and has steered us towards some very useful areas without being too rigid [16].

Aside from allowing inspectors to encourage managers to investigate the strengths and weaknesses of different technologies and techniques, flexibility in the implementation process also enabled the managers of some sites to gain some leverage in the interpretation and standard setting process. In essence, the need to cooperate ensured that the regulators had to listen to the views of the managers of the regulated sites and to take these views into account in the interpretation and standard setting process. Some of the managers of the smaller and more independent sites felt that this was particularly the case if there was a perception that the demands imposed by the regulator would threaten the economic viability of the regulated process:

Two or three years ago the inspectors for this area came to see us and were a bit heavy handed. Both myself and my colleague sat there and said well look if that is the recommendation, then this process becomes non-viable and we would have to stop making the product for the customer and rationalise our work force and business completely... They said well hang on, we are not in the business of putting people out of business... They definitely seemed to back off at that point, as though there was scope in their brief to do that [8].

Thus, particularly where the sites claimed that they were operating at the margins of economic viability, the flexibility of the implementation process ensured that standards could be adjusted by the regulator to accommodate some of the concerns of the regulated actors.

The flexibility that was offered by the regulator was seen to relate to the timing rather than the level of the demands established by the implementation process as when granted it gave the regulated sites more time to explore the potential of the various ways in which they might work towards compliance. Furthermore, by awarding a degree of flexibility, the regulators allowed the sites to

synchronise their response to IPC with any other investment programmes. The managers interviewed suggested that this significantly increased the influence of the regulations as it allowed concerns about environmental performance to be incorporated into the mainstream of business decision-making. Thus, although such flexibility may have reduced the imperatives for immediate action, for example by relaxing the deadlines for changes to be made or standards to be achieved, according to the managers interviewed flexibility in the implementation process enhanced the efficacy of the regulations in the medium term. It was also seen to have enhanced the efficiency of the regulations as it enabled the regulated sites to explore the potential of cleaner technologies and techniques, thereby reducing the need for significant investments in end-of-pipe technologies. Amongst the managers interviewed, this overlap between the environmental and economic concerns commonly formed the basis of their cooperation with the regulators and their commitment to compliance with the demands of IPC.

- *Interactive learning*

Many of the managers interviewed stated that initially they had been reluctant to engage with IPC too fully because of concerns about the costs of compliance. However, they also suggested that these concerns had decreased over time as they had accepted the regulations and established positive working relationships with the regulator. These relationships were based not only on the need to interpret and apply the requirements of the legislation; they were also centrally concerned with the search for and adoption of those forms of compliance that were both effective, in that they realised improvements in environmental performance or reductions in environmental risk, and efficient, in that they minimised the costs of compliance. While it would be too simplistic to suggest that regulators were solely concerned with the efficacy of regulation and the regulated sites with the costs of compliance, the search for responses to IPC that satisfied their mutual concerns about the efficacy and efficiency of the response to IPC helped to ensure that a cooperative relationship between inspectors and the managers of regulated processes emerged and was maintained.

Within these generally cooperative relationships, the managers of the sites interviewed suggested that they had often benefited from the information and expertise of the regulatory inspector. Indeed, some of the managers interviewed suggested that they were prepared to do more to improve their environmental performance if they were given more assistance:

Our relationship with the environmental regulators is a bureaucratic burden but it also stimulates us to think about the way we do things... We welcome the help they give us but

sometimes there could be more feedback from them to guide companies like ourselves... we are quite prepared to go further along those paths if helped a little bit more [9].

One of the main reasons that the managers of the regulated sites valued their relationship with the regulator was because it gave them indirect access to information on the technologies being adopted by other firms and on the levels of performance that they were achieving. In this sense, the managers commonly suggested that their inspector acted as an agent of exchange by transferring information on best (or at least good) practice between regulated firms:

They have gone to another company that operates a similar technology and have said 'how did you get on' and then they benchmark and use the information elsewhere... That is a major benefit of the regulators with IPC - they distribute best practice between the regulated sites [6].

However, despite the benefits that were potentially available, the managers interviewed consistently suggested that a range of factors had to be present if their relationships with the regulator were to be productive. First among these was the issue of the expertise that was available to the regulatory agency. Every manager interviewed argued that they could only have meaningful exchanges with inspectors if those inspectors had the experience and expertise that was needed to enable them to understand and talk about the complexity of the process that they were regulating and the technical feasibility of the various improvement options. Coupled with the issue of access to appropriate forms and levels of expertise were concerns relating to the frequency and the continuity of interaction between regulatory inspectors and the managers of the regulated sites. By having a close and cooperative day-to-day relationship with a relatively expert inspector, the managers interviewed felt that they were more able to build a common understanding, maintain a mutual orientation and to regularly exchange information and understanding on their process and on the nature of the changes that they were making in response to IPC:

We've known him for a while now. He visits on average probably once a month and I may speak to him two or three times a week on the telephone to talk through various things. I think there have been a lot of benefits from having a close relationship with site inspectors who understand the processes... If that style of regulation is maintained that will be fine and it will bring continued improvements. But if you get a regulator that comes in that isn't going to understand the heart of the process and has a tick box of questions and standards that will be met I think we are going to be in a lot more trouble [2].

The importance of frequent contact with the regulator was seen to be particularly important when cleaner technologies and techniques were being adopted. As these involved detailed investigations followed by a series of relatively small, incremental changes to existing processes, regular transfers of information and understanding were seen by the managers interviewed to be very important. They also enabled the regulator to influence the entire decision-making process and to shape the detailed nature of the changes that were being made.

As stated above, the presence of such a close, cooperative working relationship allowed a common understanding and a mutual orientation to develop between the regulators and the managers of regulated processes. Over time it also allowed a degree of trust to emerge that reassured the managers and made them more willing to supply information to the regulator and to be open to suggestions about options for further improvements in their environmental performance:

With IPC and BATNEEC you have to make a judgement on what it means and the judgement comes down to trust. If you have got trust then it can be a mutual judgment, if there is no trust then the regulator has to rely on the big stick. To get the best out of it is relatively complex but it needs open communication and a trusting relationship but I can see that the regulator does need to be able to fall back on the big stick sometimes [3].

Although all of the managers interviewed had at times appreciated the influence of the expertise, time and trust that underpinned their cooperative relationship with the regulator, they were also very aware that such an approach was under threat because it placed great demands on the scarce resources of the regulatory agency. As most of the managers interviewed had the perception that individual inspectors shared their view that such an intensive approach to implementation was beneficial to both parties, they tended to sympathise with the inspectors about the resource pressures that were placed upon the regulatory agency. However, they also realised that resource shortages increased the extent to which the regulatory agency depended upon their cooperation.

- *Monitoring and enforcement*

While cooperation clearly played an important role in the implementation process, the managers interviewed suggested that the monitoring requirements associated with IPC established the potential for cases of non-compliance to be detected and for sanctions to be imposed. Indeed, most of the managers interviewed suggested that in the early stages of IPC they had been required to

invest quite heavily in monitoring technologies. Thereafter they were required to establish monitoring programmes and to submit reports at regular intervals to the regulator. The scope and the content of these reports were subjected to close scrutiny by the regulator and that the integrity of the data that was included within them was assessed in the compliance audits that were regularly conducted by the inspectors. Thus, when coupled with the frequent contact that they had with well-informed inspectors, the managers recognised that any breaches of compliance could be readily detected.

Although the monitoring requirements that were associated with IPC were quite demanding, the subsequent enforcement activities were seen to be much more flexible. Other than for serious incidents with significant environmental consequences, the inspectors were generally seen to be flexible and accommodating in the first instance, as long as they were convinced that the managers of the site had both the commitment and the capacity to work towards compliance. Thus, the common perception was that, as long as the inspectors trusted the managers, occasional breaches of compliance that did not have serious consequences would not lead to the imposition of either informal or formal sanctions. Where there were more regular cases of non-compliance however the managers felt that the regulator would begin to impose informal sanctions by adopting a less cooperative regulatory style. In serious or sustained cases of non-compliance, they fully expected formal sanctions to be applied. As the managers valued their cooperative and trusting relationship with the inspectors, compliance was driven as much by the desire to maintain good relations with the regulator as it was by the fear of sanctions.

- *The influence of stakeholders on the implementation process*

While compliance was enabled by the cooperative approach adopted by the regulator and ensured by the regulators ability to detect and respond to cases of non-compliance, it was also driven by the pressure placed on the regulated sites by their stakeholders. This was a particular pressure because the processes that were regulated by IPC tended to be major industrial operations that were often highly visible and that were generally subjected to pressure from a wide range of stakeholders. The pressure on these sites from stakeholders had been growing in recent years as access to information on their environmental performance had become both more readily available through developments such as the introduction of public registers and the publication of corporate environmental reports and more widely publicised in the media. However, the regulations themselves were still seen to be more significant:

Because of the location, we are in the middle of a residential area, we have quite a close relationship with a lot of the local people. We run a community liaison group which meets regularly, we have a community news letter, we have open days that type of thing. They are quite vocal and we take them seriously, we have to really, but I think you would still have to say the regulators are more influential [3].

Significantly, the stakeholders that exerted pressure were not only external to the regulated firm. Indeed, in many instances the boundaries between the firm and its external stakeholders were not at all clear:

One of the major pressures on our directors is their own children asking them questions about the environment. Also, when we actually decided to stop fighting the greens and accept the precautionary approach there was no question about it that everybody who worked here felt much more comfortable because of the fact that they no longer had to make excuses to either their mates in the pub or their kids or whatever... Another side of it is that effectively we have convinced the local press, although that sounds over the top. They realise that we are genuine about what we do and in fact we are no longer the evil people we were then [5].

Because of the influence of these external and internal stakeholders, many of the managers interviewed felt that they had to be seen to be complying with all of the relevant health, safety and environmental regulations if the legitimacy of their operations was not to be challenged and if their reputation was to remain intact. In essence then it appeared that the broader mode of social regulation underpinned and reinforced the demands of government regulation and strengthened the role of the regulator in the implementation process as they had the power to legitimise or to de-legitimise the operations of industrial sites.

The Influence of the Implementation Process

- Technological and organisational changes

In the early stages of IPC, most of the managers interviewed suggested that, in the absence of external influences, they would have responded to IPC in the most expedient way by adopting end-of-pipe technologies. For some facilities, these end-of-pipe responses were seen to be the only way

in which their environmental performance could be improved. However, the inspectors delivering the regulations had emphasised the need to explore the potential of more integrated and anticipatory approaches. At the same time, the managers of the regulated sites had taken part in, or had at least been exposed to, wider debates about the potential benefits of initiatives which sought to improve process efficiency and to promote waste minimisation. Collectively, their interactions with regulators and their exposure to these debates had raised their awareness of, and their confidence in, more integrated approaches to emissions reduction. As a result, they had become more willing to accept that where possible it might be better to anticipate and avoid emissions at source than to capture and treat them reactively by investing in end-of-pipe technologies.

However, the managers of the regulated sites also recognised that such approaches would demand significant and sustained inputs of management time and that they would generate delayed and uncertain improvements in environmental performance. Flexibility and support from the regulator, as well as access to managerial resources, were therefore seen to be critical if more integrated approaches were to be adopted:

We have deliberately moved away from end-of-pipe whenever we can... We very deliberately and very publicly took the approach that that wasn't the answer and instead we would go back to the source of the problem and do waste minimisation and we got full backing for that from the inspector. It means unfortunately that you do not have overnight successes... Whereas for an end-of-pipe you might have sunk you money into one project, when you are talking about waste reduction and waste elimination at source you may have 30 or 40 different projects which all require thinking through or require technical problems to be sorted out and require money to some extent or another. So it takes more time and effort to sort those out, and obviously during that time you are not getting the apparently spectacular results that an end-of-pipe treatment unit would have. But it is something that we feel we can do, especially with the help of the regulator [3].

Where the regulated sites had adopted such integrated approaches, they tended to be of an organisational or a low-tech nature. Consequently, the managers interviewed felt that the changes that they had made as a response to IPC were not particularly innovative. However, the large-number of small changes that they made as a response to IPC commonly required a considerable degree of experimentation that improved the performance of existing technologies, sometimes quite dramatically. Their response to IPC therefore depended upon a process of organisational learning which, over time, incrementally improved the performance of existing technologies.

Because they tended to depend upon changes in the way that existing processes were organised, responses to IPC could not easily be bought 'off-the-shelf' from external suppliers. Instead, they had to be developed on a site-by-site basis, often over extended periods of time. Such approaches placed significant demands on the managerial resources of the regulated sites. For some, these demands represented a considerable barrier to improvement. However, the pressure for compliance, coupled with the influence that the interactions between the regulator and the managers of the regulated sites had on their capacity to change and the flexibility that was offered by the regulator, both encouraged and enabled the sites to overcome these short-term barriers. Where they had been overcome, many of the managers claimed that they had led to significant economic returns. These stemmed both from the improvements in the efficiency of the regulated process itself and from the development of techniques which could be used to improve the performance of other non-regulated processes:

After talking a lot with the inspector, we soon realised that we weren't doing things correctly... there were better ways of doing it. So we changed the working practice to come in line with the requirements of the environmental legislation and we made significant savings. And then we realised that if we looked at other processes and other methods we may be able to come up with similar sorts of savings. We have gone a long way down that path – and we've some distance still to go before it stops being worth it [11].

Some of the managers interviewed claimed that the benefits of such incremental improvements had become harder to secure over time. However, they also claimed that their capacity to explore further opportunities had increased over time. The costs and benefits of approaches to compliance which were based on incremental change therefore depended both on the presence of opportunities for change that were both technically and economically viable and on the availability of managerial capacities to exploit such opportunities.

While incremental improvements to existing process technologies represented the most common form of response to IPC, in some instances IPC had been associated with more radical forms of technological change. This was particularly the case either where the regulations required operators to undertake more major changes to their existing process, as was the case where old processes were required to work towards new plant standards, or where the operators themselves sought authorisations for new or significantly altered processes. Although such changes were relatively unusual, the managers interviewed suggested that where they did take place the regulator had

increasingly sought to influence the search process as it related to the identification and evaluation of the alternative technologies that might be adopted. While no particular technologies were prescribed, managers were required to investigate various technological options and to justify their selection on environmental as well as economic grounds. In this way, IPC extended its influence dramatically as during periods of significant change it helped to shape the fundamental nature of the technologies that were adopted in the regulated processes as well as the ways in which these technologies were organised and applied. Thus, the sustained periods during which relatively stable technologies were incrementally improved through organisational learning were occasionally punctuated by moments of more fundamental technological change.

- *Demands on internal resources*

In seeking to respond to the combination of imperatives, incentives and stakeholder pressures that they typically encountered, the regulated sites commonly drew upon a range of internal and external resources. Internally, all of the managers suggested that the resources that were available to facilitate a response to IPC were limited. However, factors restricting access to human resources were generally seen to be more significant than those which limited access to financial capital. This was particularly the case in those sites that saw the environment in general, and compliance in particular, not as a purely competitive issue but more as a precondition for doing business. In such sites, it was often relatively easy for environmental initiatives to secure investment resources:

Generally capital expenditure has a necessary return on the capital employed so it is ones with the shortest returns on capital that get approved. However, if there is a health and safety or environmental aspect to any project which is being put up for consideration, it will be resourced, even with a longer return on capital, simply because we recognise the importance of these issues. If it is a regulatory requirement we will invest in it - there is no question about it [6].

Although this was the perception of the majority of the managers interviewed, in some of the smaller and more independent sites limited access to investment resources was seen to be a more pressing concern. However, rather than failing to respond to the demands of IPC, these sites had been forced to become more innovative in the way that they sought to secure compliance:

If we had the resources it would be done straight away. But as we don't, we really have to think about it. It's got to actually pay us to do it really. But we have found that we can find

ways of doing things that actually pay dividends... The relative shortage of investment resources forces you to be more innovative... [15].

While ease of access to financial resources varied from site to site, all of the managers interviewed suggested that they had reduced the need for such resources by exploiting the potential of organisational and low-tech changes. While such changes still required an investment of time, the cost of responding to IPC in this way could often be accommodated within the existing staffing budgets of the firm. Although it was commonly the responsibility of the environmental manager to interact with the regulator and to coordinate the site's response to IPC, responsibility for working towards compliance tended to be spread more broadly within the site:

Everyone here is encouraged to take responsibility for their bit. We have regular briefing sessions, once a month, when all the staff get together in their groups. All the business heads and team leaders encourage people to develop their role within the company. It doesn't matter whether they are a floor sweeper or an engineer... With this approach there is absolutely no barrier apart from finance... but even here if it is an environmental issue which is vital to the operation of this site then we will find cash for it [4].

Given the need to coordinate and control activities at different levels and in different departments, all of the larger sites and most of the medium-sized and smaller sites had adopted a formalised environmental management system (EMS). These EMSs were seen to be a central factor enabling an integrated response to IPC that depended upon change taking place throughout the regulated site. As such, although they had taken a lot of time and effort to develop, EMSs were seen both to have enabled compliance and to have reduced the costs of compliance:

EMSs are one of those things that IPC doesn't make absolutely necessary but ours certainly helps us to comply. Where the procedures of four or five years ago weren't laid down, things were made, things got out through the door just the same but if you had a problem you were guessing. Now we have a carefully laid down procedure for everything we do and it is easy to see where you went wrong. Until IPC, the legislation wasn't there to do the things that they now require so obviously sometimes they were over looked. I'm sure that was the case with most companies. But now as a positive step, but also through necessity guided by the regulator, we have had to register processes that come under the IPC umbrella. Because of that we have to register every process in the place, every piece of equipment, and then address all the environmental problems as a result. This has been so

much easier with an EMS. It has lots of benefits which become self-perpetuating. We can now say well we've looked at that, we've done that, we've achieved that and we've saved money on that so why can't we go on to do something else or even to do the same things somewhere else... [3].

In contrast, the managers interviewed from the smaller sites suggested that they were reluctant to adopt such systems. They argued that the adoption of formalised and fully documented management systems would introduce a bureaucratic burden that might restrict their ability to maintain flexibility and responsiveness. They also argued that formalised management systems were not necessary given the opportunities for closer cooperation and more regular interaction between the smaller number of actors that existed on the site.

Thus, the response of the regulated sites to IPC was influenced by a range of internal factors. These related to the ease of access to financial capital, the availability of managerial resources, the presence of formal management systems that enabled monitoring, coordination and control and the occurrence of informal interactions which enabled information and understanding to be developed and diffused. However, while these internal factors and interactions were clearly influential, the managers interviewed suggested that their response to IPC had also been affected by the nature of their relationships with other actors outside of the site.

- Impacts on economic networks

To complement the information and understanding that was available within the regulated sites, many of the managers interviewed suggested that they had sought to gain access to the information held by a range of other actors. Although a considerable amount of generic information was widely available as it was publicised by technology suppliers and discussed in the trade press, the managers needed access to forms of information and understanding that were more reliable and more relevant to their particular process.

In seeking to gain access to such information, the managers of those regulated sites that were part of a larger group initially sought to draw upon the information and expertise that was present in the other sites within the same group. Such intra-firm linkages were particularly influential where they enabled information and understanding to come directly from the managers of similar sites that had already learnt to comply with similar regulatory demands. Information of this nature was often perceived to be reliable, relevant and readily applicable in the particular process:

One of our sites has been going through the mill with the regulations recently while another has already done the work... Because they've already done it, they are now giving presentations to representatives of all of the other sites in the hope that we can pass on some of their knowledge. Although some people are sceptical about whether it is really worthwhile expending so much time on it, everyone that has actually done these projects has said that it's worth the resource and that it's worth spending a bit of money because it does pay back. That helps me because I want to get that message across to all the divisions. Some of them say we are good enough as it is but because I know what the other sites are achieving I am sure that they are not [5].

In the absence of such extensive intra-firm linkages, the managers of the independent sites depended more upon any information that they were able to access through external or inter-firm linkages. These included links with technology suppliers, where at times there were mutual benefits from cooperation:

We were very fortunate in that the company that built the machine originally offered to get involved free of charge and so gave us two chaps that helped us. One was an engineer, one a chemist and both were more qualified than I am to put an authorisation together and to demonstrate compliance. So they basically did it for us. Without them it would have probably cost us a great deal of money and time. They put a great amount of effort in – I think it took them about 18 months to do it. But it was in their own interest as well because they have machines in other countries. It was a good idea for them to get involved and to know what we had done so they could apply it to any machine on the continent, because their other customers are going to have the same problems with regulation that we have [15].

While cooperation between actors with access to complementary resources might be expected, cooperation between firms who are normally competitors might seem less likely. However, the managers interviewed commonly stated that they did not see the environment as a competitive issue and that as a result they had exchanged information on the performance of different ways of securing compliance with their competitors. Again they suggested that these transfers of information had been to the mutual benefit of each party:

There has been a lot of co-operation with the supplier of new technologies but also with

other companies... One of our main competitors has had very similar problems to us and we've done a lot of benchmarking with them. We've also exchanged information with other industries with similar processes... We've done this because there are people on site, our own people, who are sitting down and scratching their heads and wondering what to do about the regulations. Because they have been quite ready to go out and talk to these third parties we've been more able to solve the problems. The same must be true for the other firms. I would imagine there are things we would hold as confidential but we are quite open generally, especially when it comes to environment as we believe it's the right thing to do. So when we're thinking about how to comply there's a mixture of internal, group and external communication, as well as our discussions with the regulator of course [1].

These cooperative interactions, which tended to be of a very informal and *ad hoc* nature, normally took place between competitors operating within the same industry. However, they were much more common either where links between relevant actors already existed or where *fora* such as trade associations or green business clubs had been established specifically to engender such exchanges of information.

Despite these possibilities, the managers of some of the smaller and more independent sites found the opportunities for such interactions more limited. In part this was because they were often responsible for a wider range of functions and were therefore less able to participate in specialist meetings. However, it was also because they tended to be less engaged in the networks that would grant them access to the experience that had accumulated in other companies that had faced similar problems:

We are going in our own direction trying to do what we can do. Other companies must be in the same boat but we don't seem to get together to work out where we all are, where we're up to and whether we might be able to help each other out as I am sure we should be able to do... I don't see why there should be anything confidential about the techniques involved in environmental matters. But we never seem to get together really – the opportunities just don't arise [12].

Nonetheless, some sites had participated in schemes that had been initiated by central and local government, trade associations and business support organisations. In several instances, these organisations had sought to create networks to enable cooperation and to provide information, understanding and technical assistance to raise the capacity of firms to improve their environmental

performance in economically efficient ways. This was particularly apparent in the field of waste minimisation where a variety of demonstration projects had been organised. The information that had been made available as a consequence of these projects also had an impact on non-participating sites, particularly by helping to convince them that some forms of environmental improvement might be economically beneficial. However, there was a common perception that such initiatives could not work without external support and without the sustained focus on improvement that came from being a member of a club or network. Thus, it was the regulator that drove the uptake of such schemes in many instances.

- *Impacts on environmental performance*

All of the managers interviewed suggested that IPC had exerted a significant influence on the factors that shaped their environmental performance. As has been discussed, the regulations obliged them to conduct baseline reviews and assessments of their environmental impacts and risks and to adopt extensive monitoring programmes. The information generated as a result raised their awareness and increased their understanding of both the causes and consequences of their environmental impacts. Their interactions with the regulator also raised their awareness of the different ways in which their performance might be enhanced. Particularly through the process of interactive learning associated with the implementation process, the managers felt that their commitment to environmental improvement and their capacity for change increased significantly as a consequence of IPC.

By tracing the root causes of their impacts and risks and attempting to address the issues at source, the managers suggested that IPC had commonly ensured that, wherever possible, their emissions were prevented and minimised rather than being reactively captured. However, in those instances where prevention was not possible, IPC had obliged companies to make significant investments in end-of-pipe pollution control technologies. Furthermore, where emissions streams could not be avoided entirely, IPC obliged the companies to channel any remaining emissions towards the Best Practicable Environmental Option (BPEO - i.e. air, water or land). Thus, rather than using the cheapest or most convenient disposal option, the regulated companies were obliged to examine the alternatives and to select the disposal route with the lowest environmental burden. Thus, as well as associating IPC with reductions in the quantity of emissions, the managers also felt that the impact of their residual emissions had been reduced.

- *On costs and benefits*

As has been stated, at the time of the interviews, there was a clear feeling amongst the managers of the regulated firms that compliance could often be secured through incremental improvements in process efficiency. Consequently, moves towards compliance were often associated with economic benefits, except in those instances where regulated sites were obliged to invest in costly end-of-pipe technologies. Consequently, the managers interviewed commonly suggested that compliance had been incorporated into the core values of many of the regulated sites both because of internal and external pressures and because of the belief that compliance made good business sense:

Regulation was the kick-start for our environmental management programmes really... To be fair when we started out the whole object was to comply with the legislation but as it turned out that has almost become secondary because we gained so much from it... We have saved a lot of money from environmental measures. In fact very few of the environmental measures we have put in, apart from our big investment in [end-of-pipe technology] have cost us money. The pay back period has been remarkable with things we have done paying back in way under a year, some have cost us nothing and we have saved thousands of pounds. The staff have got little projects going all over the site now... All these little things have suddenly mushroomed. Also, if we don't comply there is potentially a big financial penalty and we will have the locals as well as Greenpeace and Friends of the Earth bearing down on us very heavily. We are going to going to get bad press and the share price will drop. So there is no doubt that there is a big financial incentive to comply both in terms of the potential gains and the risk of lost value of company [4].

Thus, at the time of the interviews, all of the managers interviewed suggested that there was a commitment to compliance and in many instances a desire to move beyond compliance. However, over half of the managers interviewed also suggested that their commitment to compliance would be undermined if they were continually asked to meet higher and higher standards. This view was based on the expectation that their attempts to secure improvements in environmental performance through incremental change would eventually encounter diminishing marginal returns and therefore that the costs of compliance would escalate. Consequently, the managers suggested that the cooperative relationship that had emerged between themselves and the inspectors in the implementation process would at some point be threatened. In anticipation of this, the managers interviewed suggested that they would adopt less cooperative approaches if the costs of compliance became unacceptable:

At the moment it isn't too much of a problem for us but if we start being regulated too closely and we feel that isn't being done in the same way for everyone we will say we aren't going to cooperate and they can try and take us to court [12].

Thus, it appears that the strong cultures of compliance that were commonly reported by the managers interviewed were based upon a coincidence between a range of different factors including external and internal stakeholder pressure, the desire to maintain cooperative relations with the regulator and the presence of economically acceptable opportunities for compliance. While such a coincidence was common at the time of the interviews, many of the managers interviewed suggested that it may only be a temporary phenomena as they expected the costs of compliance to escalate as the opportunities for further environmental improvement to become less readily available. At such a time, the managers interviewed suggested that cooperation and consensus in the implementation process may be replaced with contestation and conflict.

Relating the Empirical Discussion to the Analytical Variables

To complement the analysis presented in the previous chapter, the discussion in this chapter has examined the perspectives that the managers of the regulated facilities have of the factors that shape the nature and influence of the IPC implementation process. Within the discussion, recurrent reference has been made to the influence of the central analytical variables. To facilitate a fuller conceptual and comparative analysis, this chapter will conclude by examining the influence of each variable in turn.

The character and resources of the regulated firms

IPC affects a diverse range of complex industrial facilities with potentially significant environmental impacts. Despite some variations in the character of the regulated facilities, there was a considerable degree of consistency relating to the ways in which the managers engaged with and responded to the implementation process. Because of its integrated nature and its preventative orientation, the managers of the regulated facilities consistently saw it as a significant piece of legislation with which they would have to comply. Despite some early resistance to the regulations because of the legalistic and arms-length approach adopted by the regulator, when a more cooperative approach was restored the managers generally engaged

with the implementation process positively. In seeking to gain influence within this approach to implementation, the managers of the regulated facilities commonly drew upon a wide range of resources. These related to their ability to choose whether or not to:

- Grant the regulatory agency ready access to the site-specific information that it needed to put the regulations into practice.
- Invest managerial and financial resources and develop the commitment, capacities and cultures needed to work towards compliance.
- Explore the potential of the new technologies and techniques that would enable them to secure the compliance that the regulatory agency sought to promote.
- Raise the costs or threaten the reputation of the agency and its inspectors by launching appeals, by adopting strategies of non-cooperation or by entering into collective resistance.

The nature of any resource inter-dependencies within the implementation process

Although the firms could draw upon a variety of resources as they sought to shape the approach to implementation adopted by the regulatory agency, they also depended upon the ability of the regulators to:

- Interpret the regulations and establish site-specific standards and to apply their discretionary powers sympathetically as they did so.
- Help to raise their capacities for compliance and to reduce the costs of compliance by offering:
 - information and understanding on the potential of new technologies and techniques
 - the flexibility needed to explore the potential of new technologies and techniques before investing in end-of-pipe technologies and to synchronise their responses to regulations with other investment programmes
- Maintain their cooperative and flexible approach rather than resorting to a more prescriptive or sanctions-based approach.
- Legitimise or de-legitimise their facilities in the eyes of the stakeholders.

The extent to which any resource inter-dependencies provide incentives for different forms of interaction within the implementation process

As a response to these inter-dependencies, the managers commonly perceived that there was a range of incentives associated with cooperative approaches to implementation. In particular,

they suggested that cooperating with the regulator enabled them to:

- Gain access to some useful and reliable forms of information and expertise.
- Put their views and concerns to the inspectors in an attempt to influence the ways in which they interpreted the regulations and exercised their discretion.
- Be awarded an amount of freedom to work towards compliance in ways and at times that reduced the costs of compliance.
- Gain some degree of flexibility relating to the times at which particular standards had to be achieved.
- Gain some insulation from the immediate imposition of formal sanctions in some of the less serious or sustained breaches of compliance.

The strategies that the regulated firms in response to any such incentives

Given these resource inter-dependencies and the associated incentives for cooperation, the managers of the regulated facilities engaged with the implementation process and responded to the regulators in a number of ways. Their strategies in this respect included:

- Willingly giving the regulator access to information and listening to the advice or responding to the requests made by the inspectors.
- Showing a commitment to compliance by investing in environmental improvement.
- Developing their capacities for compliance and seeking to overcome the barriers to change.
- Exploring the potential of new technologies and techniques which delivered the improvements in environmental performance that the regulations sought to promote.
- Supporting the approach adopted by the agency and being sympathetic to their resource constraints.
- Promising to do more if given more assistance
- Threatening to resist the regulations if the regulator adopted an uncooperative approach or if the costs of compliance ever became unacceptable.

The extent to which different institutional structures shape and are shaped by these incentives and constrain or enable these strategies

Although the managers appeared to be responsive to the incentives that they associated with a cooperative approach to implementation, these incentives both shaped and were shaped by a range of institutional factors. These factors related to the:

- Historical precedents that meant that a cooperative approach was well established, that change was difficult and that alternative approaches were portrayed as being more risky and less effective and efficient.
- Design of the legislation that established the potential for a flexible approach to implementation.
- Lack of complete preconditioning that obliged and enabled the implementing inspectors to exercise discretion in the implementation process.
- Presence of resources within the regulatory agency which allowed the implementation process to draw upon expert staff in frequent interactions with managers of regulated firms.
- Presence of relatively trusting and open relationships between inspectors and the managers of regulated firms.
- Ability of the firms to gain access to resources through intra-firm and inter-firm networks.
- Availability or potential for the creation of economically acceptable improvement options within the regulated firms.
- Presence of interested and influential stakeholders.

The influence that different forms of interaction have on regulatory outputs and on regulatory outcomes

This approach to implementation shaped the practical nature of the demands that the inspectors made and the ways in which the managers of the regulated firms responded to these demands.

In particular, the approach:

- Gave regulated firms, particularly those that cooperated with the inspectors, some influence in the implementation process.
- Enabled the managers to gain some flexibility relating to the point at which sanctions would be applied as a response to cases of non-compliance and to the form that these sanctions would take.
- Secured investments of financial and managerial resources and built some commitments to and capacities for compliance.

- Enabled a shift away from end-of-pipe responses and encouraged the wider uptake of the integrated technologies and techniques that were associated with improvements in environmental performance and with reductions in the costs of compliance.
- Commonly focused on those incremental and organisational changes that were productive in the short to medium term but that were expected to encounter diminishing returns in the longer term.

By examining the perspectives of both the regulators and the regulated firms, the discussion that has been presented in the previous two chapters has established the basis for a comprehensive analysis of the factors that shape the interactions that are at the heart of the IPC implementation process. Before such an analysis takes place, the thesis will first conduct a similar assessment of the implementation process associated with the framework of LAPC regulations. The results of this assessment are presented in Chapters 6 and 7. Thereafter, Chapter 8 presents a comparative analysis that draws upon the collected findings to consider the validity of the hypotheses that form the basis for this thesis.

CHAPTER 6

The Case of Local Air Pollution Control:

The perspectives of the regulators

Structure

- Introduction

- The Nature of the Implementation Process
 - *The external context for implementation*
 - *The internal context for implementation*
 - *Competition for resources*
 - *The availability of specialist expertise*
 - *Identifying sites to be regulated*
 - *Reducing resistance through education*
 - *Preconditioning, guidance and the need for flexibility*
 - *Negotiating standards, securing agreement, building consensus*
 - *The absence of monitoring*
 - *Complaints driven enforcement processes*
 - *The influence of stakeholders on the implementation process*

- The Influence of the Implementation Process
 - *On technological and organisational change*
 - *On economic networks*
 - *On environmental performance*
 - *On costs and benefits*

- Relating the Empirical Discussion to the Analytical Variables

Introduction

The previous two chapters examined the perspectives that the inspectors within the regulatory agency and the managers within the regulated firms have of the factors that shape the nature and influence of the IPC implementation process. The following two chapters now seek to

consider a similar range of issues, but this time in relation to the implementation process associated with the Local Air Pollution Control (LAPC) regulations. This chapter will therefore present a naturalistic account of the perspectives that the inspectors responsible for delivering the LAPC regulations have of the factors that shape the different stages of the implementation process, and the influence of that process on the behaviour and performance of the regulated firms. The chapter concludes by reviewing the discussion, in order to focus on the influence of the range of analytical variables that the thesis is most interested in, as perceived by the LAPC inspectors. In this way, the chapter examines the resources available to the inspectors, the nature of any inter-dependencies and incentives for cooperation that emerge in the implementation process and the strategies that the inspectors adopt in response to these. It also considers the institutional factors that shape the implementation process and the ways in which these factors combine to influence the outputs and outcomes of the LAPC framework.

Again reflecting the methodological approach and the research process that was introduced in Chapter 3, the discussion that follows draws upon the results of interviews with inspectors in eight local authorities within the same region, conducted between 1996 and 1997. Details of the interviews, including the row numbers used to attribute quotes in the text, are presented in Table 6.1. Where quotations are included in the text, they are followed by an attribution (i.e. [1]) that corresponds to the associated row number in Table 6.1.

Table 6.1: Characteristics of LAPC Inspectors

Inspector	Position	Experience	Predominant role
1	Head of Environmental Protection	Extensive experience in all areas of environmental health	Head of department, local authority policy formulation, liaison with other local authorities
2	Principal Environmental Health Officer	Extensive experience in all areas of environmental health	Head of pollution control office, local authority policy formulation
3	Senior Environmental Health Officer	Some experience in all areas of environmental health, specialist in pollution control	Local authority policy formulation, site inspections, complaints management
4	Senior Environmental Health Officer	Some experience in all areas of environmental health, specialist in pollution control	Site inspections, some monitoring, complaints management
5	Environmental Health Officer	Experience in all areas of environmental health	Site inspections, some monitoring, complaints management
6	Environmental Health Officer	Experience in pollution control	Site inspections, some monitoring, complaints management
7	Environmental Health Officer	Experience in pollution control	Site inspections, some monitoring, complaints management

The Nature of the Implementation Process

- The external context for implementation

Upon the inception of the 1990 Environmental Protection Act (EPA), responsibility for the implementation of the Local Air Pollution Control (LAPC) system was delegated to a large number of district and borough councils in England and to county and county borough councils in Wales¹. Although these local authorities are governed by the statutes and funding decisions of central government, they also have some autonomy, as they are run by democratically elected councils that have some tax-raising powers and that are able to develop and introduce their own policies in a variety of areas. They are also commonly given a degree of flexibility in the way that they enact and respond to the requirements of the regulations that are issued by central government. Local authorities therefore exist and operate in what Rydin (1993, p190) describes as an ‘uneasy partnership’ with central government, with ‘both claiming authority because of their elected nature but with central government clearly in a position of greater power through various financial and administrative controls’.

Aspects of this relationship between central and government are reflected in the LAPC implementation process. Under the conditions of the 1990 EPA, local authorities must enact the legislation, whilst giving regard to the guidance issued by central government. This guidance relates particularly to the ways in which the flexible principles within the LAPC system – notably the requirement for regulated firms to meet standards that are compatible with BATNEEC (‘Best Available Technology Not Entailing Excessive Cost’) – should be interpreted and applied. The guidance issued by central government is therefore designed to ‘precondition’ the implementation process at the local level.

Despite the presence of this guidance, local authorities retain an amount of discretion in the interpretation and application of the LAPC regulations, as the generic principles that are at the heart of the regulations must be interpreted and applied to establish and enforce standards on a case-by-case basis. However, their discretionary powers are curtailed not only by the guidance but also by the potential for regulated firms to complain to the locally elected councillors (see below), and to appeal to the Secretary of State, who has the power to over-rule any decisions made at the local level. Although appeals are relatively unusual, the ability of firms to compare the ways in which the large number of local authorities interpret the regulations, and thus to

¹ Various port health authorities throughout England and Wales are also responsible for the implementation of LAPC for industrial processes located in ports and airports.

recognise and appeal against any inconsistencies, increased the extent to which the implementing inspectors included in this study relied on the published guidance.

The potential for inconsistencies to be detected, and for appeals to be made, also increased the extent to which the inspectors in the different local authorities interacted with their counterparts in other authorities. In order to gain access to information and expertise and to improve the consistency of the ways in which the requirements of LAPC were interpreted and applied by different authorities, the inspectors had shared information and expertise through direct relationships with inspectors in other local authorities, through regional advisory committees and through a 'link authority' scheme, which published a list of local authorities with expertise relating to particular industrial processes, so that they could be contacted by any other authorities that needed to regulate similar processes. The inspectors interviewed suggested that these links had been very useful, particularly in the early existence of the LAPC system where capacities for implementation had yet to be built:

This area was dropped on me a couple of years ago. I have to hold my hand up and say that my knowledge of the processes was very, very limited. We're reasonably familiar with the types of abatement equipment that are available. But we do use other expertise in other authorities – and we're the most expert in some processes which there are a lot of in this area and so other authorities come to us when they need info on those [5].

Although these inter-relations were seen to be important, most of the inspectors interviewed suggested that once the LAPC system had become established, their links with other inspectors in different local authorities had diminished and that any remaining relationships tended to be informal and of an *ad hoc* nature. Concerns about the capacity for implementation and about the consistency of the implementation process had therefore re-emerged to some degree.

- *The internal context for implementation*

The local authorities with responsibility for implementing the LAPC regulations are also responsible for enacting a number of other environmental policies and for pursuing a wide range of other objectives. The priority awarded to the implementation of LAPC therefore depended both upon the political climate within particular local authorities, and on the relationship between environmental protection and other related functions such as planning or economic development.

In relation to the political context for the implementation of LAPC, most of the inspectors interviewed suggested that they had never had any direct pressure from elected members to change the way that they implemented or enforced LAPC regulations, and indeed that attempts to exert influence in such ways would be highly unusual and even improper. However, such pressure was not completely unheard of:

The elected members do try to, err, shall we say, influence us somewhat whether it be to give them a hard kick or not to give them a hard kick depending on their relationship with that particular industry... Sometimes our relationships with operators which have taken months or years to establish can be ruined by one telephone call from a councillor that has stopped negotiations dead in their tracks [2].

Although most inspectors were keen to stress that, as a technical process that was preconditioned from above, the implementation process could not be influenced by political pressures or by conflicts of interest within local authorities. This was particularly the case in relation to the inter-relationships between environmental protection and economic development:

Although economic development officers do everything they can to retain businesses, they wouldn't be able to convince me of the need to not apply regulations as stringently as we might do. Having discussed a lot of issues with various economic development officers over the years I've never been asked to relax standards. The authorisations are issued on the basis of technical guidance notes and they are to be dealt with by a competent technical officer... we cannot be allowed via other officers or members to be persuaded to relax any conditions relevant to any of those processes [1].

Nonetheless, the implementing inspectors were commonly conscious of the impacts that their activities might have on economic development. Indeed, they acknowledged that this consciousness had the potential to influence the ways in which they exercised any discretionary powers that they were awarded in the implementation process. This related particularly to the deadlines that they set for compliance to be secured, and to the point at which they might take enforcement activities when faced with cases of non-compliance:

At times we've all been aware that we would be cited as the villains that cause that company to close. It's a difficult dilemma, we are the local authority and we are local people, do you shut them down and make them redundant or do you negotiate with them to get the best you can? The standards are set down by the process guidance notes

which we normally apply but they are just guidance and we do vary them sometimes by giving them leeway or extensions for example [3].

Thus, the implementation of LAPC took place within a context where there was potential for environmental objectives to clash with the local authorities' desire to promote economic development and where there could be tensions between elected members and officers with responsibilities in different areas. However, the inspectors' awareness of the economic implications of their activities appeared to exert only an intangible influence on the implementation of LAPC.

- *Competition for resources*

In other respects, though, the competition between the different objectives that local authorities sought to pursue exerted a tangible influence on the LAPC implementation process. This was the case because the various departments that existed within each authority commonly had to compete with each other for funding. As funds were short and because environmental protection in general and LAPC in particular were rarely awarded a high priority, the funds that were available for the implementation process were rarely seen to be sufficient. This was despite the fact that the 1990 EPA includes provisions for local authorities to recover the costs of implementing the LAPC system by collecting authorisation from the companies that they regulate. However, these fees rarely if ever found their way back to those responsible for the implementation, monitoring and enforcement of LAPC:

Our charges were originally intended to cater for the costs that we incurred in implementing and monitoring and looking after the [LAPC] processes. But like most councils it just disappears into the abyss and that's it [2].

The effects of these financial shortages were seen to be significant in all of the authorities included in the study. Indeed, the implementation process was commonly defined more by the funds that were made available than by the objectives that were to be realised:

There's a big difference between what we actually do and what we might like to do. That's probably going to get worse not better. It's resource led... if the authorisation fees and charges that are supposed to go to these guys to allow them to regulate [LAPC] processes had come into this department we would have had no problems whatsoever in delivering LAPC to a high standard... [3].

Within such a context, the inspectors interviewed consistently suggested that while they attempted to meet their statutory obligations to the best of their ability, their capacity to go beyond a basic fulfilment of statutory objectives was limited. Even when it came to fulfilling their statutory duties, however, some of the inspectors suggested that other similar duties were seen to be more important. This was the case because the implications of many of the other activities that the environmental protection or environmental health departments had to fulfil were much more visible:

Other functions get staff to meet statutory obligations more easily than we do. If people get killed because of an industrial accident or if they get food poisoning and die... it's a more direct effect than emissions from an industrial process isn't it. So occupational health and safety and food safety get a higher priority than we do, even though we've got statutory duties as well [5].

On a day-to-day basis, this meant that LAPC was overlooked or neglected as specialist staff were either not recruited at all, or they were drawn away from their responsibilities associated with the implementation of LAPC to respond to what were seen to be more pressing concerns.

- *The availability of specialist expertise*

Some of the inspectors interviewed suggested that the personnel involved in the implementation process were often reluctant to give up their involvement in the other functions in order to become specialists in the implementation of LAPC. This reflects the fact that the LAPC system is implemented by inspectors who are trained as Environmental Health Officers (EHOs). While the training and experience of many EHOs enables them to draw upon a broad range of technical skills relating to environmental health ("it encompasses the whole lot – housing, health and safety, food, waste management, public health, pollution and business management to an extent"), most inspectors have a limited amount of specialist experience with process management or regulation. This limited experience raises an issue of competence, which has encouraged many EHOs to avoid becoming involved in LAPC implementation:

It's a big issue about competency and it's something that most EHOs are very sensitive about... Some EHOs are frightened to death of authorisations and will hide in housing or food safety for years because they don't want to come into environmental control because it's seen to be too specialist, too technical [4].

While some of the more proactive local authorities had adopted training programmes to build the technical capabilities of their inspectors, most of the inspectors interviewed suggested that they lacked the resources needed to acquire or to develop such specialist expertise. The consequent lack of such expertise increased both the emphasis that inspectors placed on the central guidance notes and the need for them to engage cooperatively with the companies that they regulate in an attempt to gain access to information. This was particularly the case where an authority or an inspector were unfamiliar with a particular process:

Any senior EHO that says to you all my staff are technically competent with dealing with any of the guidance notes is misleading you... Before we deal with an application, we visit the process as many times as it needs for us to become *au fait* with that process. Then we provide the operator with a draft authorisation for their consideration. We discuss the draft with them in its entirety with them to get agreement, that's a much more positive way to making progress. You can't regulate it unless you do this, that's why it costs as much as it does [2].

As this quotation suggests, particularly in the absence of specialist expertise, interpreting the requirements of the LAPC system for a particular process can demand intensive interaction between regulators and regulated companies, where the regulated companies hold the information that the inspectors need in order to operationalise the regulations. However, as has been discussed above, competition for resources within departments with responsibility for LAPC meant that such an intensive approach was rarely adopted. Instead, the local authorities developed a range of less specialist and resource intensive strategies in an attempt to fulfil the statutory duties associated with the LAPC system.

- *Identifying sites to be regulated*

Using what resources were available, the first stage of the implementation process was to identify the companies that were operating processes that were subject to LAPC control. Given the range of industrial processes that can be regulated by LAPC, and the fact that many of these processes are run by small and medium sized enterprises (SMEs), this was not always a straightforward task. Often, the initiative had to be taken by the local authorities themselves rather than the companies that were the targets of the regulations:

Legally speaking, the onus is on the operators of the process to come to you. But if all local authorities adopted that approach then we'd not see much of an achievement in environmental standards. So really the local authorities have to go out there. We've got

no choice. We have to search for authorised processes because they're not going to knock on our door and say can you regulate me and can I give you all of these big fees [3].

While the local authorities interviewed were confident that they had identified and were regulating the vast majority of the companies that were operating processes falling under LAPC, there was a feeling that some processes were not being regulated either because the companies were not aware that they needed to be authorised or because they were deliberately evading the regulations.

The response to this situation varied, with some of the local authorities interviewed conducting surveys of local industry and others relying upon information sources such as the telephone directory to identify those processes that may need to be regulated. Even after sites had been identified and authorisations had been issued, the inspectors felt that they had to continue to take the initiative because of the low levels of awareness and commitment in regulated companies:

Most LAPC processes that are authorised have a very low understanding of what the authorisation means... Their technical understanding is very low, they're under-resourced and under pressure and environment comes 99 out of their top 100 list of priorities [6].

Despite the impact that the need to take the initiative had on their scarce resources, many of the inspectors interviewed had some sympathy for the position that many regulated companies were in. They appeared to accept that LAPC had to compete for the limited time and resources of many of the regulated companies, and that when compared to the other pressures that the regulated companies may face, LAPC was unlikely to be a priority for action, particularly in the SMEs that were often the focus of the regulations. These sympathies were common amongst the inspectors interviewed, and reflect the extent to which the inspectors were conscious of the potential for conflict between environmental protection and economic development.

- *Reducing resistance through education*

Against this backdrop, all of the inspectors interviewed had adopted broadly similar strategies with which to implement the LAPC system. A common feature in all of the strategies adopted was the desire to build open and cooperative relationships with regulated companies and to be seen as a source of information and advice before they were seen as an enforcer:

They're so afraid of the regulators it's incredible... [but] we aren't there to hit them with a big stick. The only time we'll do that is if they do things wrong and consistently wrong and ignore the best advice that's given to them. We're here to help, to advise and then to regulate [5].

The emphasis that was commonly placed on helping and advising, rather than controlling and punishing, reflected a general feeling that the companies that were regulated by LAPC lacked access to information on the specific requirements of the regulations. To overcome these problems, most of the inspectors interviewed had proactively attempted to raise awareness of the requirements of LAPC in the early stages of the implementation process, through relatively close interactions with the companies that they were regulating.

This approach was very resource-intensive (and at times was felt to be "a bit like taking a horse to water"), and was difficult given the scarcity of resources, but it was generally felt that over time they had been an effective way of ensuring that the local authorities fulfilled their basic statutory responsibilities by issuing authorisations to LAPC regulated companies. They had also had an impact on the working relationship between local authorities and regulated companies, encouraging operators to come to the local authority for advice, indicating that the latter had come to be seen as "players in the game of environmental improvement".

In essence, then, the inspectors felt that they had to promote the regulations by offering information and assistance to companies that were unaware of the legislation or were unsure about the specific implications that the regulations would have for their particular site. This culture commonly encouraged inspectors to see the companies that they were regulating as their customers:

We've targeted them as customers so when we've issued authorisations we've given a lot of explanatory information with it which goes through the various concepts and what they mean to try and raise the level of understanding. We give contact numbers during the day and out of hours to encourage them to discuss issues within us. And more companies have now started to come and talk to us [1].

While most inspectors accepted that it was desirable for them to adopt a customer orientation in their relationships with regulated companies, it was recognised that such an orientation could change the dynamics of the implementation process as the inspectors were providing a service

for which the regulated companies paid a fee. While this had some advantages, some inspectors felt that it reduced their ability to act as impose standards or enforce sanctions:

In some ways we may err too far the other way. It would be useful on occasion to be a bit more up-front and say no, what you're doing is patently wrong and if you carry on I'm going to nick you. But there is a very different reaction as we work very much more with cooperation and then coercion. And frankly we get appealed against a lot more because people don't see local authorities as being so difficult to fight [3].

The client orientation that many of the local authorities had adopted therefore helped to create a perception that regulators were service providers and that they should either listen to the views and secure the agreement of their customers or be prepared to be the subject of appeals.

- *Preconditioning, guidance and the need for flexibility*

Once the operators of the LAPC processes had been identified and their awareness of the requirements of the regulations had been raised, the next step in the implementation process was to interpret the specific requirements of LAPC for the particular process. As an initial reference point, all of the local authorities interviewed referred to the guidance notes for each industrial sector. While the guidance notes were perceived to be very useful, not least in promoting consistency and protecting the local authorities against appeals, there was a common feeling that they were too general and that they had to be adapted to reflect the specific circumstances in each regulated company. To do this, it was generally acknowledged that the inspectors depended at first upon the information supplied to them by the regulated companies. As their experience with process management had accumulated and as they had increased their familiarity with the various abatement technologies, however, their reliance on regulated companies had declined. The inspectors also developed good relations with equipment suppliers so that they had a better idea of the costs of compliance. Thus, all of the local authorities interviewed suggested that their capacity to interpret the requirements of LAPC for particular sectors had increased over time. This was particularly the case where individual inspectors had remained in post long enough to accumulate experience through their interactions with regulated companies.

- *Negotiating standards, securing agreement*

Given the need to tailor the general requirements of the regulations to the particular characteristics of each regulated site, the standards that were to be required were generally

established through negotiations with the managers of those sites. Thus, the implementation process had become more interactive as, despite their legal authority, inspectors still depended upon regulated companies for information and ultimately even for acceptance and approval:

During negotiations there's give and take, we always ask the highest standard knowing that we may have to trade off, it's like buying a car, you eventually come to a price that you both agree which is acceptable to all of the parties concerned. It's no different when you negotiate standards with industry [7].

Within this negotiated process some of the experienced and better resourced inspectors were sometimes able to transfer information and understanding to regulated companies, which raised their awareness of the various ways in which they might improve their environmental performance. This was particularly the case where companies might be able to improve their economic and environmental performance simultaneously, for example by improving resource use and process efficiency (see below). However, these opportunities for education and awareness raising were not consistently present:

I would like to think that during negotiations we educate operators and teach them about new opportunities to improve their performance. But we often can't educate companies because they already know about the options or because they're simply not interested [7].

The inspectors' attempts to educate and persuade within the implementation process therefore related more to the practical demands associated with the regulations than to the ways in which compliance with these demands might be achieved. In this sense, while the approach to standard setting was cooperative and flexible, the inspectors played only a very limited role in building capacities for compliance or shaping the forms of compliance.

- *The absence of monitoring*

Once authorisations had been issued which contained the operating conditions and emissions limits for a particular process, in many instances the inspectors interviewed suggested that they heard nothing more from the company. In some cases companies were supposed to undertake annual monitoring and sampling and to send in their records. This requirement was frequently disregarded, but the inspectors' heavy workload meant that unless they received a complaint about the process, they did not interfere:

We don't have a visit schedule for any of the 90 scheduled processes. We used to have a schedule but the pressure of general complaint work that we have to take care of now is such that it just over-loads the system. There is no statutory duty to inspect LAPC processes, just to respond, so you take your statutory duties first and look at the rest afterwards. If you get complaints then the guys go in [6].

Although some of the local authorities included in the study were attempting to move beyond this essentially reactive approach by adopting programmes for routine and non-routine inspection of regulated processes, particularly for those processes that were seen to be a higher risk, most of the inspectors suggested that their inspection programmes were generally driven by complaints. This relative lack of proactivity related both stemmed particularly from the scarcity of resources and the fact that proactive inspections were not seen to be a statutory duty. However, it also related to the absence of a rigorous monitoring programme to assess the performance of regulated companies and the extent to which they complied with the requirements of LAPC. Without such a monitoring programme, local authorities often only found out about breaches of compliance when there were complaints or major incidents.

There was a variety of reasons for the general lack of reliable monitoring data. According to the legislation, the requirements for monitoring should be set out in the authorisation and conducted by regulated companies; however, in practice, all of the local authorities interviewed had problems with this. In part, these problems stemmed from the nature of the guidance notes, which at times were too vague:

I find the monitoring requirements incredible on the process guidance notes, they can make the measurement at whatever time suits them, even during shut down, it's a very difficult area [7].

Such concerns, which were common amongst the inspectors interviewed, served to reinforce the reactive approach adopted by many local authorities, particularly when combined with resource shortages and a comparative lack of relevant expertise. Again, this reflected the extent to which inspectors depended upon the regulated companies for information:

If we find that the monitoring data is in consistent breach we would go to see them. But, depending on the process, they can monitor at the time when they know their emissions are going to be beneath the threshold. We don't have any chance of checking that because of our resources. On some of the processes they do notify us when they're going to have their stacks tested and on a couple of occasions the guys have been down

to watch them doing the test, more for their own information as to how it's done because they've never seen it being done before... [2].

Thus, the monitoring data collected by regulated companies and presented to local authorities may not have offered an accurate reflection of their actual performance. Even where accurate monitoring data was available, it was widely accepted that the data offered only a 'snap-shot' of the performance of a regulated company on the day in which samples were taken. Requirements for monitoring performance on other days were generally much weaker or even non-existent.

In theory, these issues are catered for by the requirement for monitoring to be undertaken using established monitoring protocols and accredited consultants to generate data that can be verified by the local authorities. As one inspector observed, there was a feeling that the capacity of some of the local authorities to scrutinise the monitoring data provided by the regulated companies had increased over time as a result of their interactions with regulated companies:

Within the authorisations we ask to be notified of the days when any consultants will come onto the site to do the annual monitoring, that gives the officer the opportunity to go to the site to check that the monitoring is being conducted in accordance with the British Standard for monitoring and to talk to the consultant to make sure they're accredited to monitor. We do this for about one in four or one in three [1].

Thus, in some local authorities checks were made to verify the claims made by regulated companies about their environmental performance. However, this was far from the norm: in most of the local authorities interviewed these checks were either not undertaken at all, or if they were in general the monitoring data was not rigorously scrutinised or verified. The effect of this was that even after local authorities had established operating conditions and set emissions limits often there was no effective way of checking whether the regulated companies routinely complied. The practical outcomes of the LAPC process, reflected in the extent to which they imposed meaningful imperatives on regulated companies, were significantly weakened by the fact that the local authorities were unlikely to detect any cases of non-compliance unless there was a major incident or someone complained.

- *Complaints-driven enforcement processes*

In relation to the enforcement of the requirements of LAPC, the lack of monitoring data meant that the local authorities included in the study tended to resort to legal action only when complaints were made and when regulated companies were 'caught in the act' of exceeding

their emissions limits. Even at this stage, however, most of the local authorities interviewed preferred to use negotiations to promote compliance, rather than legal action to sanction non-compliance:

Negotiations allow you to get the respect and attention of the industry that you're dealing with – I've always been brought up with the principle that it's better to talk to people, to get their understanding, to get their cooperation that way than it is to put their backs up by taking them to court. The moment you bring a solicitor in you complicate things beyond all belief [2].

While some inspectors recognised the potential of a more robust and less cooperative approach to enforcement, the view of the regulated company as a customer or client to be assisted tended to prevail for all but the most persistent offenders. This stemmed also from a feeling that the regulated companies were not faceless entities but members of a community, employers who paid local wages and taxes – and, indeed, contributed to the regulators' own salaries through the authorisation fees that they paid. As a result, most councils tended to “use the big stick very sparingly, they will try to persuade, cajole, coerce before they will prosecute”. Nonetheless, in those cases where there were serious incidents or persistent complaints, when the inspectors commonly stated that they would immediately resort to the application of formal sanctions.

It was generally acknowledged by the inspectors interviewed that this complaints-driven approach to enforcement led to inconsistencies in the way that the requirements of the LAPC system were interpreted, applied and enforced. These inconsistencies related particularly to the proximity of neighbours who might detect and complain about breaches of compliance:

Because of the way that the processes are regulated in a reactive way rather than a proactive way because of the pressure everyone is under, if you're lucky enough for your process to be away from houses you can get away with murder. A level playing field is not likely... those in the middle of the towns get it in the neck while those on the outskirts never get troubled [6].

This generated a dilemma amongst some of the inspectors interviewed, whereby they were torn between the desire to implement and enforce the requirements of the LAPC system consistently, and the need to prioritise and to focus scarce resources on the regulated companies that were causing problems:

If you have a process out in the sticks that's emitting but it has no harmful effect on the environment and it isn't a nuisance then my view is well so what... That's the way it's going to have to be until we get the resources to do it consistently [7].

Thus, in the absence of effective monitoring, enforcement activities were driven by the demands of other stakeholders. Where there were no stakeholders to complain, or where these stakeholders could not detect any breaches of compliance, the practical imperatives established by the LAPC system were very weak indeed.

- *The influence of stakeholders on the implementation process*

Where they did exist, various stakeholders had been able to exert a significant influence on the implementation process. Individuals making complaints about regulated companies had a particularly significant influence on the implementation and enforcement of the requirements of the LAPC system: "Certainly in the case of the tax payer what he wants is someone to turn up immediately he complains". However, the managers of regulated firms, who also had status as clients of the local authority as well as being tax-payers and creators of wealth and employment, also became stakeholders in the implementation process. For example, the managers of some of the businesses that were regulated by LAPC had lobbied local authority inspectors to ensure that they imposed similar standards on their competitors. Such lobbying activities had sometimes been very influential: in one case, a regulated company which had spent £150,000 to bring its process into compliance with the standards set out in the guidance note complained that its competitors were not being obliged to do the same. The regulator in charge of this case responded by visiting the firm in question:

We went and sorted out the process in the same area that wasn't complying and he ceased operating. I also contacted my equivalent in the neighbouring authority, I explained the situation and he went and sorted out the other process. So we can adopt a strict line in terms of enforcement if we need to do. It's got to be a level playing field [2].

Thus, although the local authorities adopted a cooperative and hands-on approach as they sought to interpret the legislation and issue authorisations, when it came to monitoring and enforcement they generally adopted a much more arms-length and reactive approach, that was driven by complaints both from the public and from the managers of regulated firms.

The Influence of the Implementation Process

- On technological and organisational change

The inspectors commonly suggested that the typical response to the LAPC regulations was for firms to adopt end-of-pipe technologies. This may have reflected the perceived lack of capacity for more proactive forms of environmental management within the LAPC regulated firms. However, the inspectors also thought that there were fewer opportunities for the environmental performance of smaller and simpler processes to be improved through re-organisation or fine-tuning than were often available in larger and more complicated industrial processes:

There is more scope within a lot of the IPC processes for changing the method of operation within the process... Some LAPC processes are so basic there are no other options than end-of-pipe. Also with IPC processes you're looking at the whole process for water, waste and air so you've got more scope. When you're looking at LAPC you're only looking at air [3].

The general perception, then, was that there were fewer opportunities for LAPC processes to improve their environmental performance and perhaps their economic efficiency by changing the ways in which they organised and managed their production processes. However, the inspectors also suggested that the capacity of the firms to recognise and respond to any such opportunities was likely to be more limited, since capacity to respond declines as companies grow smaller; as a result, it was felt that smaller companies faced particular problems when seeking to respond to the requirements of LAPC. While bigger companies had begun to employ environmental managers and develop environmental management systems, environment was still low on the list of priorities for smaller companies: "Most little companies have had a shock, because although it's not a priority it's a significant budget requirement so there's an imbalance. They've had to suddenly make expenditure decisions about environmental improvement when they used to think it wasn't an issue". As a result of the perceived lack of opportunities and absence of capacities for the types of process change that could enable firms to anticipate and avoid their environmental impacts, the inspectors rarely challenged the managers' initial preference for end-of-pipe responses. This was the case even though the LAPC regulations required firms to prevent or reduce their emissions wherever possible before they resorted to those end-of-pipe approaches that would render harmless any remaining emissions. Indeed, some inspectors perceived the regulations to be about emissions rather than management or clean technology:

Most of what we do is to do with abatement – in this day and age it's fairly easy to go to a manufacturer and buy something off the shelf. That is what we would regard as BATNEEC. If it is a question of emissions we would prefer to see the filtration unit put on rather than just fine tuning little bits. We see our job as being emissions oriented rather than process oriented. We are responsible for seeing that emissions to atmosphere are within limits [4].

The job of seeking to ensure that regulated firms had adopted end-of-pipe abatement technologies was made easier as a wide range of such technologies were now commonly available. Despite the official requirement for BATNEEC, however, most of the inspectors interviewed were happy to accept an effective rather than an optimum response: “We find that companies will put in what is appropriate, not necessarily the very best but if it is effective common sense has to prevail. We will accept something slightly less than ‘best available’ if it works...”.

Indeed, some of the companies had been innovative enough to develop their own responses in an attempt to avoid the need to buy abatement technologies from external suppliers, since end-of-pipe technologies can be very costly. This was generally accepted by the inspectors: “At the basic end some of them do come up with their own responses – they can be a bit Heath Robinson but they sometimes do the job”.

More fundamentally, the inspectors recognised that some operators had attempted to redesign their processes, for example by moving away from the material inputs that generated regulated emissions. This was often less to do with a desire to improve environmental performance than to avoid being regulated by LAPC (“they're fed up with the local authority regulating them”) and by implication to avoid having to spend money on abatement technologies.

- *The influence on economic networks*

Although innovative responses to LAPC were deemed to be comparatively rare, the inspectors noted that there was one major exception to this broader trend: in various sectors, material suppliers had worked with their LAPC-regulated customers to develop new products that would either enable them to avoid the regulations entirely or that would enhance their capacity for compliance:

Material suppliers are developing products which mean that their customers can comply without any abatement. The guidance note for the paint sector for example

outlines compliant coatings, so if they use a coating that has a low amount of solvent or is water based, then it will comply without any abatement. It's the same thing with adhesives or with styrene usage where they've set a limit on the amount of styrene that can be released per tonne of resin used. Operators using styrene have said that by the time the day comes when they have to comply, the manufacturers of resin will have produced a product that contains a low amount of styrene. But if they choose not to use that product or if it isn't available then the guidance notes set out the need for abatement technologies [3].

This meant that broader economic networks, relating particularly to the emergence of new alliances within supply-chains, had dramatically altered the ways in which some of the firms that were regulated by LAPC responded to the regulations. Despite this, the inspectors suggested that many managers of regulated firms were reluctant to change their material supplies because such changes represented a commercial risk. In response to this problem, the regulators were often able to offer some short-term flexibility to companies that were prepared to take such risks as they felt that in the medium term such initiatives would pay dividends:

If people are doing tests to see if it works or if it doesn't work we generally give them a bit of leeway, providing they're not causing a nuisance. If we're getting complaints there's a dilemma, whether we enforce it rigorously or relax it and sit on the complaints in the hope that the new products will work and that things will eventually improve [5].

Other than these supply-chain initiatives that had emerged as a consequence of LAPC, the inspectors suggested that the managers of the regulated firms did not commonly engage in broader economic networks in order to gain access to any resources that they lacked. External linkages were seen to be limited, poorly developed and under-utilised:

I've no evidence that regulated processes turn to other organisations like the Training and Enterprise Councils or the Chambers of Commerce to help them comply. I'm sure they do within their own trade organisations and sometimes with one another at the local level – but trade associations are very poor apart from certain sectors in helping their members with environmental issues. Half of them are just dining clubs and cricket clubs [4].

- *On environmental performance*

In those instances where the need to buy material inputs that gave rise to harmful emissions had been removed or reduced through product and process changes, the inspectors associated LAPC with significant improvements in environmental performance. However, in the majority of cases the inspectors stated that LAPC had only led to the introduction of new abatement technologies. Although it was easy for the inspectors to assess whether or not these abatement technologies were in place, the lack of monitoring meant that it was difficult for the inspectors to say whether the abatement technologies were regularly used or if they were working effectively, unless there were changes in the number of complaints from the public. The ability of the inspectors to assess the environmental impacts of the LAPC regulations was more limited still for those pollutants that could not be seen or smelt by the public.

Despite the problems with monitoring, the inspectors felt that the wider adoption and use of end-of-pipe technologies had led to some improvements in local air quality as they enabled the managers of the regulated processes to capture a proportion of their harmful emissions and to prevent them from entering the air environment. However, they also acknowledged that the broader environmental impacts of LAPC depended on what the managers then did with the emissions that they had captured. Although some of the firms had been able to recycle the materials that they had captured or to find new markets for them, the inspectors suggested that in other instances, the harmful emissions were merely transferred from one medium (air) to another (water or waste). As the inspectors did not have a responsibility for ensuring that emissions streams were channelled towards the 'best practicable environmental option' (BPEO) as a whole, the overall impact of the LAPC regulations on the environment was unclear.

- *On costs and benefits*

Although environmental improvements had been associated with cost savings in some larger firms, most of the inspectors interviewed claimed that the smaller companies that they regulated saw far more limited economic returns on their investments of scarce management time or financial resources in improving environmental performance. Furthermore, while the Environment Agency was able to demonstrate to the bigger companies that regulation could offer them significant *savings* – for example by applying Agency expertise to help them minimise waste – the perceived *costs* of environmental improvement for smaller companies affected their willingness to respond to the requirements of LAPC. These differences in the perceived economic implications of environmental regulation in larger and smaller processes stemmed in part from the fact that there were fewer opportunities for improving the

organisation or the management and therefore the efficiency of smaller and simpler processes. However, as one inspector noted, it was also because the LAPC regulations focused on air emissions rather than water or waste emissions:

There are benefits from IPC that aren't there for LAPC... it costs money to have your waste or your effluent taken away and treated so it pays to reduce them – it's different for emissions to air because these are free [2].

Nonetheless, some inspectors clearly thought that LAPC could sometimes stimulate improvements in efficiency and that on occasion it could generate benefits as well as costs. Where the inspectors were able to offer advice, savings could sometimes be made: one interviewee cited a company which had a problem with kilns that were approaching emissions limits. On the regulator's recommendation, the company paid a consultant to do a stack emissions reading, which revealed very high levels of carbon monoxide, suggesting the kilns were working inefficiently: "We went in and gave the company advice, they had the process serviced, they're now operating much more efficiently and they've saved themselves £70,000 per year in gas bills. They weren't aware that they were running inefficient kilns". Opportunities for such integrated process changes were seen to be comparatively rare, however and the inspectors generally suggested that LAPC imposed a cost on the regulated companies that could not be recouped through improvements in economic performance. As such, while the inspectors were concerned about the economic implications of LAPC, they generally felt that little could be done to reduce the costs of compliance:

In many cases there has been no impact on the company other than on their bottom-line. There's been no production benefit or improved efficiency at all. It's just an add-on cost that they've got to meet [2].

Thus, the inspectors were often unable to counter any resistance to the regulations amongst the managers of the regulated sites by arguing that some approaches to compliance could generate benefits or by offering advice and assistance that the companies could draw upon to reduce the costs of compliance.

Relating the Empirical Discussion to the Analytical Variables

The discussion that has been presented in this chapter reflects the perspectives that inspectors within a number of different local authorities have on the various factors that shape the nature

and influence of the LAPC implementation process. Within this discussion, it is possible to identify the influence of the range of the analytical variables that the thesis is interested in, namely the resources that are available to the different actors, the extent to which any resource inter-dependencies establish incentives for different forms of interaction and the strategies that the different actors adopt in response to these incentives. The thesis is also interested in the extent to which these variables are shaped by different institutional factors and in the ways in which all of the variables combine to influence the outputs and outcomes of the implementation process. Based on the discussion presented above, this conclusion will examine the influence of each of these variables as seen from the perspective of the inspectors who are engaged in the LAPC implementation process.

The character and resources of the implementing agencies

Within the local authorities with responsibility for implementing LAPC, competition between different objectives commonly restricted the resources that were available to the LAPC implementation process. In seeking to fulfil their statutory duties whilst operating within these resource constraints, the inspectors commonly took the initiative and adopted a cooperative approach to standard setting. However, resource shortages restricted their ability to monitor the extent to which the firms complied with the standards that were established. As a result, the enforcement process was commonly complaints driven.

In adopting this approach to implementation, the inspectors commonly drew upon a range of resources. These included their ability to:

- Understand and interpret the legislation in order to establish site-specific standards;
- Use discretionary powers as they did so, whilst also resisting influence from regulated companies or third parties by referring to the published guidance;
- Draw upon networks between inspectors to:
 - transfer information and expertise;
 - reduce dependence on the information held by regulated firms; and
 - improve consistency and reduce the prospect of appeals;
- Grant or withhold flexibility relating to the times at which standards should be achieved; and
- Choose whether or not to apply formal sanctions in response to any cases of non-compliance that were detected or complaints that were made.

The nature of any resource inter-dependencies within the implementation process

Although the inspectors had access to various resources that they could draw upon in the implementation process, they also depended upon a range of resources that were held by the managers of the regulated firms. These included the managers' ability to choose whether or not to:

- Help local authorities to meet other objectives, relating particularly to economic development, which in turn influenced:
 - the resources available for implementation;
 - the status of the regulated firms as they became 'clients' of the local authorities;
 - the extent to which the inspectors were conscious of the potential conflicts between environmental protection and economic development when exercising their discretionary powers;
- Grant the inspectors ready access to the site-specific information that they needed to put the regulations into practice;
- Collect and grant the inspectors access to the accurate monitoring data that they needed to assess whether compliance had been achieved;
- Respond to requests to move back into compliance when breaches were detected and/or complaints were made, to enable the inspectors to avoid the need to resort to the application of formal sanctions; and
- Raise the costs of implementation or threaten the reputation of the local authority or its inspectors by launching appeals.

The extent to which any resource inter-dependencies provide incentives for different forms of interaction within the implementation process

Within the context of broader resource shortages, these inter-dependencies encouraged the inspectors to adopt a cooperative and hands-on approach to the stages of the implementation process associated with the interpretation of the legislation, the setting of standards and the issuing of authorisations. This approach enabled them to:

- Raise awareness of the regulations and to encourage firms to come forward to be regulated;
- Gain access to information needed to interpret legislation and apply standards;
- Issue authorisations, thereby fulfilling their statutory obligations; and
- Reduce resistance to the regulations and avoid appeals against regulatory decisions.

During the monitoring and enforcement stages of the implementation process, however, the authorities generally adopted a more arms-length and reactive approach. This approach enabled them to:

- Avoid the need to spend scarce time and resources on monitoring;
- Avoid the need to resort to legal action by giving any firms associated the opportunity to avoid further complaints by coming back into compliance; and
- Resort to legal action only in response to serious incidents or sustained cases of non-compliance.

The strategies that the implementing agency adopted in response to any such incentives

Given these resource inter-dependencies, the LAPC inspectors sought to adopt different approaches at different stages of the implementation process. Their strategies in this respect included:

- Taking the initiative by identifying companies to be regulated and raising their awareness of the requirements of the regulations;
- Cooperating with the managers of regulated firms as they interpreted the regulations, to enable them to issue authorisations without antagonising regulated firms;
- In the absence of significant monitoring initiatives, relying on:
 - the strong culture of compliance that existed within some firms;
 - the monitoring information that the regulated firms did provide; and
 - a complaints-driven monitoring and enforcement process.
- Issue informal warnings in response to any non-serious or temporary breaches of compliance; and
- Impose formal sanctions in response to any serious or sustained breaches of compliance.

The extent to which different institutional structures shape and are shaped by these incentives and constrain or enable these strategies

Within the broader context associated with the structures of central and local government, these incentives for interaction were shaped by a range of specific institutional factors that necessitated the adoption of this approach whilst restricting the ability of the inspectors to explore alternative approaches. These included the:

- Presence of different, and sometimes competing, objectives within local authorities and within implementing departments;
- Presence of client mentality in relationships between local authorities and regulated firms;
- Practical nature of the funding structures within local authorities that limited resources available in the implementation process;
- Design of the legislation that established the potential for a flexible approach to implementation;
- Lack of complete preconditioning that obliged and enabled the implementing inspectors to exercise some discretion in the implementation process;
- Presence of some preconditioning that enabled the implementing inspectors to defend themselves against undue influence from regulated firms and some third parties;
- Professional backgrounds/aspirations within EHO career structures that limited the amount of technical expertise they could offer on the ways in which companies might comply;
- Perceived absence of many economically beneficial improvement options, particularly in smaller firms with simpler processes; and
- Presence of interested stakeholders that could detect and complain about any incidents.

The influence that different forms of interaction have on regulatory outputs and outcomes

This approach to implementation shaped the practical nature of the demands that the inspectors made and the ways in which the firms responded to these demands. In particular, the approach:

- Relied on guidance and preconditioning but still gave regulated firms that cooperated some influence in the implementation process;
- Offered some flexibility relating to the point at which sanctions would be applied as a response to any cases of non-compliance and to the form that these sanctions would take;
- Generally focused on controlling emissions rather than on the opportunities to avoid these through changes to production processes;
- Was able to detect whether abatement technologies had been installed but was often unable to detect any case of non-compliance unless they were reported by the companies themselves or came to light as a result of complaints from the public;
- Commonly stimulated investments in end-of-pipe technologies that did not reduce generation of polluting substances but restricted their release and established potential for their effective management; and
- Sometimes stimulated product and process re-design to enable emissions to be avoided at source, particularly where alliances emerged in the supply-chain.

In summary, then, this chapter has examined the perspectives that the implementing inspectors had of the factors that shaped the nature and influence of the LAPC implementation process. It found that the inspectors had to mobilise what resources they had and to cooperate with the managers of the regulated firms in order to interpret the regulations and to issue authorisations. In this sense, it found that strategies that the inspectors adopted were shaped by a range of resource inter-dependencies, which gave rise to some cooperation. However, it also found that the inspectors lacked the resources needed to cooperate with the regulated firms in order to promote compliance or to reduce the costs of compliance. These resource shortages also precluded the adoption of a rigorous monitoring regime, which in turn restricted the capacity for the inspectors to control the activities of the regulated firms. In the absence of such capacities for control, the chapter found that the prospects for compliance depended on the cultures of compliance in the regulated firms and on the ability of the different stakeholders to detect and complain about non-compliant firms.

CHAPTER 7

The Case of Local Air Pollution Control: **The perspectives of the managers of the regulated sites**

Structure

- Introduction

- The Nature of the Implementation Process
 - *Multi-regulation*
 - *Awareness and understanding of LAPC*
 - *Interpretation and standard setting*
 - *Interactive learning*
 - *Monitoring and enforcement*
 - *The influence of stakeholders*

- The Influence of the Implementation Process
 - *On technological and organisational responses*
 - *On internal resources*
 - *On intra-firm and inter-firm networks*
 - *On environmental performance*
 - *On costs and benefits*

- Relating the Empirical Discussion to the Analytical Variables

Introduction

Chapter 6 considered the perspectives that the LAPC inspectors have of the factors that shape the nature and influence of the implementation process. This chapter will complete the presentation of the empirical results by considering the perspectives held by the managers of the sites that are regulated by LAPC. Following the structure of the preceding empirical chapters, the discussion examines the perspectives that the managers of the regulated sites have of the various stages of the implementation process, before considering their views on the influence

that this process has had on the behaviour and performance of the regulated sites. The chapter then concludes by drawing out the influence of the various analytical variables that are of most interest within this thesis, namely:

- The character and resources of the actors that interact within the implementation process;
- The extent to which any resource inter-dependencies generate incentives for cooperation;
- The nature of the strategies that the different actors adopt in response to these incentives;
- The degree to which these strategies are enabled or constrained by any associated institutional factors;
- The influence that different strategies and forms of interaction have on the outputs and outcomes of the LAPC implementation process.

Again reflecting the methodological approach and the research process that was introduced in Chapter 3, the discussion that follows draws upon the results of interviews with the managers of 18 regulated sites within the same region, conducted between 1996 and 1997. Details of the sites that were included in the study are presented in Table 7.1. Where quotations are included in the text, they are followed by an attribution (i.e. [1]) that corresponds to the associated row number in Table 7.1.

The Nature of the Implementation Process

- Multi-regulation

LAPC was one of several frameworks of regulation that had affected the managers of the regulated sites. As a result, the managers explained, they had to familiarise themselves with a variety of different regulations and to engage with a range of regulatory agencies and personnel. This was particularly the case because, unlike the larger sites that engaged with a single regulator under integrated pollution control, the smaller firms faced separate regulations for emissions to air, water and land:

Potentially we have visits from five or six regulators. The Environment Agency for special waste, the local authority for our air emissions, the Health and Safety Executive for hazardous substances, the water company for our effluent... I realise these things need to be controlled and they need to know what's going on but it certainly makes it a headache for us here dealing with so many regulations and so many people [14].

Table 7.1: Characteristics of LAPC Regulated Sites

Site	Nature of regulated process	Size of site	Ownership of site	Management responsibility	Strength of culture of compliance	Nature of engagement with regulators	Ease of access to internal financial resources	Ease of access to internal managerial resources	Ease of access to external resources	Predominant form of response
1	Materials Processing	Large/ Med	Group	HSE	High	Positive	High	High	Low	Integrated technologies and techniques
2	Light Manufacturing	Large/ Med	Group	HSE	Med	Neutral	Med	Med	Med	S-chain and integrated techniques
3	Paint Manufacturing	Med	Group	HSE	High	Positive	High	High	Low	Integrated technologies and techniques
4	Light Manufacturing	Med	Indep	E&Q	Low	Negative	Low	Med	Low	End-of-pipe
5	Packaging Manufacturing	Med	Group	HSE	Low	Neutral	Med	Low	Med	S-chain and end-of-pipe
6	Paints Manufacturing	Med/ Small	Indep	HSE&Q	High	Positive	Med	Med	Low	End-of-pipe
7	Packaging Manufacturing	Med/ Small	Group	HSE&Q	High	Positive	High	High	High	Integrated techniques and end-of-pipe
8	Materials Manufacturing	Small	Group	E&Q	Med	Neutral	Low	Med	Low	End-of-pipe
9	Materials Coating	Small	Group	HSE&Q	High	Positive	Med	High	High	S-chain and end-of-pipe
10	Materials Processing	Small	Indep	General	Low	Negative	Low	Low	Low	End-of-pipe
11	Packaging Manufacturing	Small	Indep	HSE&Q	Med	Neutral	Low	Med	Med	End-of-pipe
12	Printing	Small	Group	General	Low	Negative	Low	Low	High	S-chain and end-of-pipe
13	Process Engineering	Small	Indep	HSE&Q	High	Positive	Low	Med	High	S-chain
14	Process Engineering	Small	Indep	General	Low	Negative	Low	Low	Low	End-of-pipe
15	Materials Processing	Small/ Micro	Group	General	Low	Negative	Med	Low	Low	End-of-pipe
16	Printing	Micro	Indep	General	Med	Neutral	Low	Med	High	S-chain and end-of-pipe
17	Process Engineering	Micro	Indep	General	Low	Negative	Low	Low	Low	S-chain
18	Materials Coating	Micro	Indep	General	Low	Negative	Low	Med	High	S-chain and end-of-pipe

Most of the managers agreed that a steady stream of new regulatory initiatives in recent years meant that it was possible to prioritise each new piece of regulation only for a limited period, before competing regulatory demands drew their attention to a new initiative or a more pressing concern. In a setting where the different regulatory frameworks had to compete for the resources of the regulated firms, some regulators were clearly better at holding their attention than others. Legislation relating to health and safety, and to water and waste management, was generally seen to be more stringent than that relating to air pollution control, for example. However, the priority that the managers awarded to complying with different regulations depended not only on the formal design of the different regulatory frameworks, but also on the regulatory styles adopted by the different regulators:

It over-complicates it when you have to deal with different regulators, especially when you don't know what to expect from each one. They're all pretty friendly to begin with, but you really get the feeling that some of them will get legal at the first sign of trouble while others are much more reluctant to do that [11].

The fact that some regulators were resorted to legal action more readily than others established a 'pecking order' of regulations within many of the sites interviewed. As will be discussed below, the monitoring regime associated with LAPC was generally seen to be unlikely to detect many breaches of compliance, and the associated enforcement process was seen to be flexible and forgiving. As a result, LAPC was not generally considered to be the highest of priorities, particularly when compared with other regulations relating to areas such as health and safety, water or waste, where levels of compliance were more carefully monitored and where the regulators were quicker to resort to the application of formal sanctions.

- *Awareness and understanding*

For most of the managers interviewed, the realisation that they had to comply with LAPC when it came into force in the early 1990s came as something of a surprise. However, the initial shock was often followed by an acceptance of the regulations, particularly when they realised that they would eventually have to comply and that sanctions could be imposed if they did not. The simple prospect of legal authority being imposed to force them to comply was therefore enough to encourage most firms to begin to think about how they might meet the requirements of LAPC. Many of the managers interviewed, though, found themselves stumbling at the first hurdle – interpreting the generic requirements of LAPC – a problem which prevented them from identifying the specific standards with which they would have to comply:

The biggest problem that we've had is the way the regulations have been written – you just can't understand them. You've got to read them five times and then you might think you know what they say – that was a big problem from the start, not fully understanding what they wanted [13].

This initial lack of understanding meant that the majority of managers of the regulated sites left it to the regulators to take the initiative, despite the fact that the LAPC system obliged them to apply for authorisations to operate. In response to their collective lack of action, the regulators had established contact and had offered to help to translate the generic requirements of the legislation and the associated guidance into a form that was useful for each particular site.

- *Interpretation and standard setting*

Once there was engagement between the regulator and the operators of regulated sites, specific emissions standards were commonly established on the basis of cooperative interactions between the two parties. The boundaries of this cooperation were shaped by the legal authority of the regulators – “I know we've got to meet the law, they know we've got to meet the law” – and the threat of legal penalties was seen to be an important resource. However, the managers also recognised that while they depended upon the regulators to interpret the regulations (or more exactly, to establish standards and to authorise their operation), to enable them do this the regulators in turn depended upon the information that became available through their dialogue with regulated sites. In other words, the relationship between the regulators and the regulated firms within the implementation process was one of interdependence:

With the guidance notes, we agree on what the interpretation is because often I'm reading it and he's reading it and we're not quite sure what they mean. So first of all we sit down and work out what they mean to establish exactly what they say we have to do. And then we talk about how we're going to do it [3].

This was seen to be the case amongst all of the sites included in the study, as the regulator had not imposed standards in any instance without a prior dialogue with the operator of a regulated site. While this gave regulated sites some leverage in the way that the guidance was interpreted, nevertheless there was a general feeling that the guidance was central to establishing standards, and that the only flexibility that could be offered by the regulators related to the timescales for compliance: “The only room for manoeuvre is where there's an investment required, where they may give you a bit more time to meet the levels that you need to meet.” In the eyes of the managers, therefore, the standards that were established by the implementation process were

heavily preconditioned by the process guidance notes, even though these had to be interpreted by the regulator on a case-by-case basis.

Despite this high level of preconditioning, many of the regulated sites interviewed felt that they would be given more flexibility if they had established a cooperative and trusting relationship with the regulators. Such trust emerged over time between particular inspectors and the managers of sites that they regulated if the managers cooperated willingly and if a track record of compliance had been established for the site. This flexibility was commonly valued by the managers of the regulated sites, as it gave them the freedom to examine the strengths and weaknesses of the various ways in which compliance could be secured. It also reduced the risks associated with innovating, as they felt able to explore the potential of different technologies and techniques in the knowledge that sanctions would not be immediately imposed should such approaches fail. One environmental manager [9] claimed that this flexibility, and the innovative activity that it afforded, had enabled them to improve both the efficiency and the efficacy of their response to LAPC.

Thus, the trust that grew within the cooperative relationship between regulators and some regulated sites over time was associated with financial savings by the sites interviewed. In this sense, developing a trusting relationship with their regulator had an economic value for regulated sites. This also gave the regulators more power in the implementation process, as such flexibility was awarded at their discretion.

- *Interactive learning*

Although they felt that it was useful to cooperate in the standard-setting process, the managers claimed that they had received little assistance on how they might best comply with the regulations. They all agreed that their ability to learn from the inspectors depended upon the inspectors' accumulated expertise and on the continuity of their relationship with the managers of the regulated sites, but the regulators' lack of resources meant that experienced staff, with the time and attention to give to regulated sites, were in short supply.

They'd be the first to say that they could do with more expertise. The people constraint is a problem for them. They've got a lot of people to regulate and to see and they can't always be everywhere... One very experienced one left and has not been replaced as far as we can tell. We don't feel that's a good idea. They need more EHO guys and we need some continuity... [3].

Indeed, at times the managers felt that the inspectors learnt more from them than they did from the inspectors:

We learnt a lot from him, he told us about companies who've tried different things, although I have to say we were at the vanguard of things really and he was using us as an example to share with his other colleagues who were regulating other companies in our industry [1].

Far from the regulatory process being a 'one-way street' with information passing from the regulator to the regulated sites, then, in some instances the implementation of LAPC involved processes of exchange and interactive learning, whereby individual inspectors would collect information and understanding from regulated firms, and transfer it both to other regulators and to other regulated firms. It appeared, then, that a combination of continuity and expertise influenced the nature of the relationship between the inspectors and the managers of the regulated sites. This combination allowed trust and mutual understanding to develop, in turn enabling the emergence of an interactive learning process that could be to the benefit of each actor. However, the managers interviewed repeatedly remarked that the level of expertise that the inspectors had to offer within this interactive learning process was often limited.

On the one hand, then, companies felt that such cooperation was useful, as it gave them a greater understanding of the regulations and enabled them to be awarded some flexibility relating to the times at which they would have to secure compliance. On the other hand, they rarely felt that cooperating with the regulator would enable them to gain access to the information and understanding that they needed to enhance their capacities for compliance or to reduce their costs of compliance.

- *Monitoring and enforcement*

Although many of the managers felt that the standards that had been established were quite demanding, the common perception was that the inspectors did not have the resources to monitor whether or not companies complied with these standards. Instead, unless there were complaints or major incidents, it was left to the regulated companies to take the initiative by collecting monitoring data and supplying it to the regulators. But even where they did this, the managers generally felt that the inspectors were slow to scrutinise or to verify any monitoring data, and quick to forgive any occasional breaches of compliance brought to their attention by the public complaints procedures:

We get the monitoring done and send them the results. We get an independent company to come in and they send a copy to the EHO. They never actually arrive on site to have a look. The water regulators do – they just arrive at any time. Air is reactive though and complaints-driven. But even then they call and say, ‘Well I had a complaint last Thursday, were you doing anything?’ And I’ll say, ‘Yes we were doing this or that’. He’s just following it up, but he never comes down and he takes our word for it that we’ve rectified the situation [4].

The influence of the perceived weaknesses in the monitoring regime associated with LAPC depended on the cultures of compliance amongst the regulated firms (see Table 7.1). In this respect, the sites included in the study can be divided into two main groups: those sites with a strong culture of compliance that accepted the regulations and that positively engaged with the regulators, and those with a weak culture of compliance that would have preferred the regulations not to exist and that adopted a defensive stance in their interactions with the regulator. Differences in the cultures of compliance appeared to relate particularly to the size, ownership and public profile of the site. Medium-sized and/or group-owned sites that were often subjected to public pressure tended to have stronger cultures of compliance than their smaller and/or more independent counterparts, which were commonly less visible.

Managers that worked in sites with a strong culture of compliance commonly attributed this not only to the fact that their sites tended to be subjected to more public scrutiny (either because they were larger or because the companies that owned them had a higher public profile), but also to the fact that both they and their company had some ethical commitment to the environment. As a result, they claimed, they always sought to comply with the requirements of LAPC even though their environmental performance was rarely subjected to any scrutiny by the regulator:

We do it purely off our own bat because we feel that we ought to. We know that there’s legislation... but nobody is bothering us, we’ve nobody on our backs. The nearest we get to any bother is from our customers who say, ‘What checks are you doing?’ as part of their environmental policies [3].

In stark contrast, the managers of those sites with a weaker culture of compliance stated that a lack of contact with the regulator and the lack of public scrutiny had led to the feeling that compliance with LAPC should not be seen as a priority – “Nobody’s bothered about our performance so we’re not either”. It was recognised that in the absence of a rigorous monitoring regime, incidents of non-compliance were unlikely to be detected. As a result, the managers of

those sites with a weak culture of compliance tended to be reluctant to spend time or money working towards compliance with LAPC. This reluctance was even more acute where they suspected that their competitors were not being required to achieve the same standards that they had been asked to achieve. Such suspicions about the consistency of the implementation and enforcement process were common wherever information on the standards that were being demanded by different regulators, and those that were being achieved by similar sites, flowed between companies within the same sector:

I know from travelling around that there's hardly a factory like this that can conform to [the standard set out in the guidance] so what are we to do. We're all struggling against the tide – the sort of business this is and the cost of cleaning up and getting to that level is too prohibitive... We've tried hard to meet it but I know of quite a lot who haven't done anything [12].

The perceived lack of monitoring, together with the feeling that a firm would be put at a competitive disadvantage if it complied with the requirements of LAPC while its competitors did not, served to undermine commitment to meeting standards among managers of those sites with a weaker culture of compliance.

This commitment was further eroded by the fact that the enforcement regime was not seen to be particularly stringent unless there were public complaints or serious incidents. For example, the common perception was that the LAPC inspectors were inclined to respond to any non-serious cases of non-compliance that they were able to detect by adopting a cooperative, flexible and relatively forgiving approach to enforcement, in an attempt to encourage compliance and to avoid the need to resort to legal action. Although the managers accepted that this cooperative and flexible approach would eventually be withdrawn in serious or sustained cases of non-compliance, they also thought that it would be reinstated when the site had moved back into compliance. Consequently, while they valued the cooperation of the regulator, they were not particularly afraid of this cooperation being temporarily withdrawn as an informal sanction, not least because the existence of this informal sanction protected them from the immediate imposition of more formal sanctions.

Given the low probability of being 'caught', the temporary nature of any informal sanctions and sites' ability to avoid the imposition of formal sanctions, then, consistent compliance was expected only in those sites with a very well established culture of compliance, or in those that were the subject of complaints from the public and other stakeholders.

- The influence of stakeholders

The various factors outlined above helped to generate a ‘lowest common denominator’ approach to compliance with LAPC amongst those companies with a weak culture of compliance. However, there were also some counter-veiling forces at work. For example, the complaints-driven monitoring and enforcement process gave a considerable amount of power to various stakeholders, since members of the public as well as regulated firms were seen to be the ‘clients’ of the local authority. Consequently, complaints about nuisance were taken seriously and inspectors commonly reacted to any serious or sustained incidents by resorting to their legal authority. This tended to mean that those sites that were located near to residential areas, or that emitted visible or smelly substances, were subjected to significant amounts of pressure from the public and subsequently from the inspectors. More isolated sites, or those with less easily detectable emissions, generally escaped more lightly.

Furthermore, this complaints-driven approach to enforcement appeared to have a ‘knock-on’ effect, whereby some of the more proactive sites with a strong culture of compliance, or those sites that had been forced to comply as a response to public complaints, had lobbied the regulator to force their competitors to achieve the same standards. This served both to promote consistency and to ensure that higher rather than lower standards were adopted and complied with across the range of sites. For example, the HSE manager of one particularly proactive site provided information to a regulator from another authority, which was taking legal action against one of its competitors:

There’s another similar plant like this in Scotland – and the Scottish local authority wanted to come here and get some baseline information because they were taking the chap to court... We were very happy to show the inspector around, and we’ll be even happier if they take him out of business. It should be a level playing field, we’re spending the money to comply, [and] so should our competitors [1].

In another instance, a company that had been forced to make substantial investments in abatement technologies, following a series of complaints from the public, had appealed to the local authority because one its competitors had not been required to do the same. The company alleged that this meant its competitor was able to charge lower prices. In response to the firm’s appeal, the inspector notified his counterpart in the neighbouring authority, leading to the imposition of a similar standard on the competitor’s site. The competitor was therefore obliged to make substantial investments in abatement technology despite the fact that no one had complained about its performance. Thus, the implementation process was sometimes driven by

the demands of industry as well as by those of the public and in some instances this led to an upward rather than a downward movement of standards.

The influence of the implementation process

- On technological and organisational change

Differences in all of the factors outlined above had an impact on the ways in which the sites included in the study responded to the practical demands established by LAPC. At the most basic level, variations in sites' culture of compliance affected the level and the nature of the monitoring they undertook. Those sites with a strong culture of compliance were much more willing to invest in monitoring technologies, giving them regular or even continuous data on the performance of their process, as well as on the level and the nature of their emissions. These data improved their understanding of the factors that affected the environmental performance of their process, in turn increasing their capacity for compliance. By contrast, those sites without such a strong culture of compliance tended to be reluctant to undertake monitoring, beyond the basic requirement for them to submit representative data to the regulator on the level of their emissions. Since they only occasionally monitored their emissions to provide these data, these sites learnt very little about the factors impacting upon the environmental performance of their process, and as a result felt less able to improve their performance. This meant that weak *cultures* of compliance were often associated with poorly developed *capacities* for compliance. These differences then affected the nature of the technological and organisational responses to LAPC that were adopted by the sites interviewed.

In those sites with a stronger culture of compliance, the relatively high cost of end-of-pipe technologies tended to stimulate their interest in cleaner technologies and techniques which avoided the need for abatement equipment. In other words, these sites sought to draw upon and develop their capacities to reduce their emissions by improving the efficiency of the design and operation of their existing process. Such responses demanded a fuller understanding of existing processes, more sustained inputs of managerial time and attention, and a willingness to experiment with and disrupt current practice. The HSE manager of one medium-sized site [3] explained that, "Changing processes, not looking at end-of-pipe solutions, really made a big difference to us". They realised that by looking at the system as a whole, far greater efficiency improvements could be gained than any abatement technology could offer. However, this demanded a much more integrated approach to managing and running the process, since "you couldn't run one bit efficiently unless you were running the others efficiently as well". An

integrated management approach was more difficult and it took a lot of effort to make the individual operators understand the impacts of their work on the system as a whole. Nevertheless, it was felt that this effort had paid off: “With our quality management systems we were able to quantify what the benefits were and we’re very pleased we did it”.

In most of the sites that had explored the potential of clean technologies and techniques, the costs and the associated risks were commonly offset by the reduced need to invest in end-of-pipe technologies and by improvements in process efficiency. Reducing or even eradicating the need for inputs which led to regulated emissions also better enabled them to comply with other forms of legislation, most notably health and safety regulations:

The big benefit is not having to buy end-of-pipe – it also puts our people at less risk from a health and safety point of view. It saves us money not having to use flameproof materials, special protective clothing and rooms and special washing equipment. We’re not buying solvents which are quite expensive, we’re not recycling solvents which we had to pay for as well. So there’s quite a significant knock on [effect] really... it also released money to invest in other things [5].

The medium-term benefits of cleaner technologies and techniques were felt across those sites that had adopted them. This created an overlap between economic and environmental concerns, or in other words a ‘regulatory space’ within which compliance with LAPC was made much more palatable. However, it was widely recognised that the ability of cleaner technologies and techniques to deliver longer-term, sustained improvements in the economic and environmental performance of existing processes was limited:

You do quickly get into the laws of diminishing returns through process change, that has to be said, but there are a lot of gains in the early years. When we get to the point of no returns we’ll have to look at it again [11].

However, these diminishing returns were associated primarily with the ‘fine-tuning’ of existing production processes. Where these production processes were replaced periodically, step-changes in environmental performance became possible. In some instances, then, compliance with LAPC was secured almost as a serendipitous by-product of technological advances that had been adopted for other reasons. Inadvertently revealing that he been happy to operate older process technologies that generated emissions that were almost twice the legal standard, the manager of one small site stated:

We've just added a new machine to our process because the old ones weren't paying their way any more and they kept breaking down. It cost us nearly half a million to get it in and running. That increased our capacity by 40% and our emissions stayed about the same because it's so much better than what it replaced, which was only three years old. The old one got us to 90 parts per million (ppm) emissions, our limit is 50ppm and the supplier says we'll get there with the new one [15].

Technological dynamism had therefore enhanced the prospects for compliance even in companies without a strong culture of compliance. In general, though, those sites with a weaker culture of compliance tended to be the smaller sites with simpler processes. In many of these sites, technological dynamism was comparatively unusual and the managers felt that there were fewer opportunities for existing processes to be fine-tuned in order to improve their environmental performance. While this was certainly the case in some instances, the reluctance of these managers to invest even in monitoring technologies also limited their understanding of the factors that affected the environmental performance of their processes. In turn, this reduced their capacity to recognise or to explore any such opportunities. As a result, these managers were much more likely to respond to LAPC by investing in end-of-pipe solutions. These responses could often be readily sourced and evaluated, and easily added to their existing process with relatively predictable results. Although they often demanded significant financial investments in the short-run, they did not disrupt the existing process or demand significant or sustained amounts of managerial time and attention. As a consequence they were often seen by these sites to be the most expedient response to LAPC:

Our scrubber cost £70,000 – we bought it, bolted it on and our emissions fell by 80% or more... it reduced the problem to a level that was hardly discernible which was well within the limits set by the local authority [15].

Expedient though they could be, abatement technologies nevertheless remained beyond the means of some regulated sites. For these companies, the kit they needed was prohibitively expensive: the general manager of a micro-sized process engineering site explained that the company would be forced to close down if the regulator insisted that they put in the necessary abatement technologies; "The profit margins just aren't there so we don't do it" [17].

Meanwhile, for those sites that could afford to purchase and install end-of-pipe technologies, the common perception was that although they enabled the sites to secure compliance without demanding a great deal of managerial time and attention, they did not actually generate any economic benefit:

All it does is enable us to comply with the law, it's not giving us any benefits production wise or cost wise. There's no cost reduction, even the recycling side costs us more in admin – like any small company we were already recycling whatever we could to use again or to sell for scrap but it's a lot of hassle and I've got a lot of better things to do with my time [10].

For some of the managers interviewed, then, the perception that the opportunities for process change were very limited was allied with a reluctance to invest in end-of-pipe technologies because of the initial cost and the subsequent lack of economic benefit. In combination, these factors tended to prevent them from securing compliance with LAPC – something they could get away with given the lack of monitoring or public scrutiny.

- On internal resources

Investment resources were limited in all of the companies interviewed. However, in those sites with a strong culture of compliance, the managers suggested that investments in environment, health and safety were often assessed using different criteria from other, purely economic, investment opportunities. This meant that investments in environmental improvement did not have to compete for scarce resources on an equal footing with all of the other investment requirements and opportunities. In other words, compliance with the environment was put before immediate financial concerns, although of course, where investments in environmental improvement were made, the lowest investments with the highest rate of return tended to be funded first and the efficiency of any investments made remained a key issue.

In those sites with a weaker culture of compliance, however, environmental initiatives had to compete for financial resources with the wider range of investment requirements and opportunities encountered by the company. These included both those that stemmed from the need for sites to comply with a wider range of HSE regulations than LAPC alone, and those relating to the broader investment needs and opportunities within regulated sites. In relation to the former, the sites interviewed generally saw other regulatory frameworks with more established monitoring regimes or with tougher sanctions for non-compliance as being a higher priority. Investments that would secure compliance with health and safety legislation, for example, therefore usually took precedence over those that would satisfy the requirements of LAPC. In relation to the latter, competition for investment resources was fiercer, as the managers were keenly aware that any investments that they made to improve their environmental performance would draw resources away from other core business areas.

In these sites, there was a perception that it was economically risky for scarce investment resources to be drawn away from core-business areas and diverted toward what were considered to be secondary concerns such as environmental performance. The result was that environmental initiatives found it even harder to compete for resources where compliance was not seen as an absolute requirement or where environmental performance was not seen to be a core-business issue.

While access to financial resources was a critical issue in all of the sites interviewed, for many companies access to human resources was a bigger problem. Within all of the sites included in the study, responsibility for environmental management and for compliance with the requirements of LAPC had been combined with a wider range of other management responsibilities. For the managers in the medium-sized firms, these tended to relate to other forms of health, safety or environmental legislation; however, for those in the smaller firms these related to every other area of the business. In both instances, other concerns commonly took precedence and the resources that were available internally that could be drawn upon to work towards compliance with LAPC were often very limited.

- On intra-firm and inter-firm networks

Within all of the smaller sites interviewed, there was a lack of specialist expertise and understanding where environmental management was concerned. This was also the case for some of the medium-sized sites interviewed, although these sites were often part of a wider group which gave them the opportunity to exchange information and expertise between their various sites. Where they took place, these exchanges led to an accelerated process of learning which enabled them to improve the efficiency of process management and to reduce the risks associated with new initiatives. Similarly, exchanges of information and expertise between similar sites within the same group were seen to have reduced the costs associated with searching for new technologies and techniques and the risks associated with their adoption:

When we needed to put the scrubber in, we had experiences with it in our German plant. So we were able to find out at no cost what we could achieve... I went over there and saw how they'd done it so we could share the technology. It's one of the advantages of being a big company. Also each location can tackle a separate bit of the problem and make everyone else aware of the results [8].

The quality of the information that flowed within these intra-firm networks was seen to be particularly good, as in general the information and experience was willingly shared by colleagues in similar sites with similar working patterns. As a consequence, it was specific enough to be readily usable and it incorporated tacit understanding as well as formal information. Their ability to access the resources that they needed internally meant that the managers of the medium-sized or group-owned sites rarely if ever participated in external networks to enable compliance. This was particularly apparent at the local level, where these sites were generally sceptical about the potential for external networks to add to the specialist information and understanding that was available internally:

We've don't need local links really – we think we've got enough information from our own world on what the regulations say and on how we can respond... But we're big enough not to have to, those sorts of things are for the smaller players [3].

In contrast to the medium-sized or group-owned sites, the managers of the smaller or more independent sites generally confirmed that they had to rely on external networks in order to access resources such as information and understanding. However, the common view was that the information they gained by participating in these networks was often too generic. The managers wanted specific information that would give them a clear understanding of whether a particular technology or technique would work in their particular context, and whether it would secure compliance with the requirements of LAPC. Although information of this nature was made available by some technology suppliers and consultants who engaged with various external networks to market their products and services, the managers interviewed tended to be sceptical about the integrity of the information, since claims about the performance of new technologies or techniques had rarely been independently evaluated. As a result, they did not feel confident to compare the various ways in which they might respond to the requirements of LAPC.

Given their lack of access to information and resources, various support mechanisms had been introduced to enable smaller companies to comply with regulations such as LAPC. These support mechanisms included some schemes initiated by central government and some initiated by the various local authority economic development offices and business development agencies. Other schemes had also been introduced by the local chambers of commerce and universities, and a 'green business club' had been established by various actors in the local economy to facilitate networking between firms. The sites interviewed were therefore eligible for, and indeed were the targets of, business support in various forms from a range of different organisations and networks.

While the managers of the smaller sites were commonly aware that these support mechanisms existed, they were generally reluctant to engage with them. Aside from further scepticism about the value of generic support in their specific context, their reluctance to apply for business support to aid compliance was based on the suspicion that there were complicated and protracted application procedures that had to be completed, which would draw upon their already scarce managerial time and resources. They also predicted that even if an application for support was successful, the schemes would not provide support at the time or in the form in which it was needed. Many of the business support schemes were in fact designed to consider and cater for these factors, but they were unable to overcome the regulated sites' suspicions and persuade them to engage in these business support networks. The one site in this study that had applied for and had been granted support to improve its environmental performance – a medium-sized packaging company – had found the process and the support it eventually provided to be very useful. However, this site had already overcome its suspicion about the relevance of these networks, as it already had well-established links with the local economic development officer and was already very active in various other business support networks. Trust, therefore, appeared to be an important factor influencing the level of engagement in external networks.

Due to their scepticism about the value of external networks, many of the managers of the smaller and more independent sites included in the study suggested that they had to rely upon their limited internal resources alone as they sought to respond to the demands established by LAPC. However, there was one common exception in the form of alliances which had emerged between the suppliers of some inputs and their customers, who were regulated by LAPC solely because they used these inputs. These alliances had enabled some suppliers to develop and introduce new products that had reduced their customers' emissions, thereby enabling them to comply with the requirements of LAPC. In many instances, after an initial period of experimentation, the redesigned products that were developed through these alliances had both economic and environmental benefits:

Environmental legislation has driven us to say to our suppliers that we need an alternative to this. We put pressure on them to come up with something and they've managed to design a product that works as well now as the old ones used to – although they didn't initially and it took a bit of time to get them right. They're actually cheaper than the old ones too [13].

Competition between suppliers, together with cooperation between some suppliers and their customers, therefore helped some of the sites interviewed to secure compliance with the requirements of LAPC. In some cases these alliances were based on cooperation, common understanding and mutual benefit, as they simultaneously protected a market for the manufacturers and enabled the users of such inputs to comply with the requirements of LAPC. However, interactions within the supply chain were sometimes based more on control than cooperation. This was particularly the case where large customers put pressure on their smaller suppliers to improve their environmental performance:

The big customer holds these supplier seminars where they get all of their supplier companies in and tell them how they're going to deal with them and things like that. It's all very good but they tell us what we have to do if we want to supply them, and that always includes showing that we comply with all of the different regulations, and I wonder whether we can afford it... If they started banging the drum too hard then we'd probably tell them to go and buy the product elsewhere [11].

For some of the managers interviewed, these pressures from their customers related particularly to the emissions that were regulated by LAPC. Indeed, in some instances compliance with the requirements of LAPC was monitored and enforced more rigorously by some of their private sector customers than by the public sector regulators of regulated sites. Depending on the relative power of the different actors therefore, external networks served not only as networks for cooperation to enable compliance, but also as networks of control to enforce compliance with the requirements of LAPC.

- *On environmental performance*

Depending on the ways in which they had responded to the regulations, the managers interviewed had different perspectives on the influence that LAPC had had on their environmental performance. Some of the managers explained that because of their desire to comply with LAPC and their subsequent investments in monitoring technologies, they were much more aware of the factors that shaped the environmental performance of their site. In a sense, they suggested, the LAPC regulations had made them much more able to manage their processes in ways which reduced their emissions. They had learnt to substitute polluting inputs with cleaner ones and to improve the efficiency of their production process so that it generated lower levels of emissions.

This contrasted with the perception that was common amongst those managers of the sites with a weaker culture of compliance, that LAPC had done little to build their understanding of their processes or their capacity to improve the environmental performance of those processes. Unless the suppliers of these sites had been able to develop cleaner products that would allow them to improve their environmental performance, these sites tended to respond to LAPC by adopting end-of-pipe technologies. If they were used, these technologies enabled them to capture their emissions, thereby reducing the extent to which they damaged the air environment, but possibly increasing the level of their emissions to water or land. Other than this, some of the managers interviewed suggested that they had done little to ensure that their processes complied with the LAPC regulations and that their environmental performance had not been influenced by the presence of the regulations. For these sites, the absence of a response to LAPC was made possible by the lack of monitoring, by the absence of stakeholder pressures and by the perception that no cheap and easy improvement options were available.

- *On costs and benefits*

Amongst the sites included in the study, the costs and benefits of compliance with LAPC appeared to vary quite considerably. Competition for scarce investment resources was generally significant across all the regulated sites. In some instances, however, the investments that were needed to comply with LAPC were able to compete for funding with other investment opportunities on purely economic grounds. This was particularly the case in the medium-sized sites, where there had been more opportunities for a series of incremental process changes to lead to both economic and environmental returns. In such instances, environmental regulation commonly triggered a process of learning, often involving the regulator. This gave the company a new perspective on process management which enabled them to re-evaluate materials and energy flows and to improve process efficiency. For some sites, this allowed investments in process efficiency to generate competitive rates of return:

There's always competition for resources. There's a standard rate of return – I think it's 15% – our targets are three-year paybacks. But for some environment-related projects we still manage to meet that so of our capital spend about 15% is on environment, health and safety even with the competition for resources [7].

Competitive rates of return were not available in all sites at all times, however. Some of the medium-sized sites interviewed suggested that the ability of the environment to compete for scarce investment resources on economic grounds was beginning to diminish, as most of the easy options had already been exploited. In the smaller sites with simpler processes, the

perception was that such opportunities had never existed, largely because in simpler processes there were fewer opportunities for learning and for incremental improvement. In both the medium-sized and the smaller sites, therefore, it was commonly felt that if existing process technologies remained in place, the only way to continue to improve environmental performance was to invest in and run abatement technologies.

The costs and benefits of regulation also varied according to a range of other factors, since the economic context within which they existed and operated differed considerably from sector to sector and from firm to firm, as well as over time. Some of the sites that operated in particularly competitive markets, or that were struggling to compete for any number of other reasons, argued that at the margin, the costs of securing compliance with LAPC were in danger of putting them out of business. Obviously this led to a reluctance to invest in the measures needed to secure compliance with LAPC, if such investments would put the site at a competitive disadvantage in the short term. The general manager of one site [14] remarked that the company was simply too busy trying to survive as a business, and simply could not spare the time to meet the requirements of LAPC.

These concerns about the competitive implications of the LAPC regulations were even more acute in the smaller and more independent sites, which felt that they were operating in highly competitive markets. These sites were less likely to be able to accommodate any of the short-term cost implications associated with securing compliance, by raising their prices or by drawing on the profits made by other parts of the group. The risks of diverting scarce managerial and financial resources away from core business areas were also seen to be pronounced for such sites. In contrast, those sites that did not operate in such competitive markets or that were part of a larger group were generally more willing to invest in new technologies and techniques even if they had short-term cost implications.

While many of the smaller and independent sites saw the need to secure compliance as a source of competitive disadvantage, differences in the short-term capacity for compliance were seen by some of the medium-sized and group-owned sites to be a source of competitive advantage. As has been discussed above, in a number of instances, regulated sites had actively encouraged central and local government to apply stricter standards more forcefully and more consistently, as they suspected it would drive their competitors out of business. Indeed, one of the managers interviewed explained that his company identified targets for takeover by looking for the sites in their sector that were having difficulty complying with LAPC and with other regulations, as they felt that this was an indication that such sites were inefficient or poorly managed.

Relating the Empirical Discussion to the Analytical Variables

To complete the analysis of the LAPC implementation process and the presentation of the empirical results more generally, the discussion in this chapter has examined the perspectives that the managers of the regulated sites have of the factors that shape the nature and influence of the implementation process. Within the discussion, reference has been made recurrently to the range of analytical variables that this thesis is interested in, namely the character and resources of the central actors, the presence of any resource inter-dependencies and incentives for cooperation, the nature of the strategies adopted in response to these incentives, the significance of any associated institutional factors and the influence of these strategies on the outputs and outcomes of the implementation process.

Specifically, the discussion has looked at the influence that these variables can have on the ways in which the different actors interact within the implementation process. Further, the discussion has explored the ways that these interactions influence both the demands that are made by regulators and the ways in which regulated firms respond to these demands. This chapter will conclude by examining the influence of each of the variables in turn, drawing these issues out of the discussion so that their conceptual relevance can be examined in the comparative analysis that follows in Chapter 8.

The character and resources of the regulated firms

The sites that are regulated by LAPC and that were included in the study can be divided into two categories:

- Those medium-sized and/or group-owned sites that were subjected to stakeholder pressure and that had a strong culture of compliance. The managers of these sites tended to have access to the resources needed to work towards compliance both internally and through intra-firm networks; and
- Those smaller and/or independent sites that were less visible to stakeholders and that had a weak culture of compliance. The managers of these sites commonly lacked access to resources internally and sometimes engaged in external networks in an attempt to comply with the regulations.

Although the characteristics of the sites regulated by LAPC differed in a number of ways, the managers that interacted with the regulators in the implementation process drew upon a similar range of resources. These included their ability to:

- Collectively ignore or resist the regulations, thereby forcing the regulator to take the initiative and to engage in cooperative relations in the implementation process in order to operationalise the regulations;
- Grant the inspectors ready access to the site-specific information that they needed to put the regulations into practice;
- Collect and grant the inspectors access to the accurate monitoring data that they needed to assess whether compliance had been achieved;
- Respond to requests to move back into compliance when breaches were detected and/or complaints were made to avoid the imposition of formal sanctions;
- Raise the costs of implementation or threaten the reputation of the local authority or its inspectors by launching appeals.

The nature of any resource inter-dependencies within the implementation process

Although the managers had access to various resources that they could draw upon in the implementation process, they also depended upon a range of resources that were held by the inspectors in the local authorities. These included the inspectors' ability to:

- Understand and interpret the legislation in order to translate generic principles into site-specific standards;
- Use their discretionary powers in the standard setting process;
- Resisting influence from regulated companies or third parties by referring to the published guidance;
- Grant or withhold flexibility relating to the times at which standards should be achieved;
- Detect any breaches of compliance through complaints from the public and/or other firms seeking to promote consistency; and
- Choose whether or not to apply formal sanctions in response to any cases of non-compliance that were detected or complaints that were made.

The extent to which any resource inter-dependencies provide incentives for cooperation within the implementation process

These resource inter-dependencies established some incentives for cooperation with the inspectors at certain stages of the implementation process. In particular, the managers argued that by cooperating they could:

- Influence the ways in which the inspectors exercised what discretionary powers they had in the interpretation and standard setting phase;
- Ensure that they were granted some flexibility relating to the times at which standards should be achieved, thereby giving them more freedom to explore alternative approaches to compliance and to reduce the costs of compliance; and
- Build trusting relationship with the inspectors to insulate themselves against the prospect of formal sanctions being immediately imposed in response to any breaches of compliance that were detected or complaints that were made.

However, they also argued that because the inspectors lacked expertise on their process and on the ways in which they might comply, there were few benefits from cooperating with the inspectors in terms of building their capacities for compliance or reducing the costs of compliance.

The strategies that the regulated firms adopted in response to any such incentives

As a response to these incentives, the managers of the regulated firms adopted some common and some contrasting strategies. As a result:

- The managers of all sites sought to cooperate with the regulator in the standard setting phase;
- For those sites with a strong culture of compliance, the managers commonly sought to pursue compliance voluntarily even in the absence of rigorous monitoring; and
- For those sites with a weaker culture of compliance, the managers commonly sought to minimise the time and money they spent working towards compliance because:
 - by spending time and money working towards compliance they thought they would be put at a competitive disadvantage, as they suspected that their competitors were not necessarily being forced to comply with the same standards;
 - in the absence of rigorous monitoring or complaints from the public they thought that the chances of being caught were low; and

- in many instances they felt they could avoid the imposition of formal sanctions by cooperating with the inspectors and by working to restore compliance.

The extent to which different institutional structures constrain or enable these strategies

Although the managers appeared to be responsive to the incentives that they associated with the different ways of engaging with the regulators within the implementation process, their activities were both constrained and enabled by a range of institutional factors. These factors related to:

- The presence of different and sometimes competing regulatory frameworks that existed alongside LAPC;
- The limited resources that were made available to the inspectors that they interacted with in the implementation process;
- The design of the legislation that established the potential for a flexible approach to implementation;
- The lack of complete preconditioning that allowed the implementing inspectors to exercise some discretion in the implementation process;
- The presence of some preconditioning that enabled the implementing inspectors to defend themselves against undue influence from regulated firms and some third parties;
- The perceived absence of many economically beneficial improvement options;
- The presence of various intra-firm and inter-firm networks that they could draw upon as they sought to comply with the regulations; and
- The presence of interested stakeholders that could detect and complain about some incidents or breaches of compliance.

The influence that different forms of interaction have on regulatory outputs and outcomes

This approach to implementation shaped the practical nature of the demands that the inspectors made, and the ways in which the firms responded to these demands. In particular, the approach meant that:

- The standards that were set were shaped by the guidance, although firms that cooperated still gained some influence in the interpretation of the guidance;
- The practical imperatives that were established were generally seen to be weak because of the absence of a rigorous monitoring regime;

- Larger sites with stronger cultures/capacities for compliance and opportunities for process change sought to minimise emissions and to avoid need for investments in end-of-pipe technologies;
- Smaller sites with weaker cultures/capacities for compliance generally lacked opportunities for process change and therefore tended to invest in end-of-pipe technologies to control their emissions;
- Some sites engaged in external supply-chain networks to redesign their inputs to avoid the need to invest in end-of-pipe technologies;
- Some sites also complied as a by-product of technological dynamism and major process change;
- Impacts on the environmental performance of the regulated firms and on the costs of compliance were therefore variable; and
- The common perception amongst the managers was that compliance placed demands on scarce resources whilst generating little or no economic benefit.

It is apparent, then, that the managers of the sites that were regulated by LAPC had contrasting views of the factors that shaped the nature and influence of the implementation process. While all of the managers sought to cooperate with the inspectors at the standard setting and enforcement stages, few of them felt that they could raise their capacity for compliance or reduce their costs of compliance by cooperating with the inspectors. While the capacity for cooperation in the implementation process was therefore seen to be limited, in the absence of a rigorous monitoring regime all of the managers felt that the inspectors' capacity for control was also restricted. As a result, the discussion has suggested that the outcomes of the LAPC implementation process depended not only upon the nature of the interactions between regulators and regulated firms but also upon the characteristics of the regulated firms, most notably their cultures and capacities of compliance, and on the presence of stakeholders who could detect and complain about any breaches of compliance.

This chapter completes the presentation of the perspectives that both the inspectors within the regulatory agencies, and the managers of the regulated sites, have of the IPC and LAPC implementation processes. The thesis will now move on to compare and contrast the factors that shape the nature and influence of both implementation processes. In so doing, the discussion will seek to examine the validity of the hypotheses that were established earlier in the thesis. It will also refer back to the conceptual discussion on the theories of cooperation and collective action and on the concepts of policy networks and economic networks, in order to evaluate the extent to which these theories have helped us to understand the empirical cases, and the extent

to which the experiences that have emerged from the empirical cases can be drawn upon to reinforce or refute the central claims of the theories.

CHAPTER 8

Comparative Analysis and Conceptual Review

Structure

- Introduction

- Comparative Analysis
 - *Resource Allocations*
 - *Inter-dependencies and Incentives*
 - *Strategies and Interactions*
 - *Institutional Influences*
 - *Regulatory Outputs and Outcomes*

- The Explanatory Value of the Different Theories of Cooperation and Collective Action

- The Validity of the Hypotheses

- Conclusions from the Comparative Analysis

Introduction

Based on the results of a comparative analysis of the empirical findings that were presented in the preceding chapters, this chapter examines the explanatory value of the contrasting theoretical perspectives on the basis for cooperation and collective action in the implementation process and the validity of the hypotheses that are at the heart of the thesis. These factors, which were established on the basis of the conceptual discussion that was presented in Chapter 2, are summarised in Table 8.1. An overview of the analytical variables that were influential in each case is presented in Table 8.2 for IPC and Table 8.3 for LAPC.

Despite some similarities both in the design of IPC and LAPC and in the context for their implementation, the comparative analysis finds that the significant differences in the nature and influence of the two case-study implementation processes can indeed be explained by referring to the influence of the central analytical variables. More particularly, it finds that the

Table 8.1: Hypotheses, Theoretical Perspectives, Analytical Variables.

<p>• Theoretical Perspectives</p> <p>In seeking to understand the basis for cooperation in the implementation process, the thesis considers the explanatory value of two contrasting theoretical perspectives:</p> <ul style="list-style-type: none"> - The rational choice perspective which suggests that rational and responsive actors will cooperate with each other where the incentive structures favour such forms of behaviour and where certain conditions are in place. The inferred causality that is associated with this perspective is that resource inter-dependencies generate the incentives that encourage the different actors to co-operate and to exchange resources in order to realise their objectives. - The institutional perspective which suggests that the conditions that lead to cooperation between actors are likely to be more complicated than the rational choice perspective assumes. Instead, the institutional perspective suggests that the implementation process cannot be separated from its broader institutional context and that particular forms of behaviour are likely to emerge, evolve and become institutionalised within the implementation process. The strategies adopted by the different actors will therefore be both enabled and constrained by the institutional structures within which the actors are embedded.
<p>• Hypotheses</p> <p>Reflecting aspects of both the neo-classical and the institutional perspectives, the thesis hypothesises that:</p> <ul style="list-style-type: none"> - actors within the implementation processes will be able to derive influence through their access to a broad range of resources; - various resource interdependencies will emerge in the implementation process which establish incentives for cooperation as securing compliance becomes a 'collective action problem'; - cooperative interactions within the implementation process will be institutionalised within different forms of network which will influence both the outputs and outcomes of the implementation process; - because of these inter-dependencies the implementation process will display some of the advantages of co-operation (i.e. increases in administrative viability and an enhanced ability to secure compliance through collective action) and some of the disadvantages of regulatory capture (i.e. reduction of standards and loss of accountability).
<p>• Analytical Variables and Lines of Causality</p> <p>In order to examine the validity of these hypotheses, the thesis focuses on the influence of a number of central analytical variables. However, the explanatory value of the contrasting theoretical perspectives, and hence the validity of some of the hypotheses, depends upon the nature of the inter-relations between these analytical variables: The rational choice perspective predicts a relatively simple, linear chain of causality whereby inter-dependencies create the incentives that shape the behaviour of economically responsive actors; the institutional perspective predicts a more complex set of inter-relations where the inter-dependencies, incentives and strategies all interact both within the implementation process and within the broader institutional context.</p>

Table 8.2: The central analytical variables in the case of IPC

IPC	
<i>REGULATORS</i>	<i>FIRMS</i>
<i>Resources</i>	
<p>Their ability to:</p> <ul style="list-style-type: none"> • Exert legal authority and apply discretionary powers to establish site-specific standards • Engage and adopt a hands-on relationship • Offer expertise to build capacities for compliance • Offer flexibility to reduce the costs of compliance • Argue that compliance could often be secured in economically acceptable ways • Detect cases of non-compliance • Respond to cases of non-compliance by applying a range of informal and formal sanctions • De-legitimise firms in the eyes of stakeholders 	<p>Their ability to:</p> <ul style="list-style-type: none"> • Offer access to site-specific information • Develop and draw upon commitments to and capacities for compliance • Commit financial and managerial resources and to take risks to explore the potential of new technologies and techniques • Influence the costs and the reputation of the regulatory agency
<i>Inter-dependencies and Incentives</i>	
<p>Needed to interact in ways which enabled them to:</p> <ul style="list-style-type: none"> • Gain access to information • Build capacities for compliance • Stimulate the adoption of clean technologies • Reduce the costs of compliance • Avoid resistance and legal action 	<p>Needed to interact in ways which enabled them to:</p> <ul style="list-style-type: none"> • Gain access to information and expertise • Gain access to influence and flexibility • Build capacities for compliance • Reduce costs of compliance • Avoid imposition of legal authority • Secure legitimation
<i>Strategies</i>	
<p>Promoted cooperation in the implementation process by:</p> <ul style="list-style-type: none"> • Only offering information, expertise and flexibility to cooperative firms • Seeking to raise capacities/reduce costs of compliance for cooperative firms • Adopting a tiered approach to enforcement to promote compliance and maintain cooperative relations • Maintaining capacity for control and the ability to sanction uncooperative firms 	<p>Promoted cooperation in the implementation process by:</p> <ul style="list-style-type: none"> • Only offering information and expertise to cooperative regulators • Seeking to comply as long as costs of compliance were seen to be acceptable • Threatening to withdraw cooperation if costs of compliance escalate.
<i>Institutional enablers/constraints</i>	
<p>This approach to implementation was shaped by:</p> <ul style="list-style-type: none"> • Historical precedents which also constrained changes to an alternative. • The design of the legislation that established legal authority and discretionary powers and that demanded case-by-case interpretation. • The inability of external stakeholders to exert sufficient influence to undermine the basis for cooperation. • The presence of resources within the agency that enabled expert staff to engage in frequent and sustained interactions with firms, thereby enabling trust and mutual understanding to emerge. • The temporary availability of economically acceptable improvement options within regulated firms and potential for different forms of interaction to create/extend the life of such options. • The presence of interested and potentially influential stakeholders that increased the value of compliance. 	
<i>Influence on outputs and outcomes</i>	
<p>These interactions and the associated institutions:</p> <ul style="list-style-type: none"> • Gave regulated firms some influence on standards to be complied with in the SR. • Encouraged firms to explore the potential of cleaner technologies and techniques before investing in end-of-pipe technologies. • Enabled firms to reach higher standards and to reduce costs of compliance in the MR. • Improved environmental performance and reduced risk amongst the majority of firms. • This approach to environmental improvement seemed likely to encounter diminishing marginal returns and escalating costs of compliance in the MR-LR. 	

Table 8.3: The central analytical variables in the case of LAPC

LAPC	
<i>REGULATORS</i>	<i>FIRMS</i>
<i>Resources</i>	
Ability to: <ul style="list-style-type: none"> • Exert legal authority and apply discretionary powers to establish site-specific standards • Offer flexibility to reduce costs of compliance • Receive complaints about non-compliance • Respond to complaints by applying informal and formal sanctions 	Ability to: <ul style="list-style-type: none"> • Grant access to information • Develop and draw upon commitments to and capacities for compliance • Influence the costs and the reputation of the regulatory agency
<i>Inter-dependencies and Incentives</i>	
Needed to interact in ways which enabled them to: <ul style="list-style-type: none"> • Gain access to information • Avoid resistance from firms • Reduce the number of complaints • Reduce the need for legal action 	Needed to interact in ways Which enabled them to: <ul style="list-style-type: none"> • Gain access to information • Gain access to influence and flexibility • Minimise the need to spend time and money working towards compliance • Avoid the imposition of formal sanctions
<i>Strategies</i>	
Engaged with the implementation process by: <ul style="list-style-type: none"> • Taking the initiative and offering information and flexibility to all but the most resistant firms. • Adopting an arms-length approach to monitoring. • Adopting a complaints driven approach to enforcement. • Adopting a tiered approach to enforcement to reduce complaints and to avoid the need for legal action. 	Engaged with the Implementation process by: <ul style="list-style-type: none"> • Only offering information to cooperative regulators • Seeking to comply where there were strong cultures of compliance or complaints from the public. • Resisting or ignoring the regulations where there were weak cultures of compliance or where there were no complaints from the public.
<i>Institutional enablers/constraints</i>	
This approach to implementation was shaped by: <ul style="list-style-type: none"> • Historical precedents had favoured a reactive, complaints driven approach. • Competing objectives within the regulatory agency restricted resources available for implementation, thereby preventing inspectors from adopting a more proactive approach. • Lack of opportunities/capacities for economically acceptable improvement options amongst many regulated firms precluded the adoption of a more proactive approach. • In the absence of rigorous monitoring, prospects for compliance depended upon the strength of the cultures of compliance and/or by the presence of stakeholders that were able to detect and complain about cases of non-compliance. • Inconsistencies and concerns about the costs of compliance encouraged resistance in some firms. 	
<i>Influence on outputs and outcomes</i>	
These interactions within the implementation process: <ul style="list-style-type: none"> • Gave regulated firms some influence on standards to be complied with. • Lack of monitoring reduced practical imperatives imposed by regulator. • Medium-sized and group-owned sites with stronger cultures/capacities for compliance and opportunities for process change sought to minimise emissions and to avoid need for investments in end-of-pipe technologies. • Smaller and more independent sites with weaker cultures/capacities for compliance generally lacked opportunities for process change and therefore tended to invest in end-of-pipe technologies to control their emissions. • Some sites engaged in external supply-chain networks to redesign their inputs to avoid the need to invest in end-of-pipe technologies, others complied as a by-product of technological dynamism and major process change. • Impacts on environmental performance and associated costs of compliance were therefore highly variable. 	

explanatory value of the rational choice perspective on the basis for cooperation and collective action in the implementation process is fundamentally limited. Although it recognises the potential for inter-dependencies to incentivise *the initiation* of cooperative relations, it ignores the extent to which the incentives for cooperation can be shaped *over time* both by the broader institutional context within which the implementation process takes place and by the emergence of various institutionalised forms of behaviour within this process. By acknowledging the significance of these factors, and by highlighting the influence of the dynamic and at times self-reinforcing nature of the interactions that shaped the implementation processes examined, the chapter concludes that the analysis was able to develop a much fuller understanding of the factors that shape the nature and influence of the implementation process where it adopted the institutional perspective.

As well as influencing the validity of the hypotheses, the conclusion that the institutional perspective offers a fuller understanding of the factors that shape the nature and influence of the implementation process is of great practical significance. Under some circumstances, it suggests that cooperative interactions between regulators and regulated firms can become embedded within particular paths or trajectories that can be very difficult to change. This degree of embeddedness may be seen to be a good thing where cooperation is seen to be desirable, as it may be from the perspective of those regulators and firms who perceive cooperation to build capacities for compliance and to generate more effective and more efficient regulatory outcomes. However, from the perspective of those stakeholders who are concerned not so much with the efficacy and efficiency of regulatory outcomes as with the accountability of the regulatory process the fact that cooperative approaches to implementation can become deeply embedded may be seen as a significant obstacle to change. These issues will be discussed further in the final chapter that examines the wider implications of an institutional perspective on regulation and implementation.

Comparative Analysis

Resource Allocations

In relation to the initial allocation of resources, inspectors in each of the regulatory frameworks examined were awarded some legal authority by the statutes that established the regulations. They were also able to draw upon some discretionary powers as they interpreted the regulations and established site-specific standards. However, their discretionary powers, which stemmed from the need to interpret flexible regulatory principles such as BATNEEC on a case-by-case

basis, were curtailed to differing degrees by the guidance that was published to precondition the implementation process. For IPC, the relative complexity of the sites and the expertise of the inspectors meant that the generic guidance was often seen only as an initial reference point in their standard setting activities. For LAPC, the relative simplicity of the sites and the prospects for inconsistencies to emerge and for appeals to be made meant that the guidance played a more significant role. Consequently, the discretionary powers that could be drawn upon by the inspectors were more influential in the case of IPC than in that of LAPC.

Despite these differences, the ability of the inspectors to understand and to interpret the requirements of the regulations was an important resource in each instance, as was the managers' ability to grant or withhold the information that the inspectors needed to establish site-specific standards. Thus, although they used them in different ways, the actors in each implementation process had access to a similar range of resources during the standard setting phase. At subsequent stages of the implementation process however significant differences in the resource allocations emerged.

In the case of IPC, the inspectors were able to offer the regulated firms information and understanding both on the regulations and on the ways in which they might comply. Drawing upon their discretionary powers, they were also able to offer some flexibility relating to the times at which compliance had to be secured. These resources could be drawn upon by the regulated firms to increase their capacities for compliance and to reduce their costs of compliance (see below). In turn, this enabled the inspectors to argue that compliance could be achieved in economically acceptable ways – a rhetorical device that became an important resource for the inspectors.

The managers of the firms that were regulated by IPC were also able to draw upon some significant resources as they engaged in the implementation process. As well as granting or withholding ready access to information, the managers were able to decide whether or not to develop some commitment to compliance and to mobilise their financial and managerial resources in order to work towards compliance. If they withheld their information and resisted the regulations, they also had the ability to increase the costs and damage the reputation of the implementing agency and its inspectors.

Where individual firms exercised their ability to resist or ignore the regulations, the IPC inspectors were able to detect cases of non-compliance and to resort to the imposition of both informal and formal sanctions. The managers of the firms that were regulated by IPC saw the inspectors' ability to impose informal sanctions to be significant as they would lead to the

withdrawal of their access to the resources that were held by the inspectors but that they valued. They also felt that the IPC inspectors' ability to call for the imposition of formal sanctions was an important resource. This was not only because of the significance of the sanctions themselves, but also because the managers felt that by imposing such sanctions the inspectors could de-legitimise the firms operations in the eyes of its stakeholders.

In contrast, once the LAPC regulations had been interpreted and standards had been established, the inspectors generally left it to the managers of the regulated firms to decide how to comply. Shortages of resources, relating both to the level of expertise that the inspectors had in the nature of the sites that they were regulating and to the time that they could spend with each company, meant that the inspectors were commonly unable to work with the managers of the regulated firms to build their capacities for compliance or to reduce their costs of compliance. The inspectors' also lacked opportunities to engage with the firms to encourage them to pursue economically acceptable forms of compliance (see below). Consequently, their ability to argue that compliance could be achieved in economically acceptable ways was much more restricted than in the case of IPC.

The firms that were regulated by LAPC were much more likely to draw upon their ability to resist or to fail to pay much attention to the regulations. This was because compliance was seen to be costly and because there were a range of other regulations competing for their resources. Whereas the IPC inspectors were able to detect cases of non-compliance through regular monitoring, the LAPC inspectors were less able to do so, again because of resource pressures. Instead, they adopted a reactive and complaints driven approach to monitoring and enforcement. For those cases of non-compliance that were detected, the LAPC inspectors were less able to encourage the firms to restore compliance through the application of informal sanctions than were the IPC inspectors. Aside from the costs of compliance, this was also because the firms that were regulated by LAPC tended to place a lower value on the resources that the inspectors could offer to cooperative and compliant firms. Consequently, the inspectors often had no alternative but to resort to the application of formal sanctions. Although these formal sanctions were seen to be significant by the firms, the sites that were regulated by LAPC were less concerned about the de-legitimation of their sites in the eyes of stakeholders than were their IPC counterparts as they generally had a much lower public profile.

Inter-dependencies and Incentives

In combination, these differences in resource allocation and use gave rise to contrasting inter-dependencies and incentives in each of the implementation processes. In both the IPC and the

LAPC frameworks, information and understanding were particularly important resources during the standard setting phase. While the inspectors needed to gain access to the site-specific information that was held by the managers of the regulated firms, so the managers depended upon the inspectors' understanding of the regulations and their ability to interpret the regulations to establish site-specific standards and to exercise their discretionary powers sympathetically as they did so. These inter-dependencies gave rise to incentives for information exchange and for cooperation at the standard setting phase of each implementation process.

At later stages of the implementation process however different inter-dependencies emerged. In the case of IPC, both the inspectors and the managers sought to further their mutual interest in reaching compliance through the wider adoption of cleaner technologies and techniques. Opportunities for the adoption of clean technologies were relatively prevalent because the plants were large and complex. Consequently, in many instances there were opportunities for environmental performance to be improved by re-organising and fine-tuning existing technologies. As these forms of response enabled the prevention rather than the capture and treatment of emissions, they were seen to be an environmentally effective outcome by the inspectors. In time, they had also come to be seen as an economically acceptable outcome by the managers of the regulated sites as they allowed them to avoid the need to invest in end-of-pipe technologies and to improve the materials and energy efficiency of their operations.

In order to secure the wider adoption of these technologies and techniques, both the inspectors and the managers had resources that were needed by the other. As firms had the managerial and financial resources needed to explore the feasibility and the viability of different options, as well as the ability to decide whether or not to take risks as they explored different forms of compliance, so regulators had some ability to raise their capacity to do so by offering information, understanding and flexibility. As a result, securing compliance based on the adoption of cleaner technologies and techniques essentially became a collective action problem and significant incentives for co-operation and the exchange of resources emerged. These incentives were increased by the common perception amongst both the inspectors and the managers that alternative approaches to implementation, and alternative forms of response, were likely to be less effective and more costly.

In the case of LAPC, although the inspectors and the managers were also concerned about the costs of compliance, there were more limited opportunities for compliance to be secured through the wider adoption of cleaner technologies and techniques. In part, this was because the regulated processes tended to be smaller and simpler and so there were fewer opportunities for their environmental performance to be improved through reorganisation or fine-tuning.

However, it was also because the inspectors were less able to draw upon their resources to build the capacities for these approaches to compliance amongst the regulated firms. Instead, end-of-pipe responses, which imposed extra costs and generated very few economic benefits, were the predominant form of response. The opportunities for the inspectors and the managers to exchange their resources to realise a mutual benefit (environmental efficacy for the inspectors, economic acceptability for the firms) were therefore more restricted. As a result, the inter-dependencies were less pronounced and the incentives for cooperation were less apparent in the LAPC implementation process than in the case of IPC.

During the enforcement stage, however, the IPC and LAPC implementation processes shared a common range of inter-dependencies and incentives. In each case, the inspectors suggested that there were disincentives associated with legal action as it would increase their costs and damage their reputation. As a result, when cases of non-compliance were first detected there were incentives for the inspectors to cooperate and to offer their resources to non-compliant firms in an attempt to draw them back into compliance. Where these resources were of value to the regulated firms, as in the case of IPC, such approaches established significant incentives for cooperation and compliance amongst the regulated firms and the need for legal action was commonly avoided. However, as stated above, these resources were seen to be less significant in the case of LAPC. As a result, in the case of LAPC, the ability of the inspectors to incentivise compliance by threatening to restrict the extent to which non-compliant firms could access their resources was lower than in the case of IPC. This meant that, even when cases of non-compliance were detected, the inspectors were more likely to resort to the application of legal authority in the case of LAPC than in the case of IPC.

Strategies and Interactions

In the standard setting phase, the inspectors and the managers in both cases had eventually recognised and responded to the different inter-dependencies and incentives by adopting cooperative strategies and exchanging their resources. While early in the life of the IPC framework the inspectors had adopted a more arms-length and less cooperative approach, this had engendered (or had at least done little to challenge) a collective reluctance to comply with the regulations amongst the managers of the regulated sites. As this reluctance emerged at a time when the regulatory agency was under pressure to operationalise the regulations, the inspectors were soon drawn back into cooperative relations with the managers of the regulated firms so that they could meet their deadlines. Similarly, in the early stages of the LAPC implementation process, the inspectors felt that the levels of awareness and concern about the regulations amongst the regulated firms were so low that they were forced to take the initiative.

As a result, they sought to identify and to approach those sites that were to be regulated and to build their understanding of their responsibilities and of the need to comply. In both instances then cooperative relations were initiated or restored by the inspectors as they sought to overcome resistance or inertia and to gain access to the information that they needed to put the regulations into practice.

Later in the implementation process, however, the actors in the case of IPC adopted strategies that actively sought to shape as well as to respond to the various inter-dependencies and incentives. Through their cooperative and hands-on approaches, the IPC inspectors were able to offer resources that the firms could draw upon to build their capacities for compliance and to reduce their costs of compliance. Furthermore, by adopting a 'tiered' or 'responsive' approach to enforcement, they were able to introduce a range of incentives and disincentives that rewarded cooperative behaviour amongst the firms by granting them access to their resources and that punished defection with the withdrawal of access to these resources and the imposition of sanctions. The strategies adopted by the IPC inspectors were therefore of a 'tit-for-tat' nature – they cooperated where the firms cooperated and defected where the firms defected. However, where firms defected, the strategies adopted by the inspectors were also relatively forgiving as they were willing to restore cooperative relations once the firms came back into compliance. Thus, their strategies clearly influenced the incentives and disincentives that were encountered by the regulated firms.

In this way, the inspectors were able to create, define and extend an area of mutual interest that can be likened to a metaphorical 'cooperative regulatory space' within which they could interact with the managers of the regulated firms. While the strategies adopted by the IPC inspectors enabled them to shape this cooperative regulatory space, the existence of such a space depended upon the firms' abilities to secure improvements in environmental performance in economically acceptable ways. At the time of the study, such opportunities were seen by the managers of the regulated firms to be fairly widely available. Indeed, the question of what might constitute an 'excessive cost' was rarely raised other than in those instances where firms had no option other than to invest in costly end-of-pipe technologies. As in the case of IPC the costs of compliance were commonly seen to be acceptable at the time of the interviews, the managers were generally happy to work with the inspectors to improve their environmental performance. However, the managers also suggested that the costs of compliance would escalate if the inspectors continued to demand further improvements in environmental performance. If they ever decided that these costs had reached unacceptable levels, the managers suggested that they would defect from the cooperative approach, thereby raising the costs and threatening the reputation of the regulatory agency. In this way, the managers created an incentive for the inspectors to continue to interact

in ways that built the capacities for compliance and reduced the costs of compliance, thereby prolonging the life of the cooperative regulatory space. Thus, like the IPC inspectors, the managers also adopted a tit-for-tat strategy, although their willingness to do so depended upon availability of economically acceptable improvement options.

Although cooperation emerged fairly consistently in the standard setting phase of the LAPC implementation process, the range of strategies that could be adopted by the LAPC inspectors later in the process was severely constrained by the human and financial resources that were available to them. Had there been incentives for greater cooperation, it is unlikely that the inspectors would have been able to respond because of these resource shortages. However, as has been stated, such incentives for cooperation were not seen to be present because the opportunities for firms to find economically acceptable improvement options were seen to be more limited amongst the LAPC regulated firms than had been the case amongst the firms regulated by IPC. These factors limited the LAPC inspectors' capacities and incentives for cooperation. They also restricted their capacity to impose controls 'from above' effectively, as the LAPC inspectors were less able to undertake regular monitoring and thus to detect cases of non-compliance. Instead, the inspectors adopted an arms-length and reactive or complaints driven approach to enforcement.

While the strategies adopted by the firms regulated by IPC were relatively consistent, the strategies adopted by the LAPC regulated firms as a response to the arms-length and complaints driven approach to enforcement can be divided into three categories. Firstly, those generally medium-sized or group owned sites with a strong culture of compliance sought to comply in the absence of both incentives for cooperation and compliance and of regular monitoring and well developed capacities for control. Secondly, those generally smaller and/or independently owned sites that had a weak culture of compliance but that were the subjects of complaints from stakeholders were eventually forced to comply as the inspectors responded to sustained complaints by adopting a sanctions-based approach to enforcement. Thirdly, those generally smaller and/or independently owned sites with a weak culture of compliance that were not the subject of complaints were often able to avoid the need to make much of an effort to comply with the regulations. The strategies for compliance adopted by the LAPC regulated firms were highly variable therefore. These variations, the associated inconsistencies and the potential for free-riding undermined the incentives for cooperation and compliance amongst other LAPC regulated firms. Despite these inconsistencies however, some sites within each category managed to comply with the regulations almost serendipitously either through the technological dynamism that changed their production processes and improved their environmental

performance or through supply-chain alliances that enabled them to remove or reduce their demand for the inputs that generated the regulated emissions.

Institutional Influences

a) The significance of the broader institutional context

Decisions about the strategies to be adopted by the different actors in each implementation process were heavily influenced by historical precedent. In the case of IPC, a relatively cooperative and hands-on approach to implementation had been prevalent prior to its adoption. As a result, cooperative relationships between the actors were well established and the relationships between the inspectors and the managers of the regulated sites were already based on a degree of trust and mutual understanding. Thus, some social capital had been carried over from the previous legislation in the form of an implementation network that was based upon the presence of relatively close, trusting, reciprocal relationships between inter-dependent actors. The pre-existence of this network, and the nature of the relationships within it, encouraged the adoption of a similarly cooperative approach to the implementation of IPC. Although the legislation changed with the adoption of IPC, therefore, the nature of the networks associated with the implementation process proved to be more resilient.

The maintenance of this cooperative approach to implementation was made possible by the continued availability of human and financial resources within the regulatory agency and by the lack of effective pressure from external stakeholders. At various times, concerns emerged both internally within the regulatory agency and externally amongst stakeholder groups relating to the accountability and the expense of this approach to implementation. Indeed, upon the inception of the IPC regulations, the regulatory agency sought to respond to these concerns by adopting a less cooperative and more arms length approach to implementation. However, the companies responded by restricting the inspectors' access to their own resources and by raising the prospect of mass inactivity and/or non-compliance. As the regulatory agency was unwilling or unable to force the regulated firms to take steps to work towards compliance, and as external stakeholders lacked the ability to force change, the brief experiment with an alternative approach to implementation was seen to fail and cooperative relations within pre-existing network forms quickly re-emerged. Thereafter, support for the cooperative approach evolved amongst the inspectors and the managers and the approach became further embedded as each adopted 'tit-for-tat' strategies that rewarded cooperation and sanctioned defection. At the time of the interviews at least the inspectors had been able to secure the financial and human resources they needed to maintain such an approach.

In the case of LAPC, the approach to the implementation of pre-existing regulations in related areas had tended to be more reactive and sanctions-based. Upon the inception of LAPC, there was some support for the adoption of a more cooperative approach which would encourage and enable compliance as such an approach was seen to have the potential to reduce the impact that the regulations would have on local economic development. However, opportunities for such a change of regulatory style were constrained by the funding structures within the local authorities. Although the LAPC system should have been self-funding, the inspectors had to compete for financial and human resources with the other functions both within the environmental health departments and the local authorities at large. As these functions were often more visible and more politically sensitive than the control of air emissions, LAPC was often awarded a lower priority and the implementation process tended to be under funded. Thus, although inspectors commonly engaged in cooperative relations to allow them to gain access to the information that they needed to issue authorisations, later in the implementation process resource shortages forced them to revert to a complaints-driven and sanctions based approach. The subsequent suspicions about inconsistencies, and the inability of the inspectors to reduce resistance and to generate trust by promoting economically acceptable forms of compliance, meant that a change away from this approach became even more difficult over time. The interactions between the inspectors and the managers of the regulated firms therefore took place in loosely coupled networks where interactions were less frequent and, from the firms perspective at least, were more likely to be based on suspicion and resistance than on trust, mutual understanding and open engagement.

Aside from issues relating to historical precedent and the availability of funding within the implementing agencies, the strategies that were adopted in each implementation process also related to the technological and economic conditions that were encountered by the regulated firms. As has been stated, in the case of IPC, opportunities existed for the regulators and the managers to work together to promote the wider adoption of cleaner technologies and techniques. This was the case not only because the regulated processes were typically large and complex and therefore amenable to reorganisation and fine-tuning. It was also because the firms were able to access the financial and managerial resources needed to exploit these opportunities, particularly through their links within intra-firm networks. They also benefited from the extent to which they could access to the resources held by the inspectors. In the case of LAPC, by contrast, the opportunities for the wider adoption of cleaner technologies and techniques were much more limited. This was because the regulated processes were much smaller and simpler and hence less amenable to reorganisation or fine-tuning. However, it was also because the managers of the processes regulated by LAPC often found it much more difficult to access the

managerial and financial resources that were needed if they were to redesign or reorganise their production technologies. Amongst the firms regulated by LAPC, access to such resources was commonly restricted by the absence of intra-firm networks and by the lack of participation in external or inter-firm economic networks. The managers also found it harder to access these resources through their interactions with the inspectors who tended to lack the time and the expertise needed to build their capacities for compliance.

It is apparent therefore that the strategies adopted by the different actors in each of the implementation processes were not only a response to the incentives that stemmed from any resource inter-dependencies. They were also influenced heavily by historical precedent, by the institutional context within which the implementing agency operated and by the technological and economic context within which the regulated firms existed and operated.

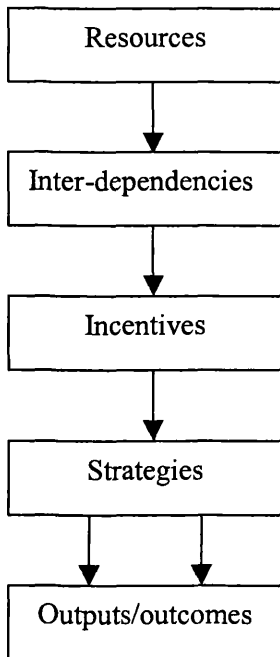
b) The emergence of institutionalised modes of behaviour

In addition to the influence of the wider range of contextual factors that shaped the implementation process, a number of 'feedback loops' emerged in the relationship between some factors that had a significant impact on the behaviour of the different actors. Instead of there being a simple, linear set of causal relationships between the analytical variables, where resource inter-dependencies generated incentives that shaped the strategies adopted by the different actors (Figure 8.1a), the presence of these feedback loops meant that the different variables were in fact co-produced within a more complex web of inter-relations (Figure 8.1b). These feedback loops took a number of forms.

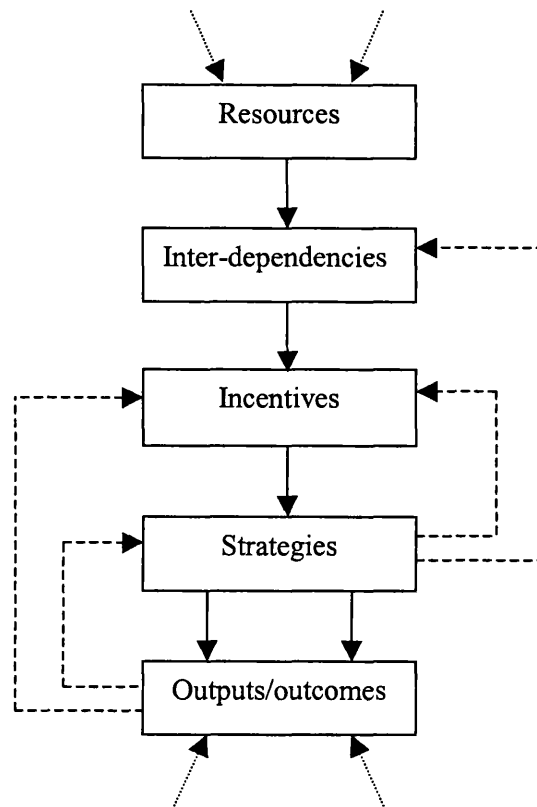
Firstly, the strategies that were adopted by the inspectors served to create as well as respond to a range of inter-dependencies. This was evident in the case of IPC where the inspectors' attempts to promote particular forms of compliance increased their dependence on the ability of the regulated firms to access and invest the financial and human resources that were needed if new technologies and techniques were to be adopted. As they sought to explore the potential of such technologies and techniques, the regulated firms came to depend more on the information, understanding and flexibility that could be offered by the inspectors as they sought to innovate. As their inter-dependence led to cooperation, therefore, so cooperation led to greater interdependence. Such inter-dependencies were much less apparent in the case of LAPC where the regulators were less likely to engage with the regulated firms in an attempt to shape the ways in which they complied with the regulations.

Figure 8.1: Perspectives on the Relationship between the Central Analytical Variables

a) Rational Choice Perspective



b) Institutional Perspective



Key

- Influence of the central analytical variables —————▶
- Influence of the broader institutional context ·····▶
- Feedback loops creating institutionalised modes of behaviour - - - - -▶

Secondly, the strategies that were adopted by the different actors served to shape the incentives that were encountered by the other actors. This was particularly the case in relation to the 'tit-for-tat' strategies that were adopted by the different actors in the IPC implementation process as both the inspectors and the managers sought to reward the other actors' cooperation by cooperating themselves and to sanction defection by defecting themselves. In the case of LAPC, 'tit for tat' strategies were also adopted to some extent during the enforcement stage, however the ability of the inspectors to detect defections amongst the regulated firms was limited by the absence of an effective monitoring regime. As a consequence, the incentives for firms to cooperate with the regulator were reduced.

Thirdly, where cooperative strategies were adopted, these helped to secure mutually beneficial outcomes for the different actors. In the case of IPC, cooperation raised the capacity of the regulated firms to adopt environmentally effective and economically acceptable forms of compliance. Over time, such cooperation served to generate a degree of trust and mutual understanding between the different actors, which raised the capacity, and increased the incentives, for further cooperation. Again, such opportunities for the actors to realise mutual benefits through cooperation were less apparent in the case of LAPC.

The presence of these feedback loops, and the potential for the co-production of the interdependencies, incentives and strategies that shaped the implementation process, is significant. It suggests that the interactions within the implementation process can evolve along and become embedded within particular trajectories as different routines of behaviour emerge and become institutionalised within different forms of network. In turn, this helps to explain why the actors within each implementation process found it difficult to move away from the historic precedent even though there were pressures and/or incentives for them to do so. In the case of IPC, this was because the incentives for such an approach, which had been actively shaped and reinforced by the different actors over time, were strong enough to draw the different actors back into a cooperative approach should they attempt to defect. In the case of LAPC, this was because the regulatory agency lacked the resources that were needed to initiate a more cooperative approach and the regulated firms lacked the incentives needed to overcome their inertia and resistance to the regulations in order to engage with such an approach.

Regulatory Outputs and Outcomes

Collectively, the factors that have been examined in the preceding sections influenced both the outputs (i.e. the practical nature of the demands made by the regulators) and the outcomes (i.e. the ways in which the firms responded to these demands) of each implementation process.

In the case of IPC, the cooperative approach to implementation enabled the regulators to put the regulations into practice. In essence, cooperation increased the administrative viability of the regulatory function. It also gave firms some influence in the standard setting process. In particular, it enabled cooperative firms to gain some flexibility relating to the times at which compliance should be achieved and the point at which sanctions would be imposed as a response to minor breaches of compliance. In the short term, then, the cooperative approach was associated with weaker outputs both because the standards that had to be achieved were reduced through negotiation and because a more forgiving approach to enforcement was adopted. These are important issues as they are closely related to the view that cooperation led to capture in the IPC implementation process.

However, both the inspectors and the managers were firmly of the view that the cooperative interactions that defined the IPC implementation process played a role in building the capacities for compliance and the commitment to environmental improvement amongst the regulated sites. In turn, these capacities and commitments enabled the firms to explore the potential of the cleaner technologies and techniques. In so doing, the regulated firms were able to improve their environmental performance by avoiding rather than capturing and controlling their emissions, thereby reducing the need to invest in end-of-pipe technologies and hence the costs of compliance. In essence, then, inspectors and the managers felt that although the cooperative approach was associated with weaker *outputs* in the short term, it generated more effective and more efficient *outcomes* in the medium term. In the longer term, however, the managers expected that their attempts to improve their environmental performance would eventually encounter diminishing marginal returns and that the costs of compliance would escalate if the standards that they were required to reach continued to be increased.

In the case of LAPC, the cooperative approach to standard setting also enabled the inspectors to interpret the regulations and issue authorisations. It also allowed the firms to gain some flexibility relating to the times at which standards should be achieved. Again therefore the short-term *outputs* from the implementation process were weakened through cooperation. However, the lack of resources available to the inspectors and the absence of regular monitoring meant that in practice these outputs were weakened further as cases of non-compliance, or defections from the cooperative approach, were often not detected. As a result, the response of the firms to these outputs depended upon their culture of compliance. Those firms with a strong culture of compliance sought to comply even in the absence of effective controls from the regulator, while those firms with a weak culture of compliance were able to do little unless there were serious incidents or complaints from the public. Where there were strong cultures of compliance or

complaints from the public, the nature of their response depended on their ability to access resources both internally and through their engagement in broader economic networks. Their response also depended on the extent to which they could avoid the need to invest in end-of-pipe technologies by substituting their inputs or by redesigning their production process. Although this had happened in some instances, for example as a by-product of broader technological changes or as a result of inter-actions within supply chains, the predominant form of response to LAPC was to invest in end-of-pipe technologies. To some extent, the *outcomes* of the regulations were effective as the end-of-pipe technologies allowed the firms to capture their emissions and to render them harmless. However, the regulations would have generated more effective and more efficient outcomes if the firms had been able to prevent and/or minimise their emissions by adopting cleaner technologies and techniques. The regulations would also have generated more consistent or equitable outcomes if the inspectors had been able to monitor performance more effectively and to detect cases of non-compliance without relying on complaints from the public.

It is apparent then that the strategies adopted by the different actors generated different outputs and outcomes and that these were shaped not only by the incentives and strategies of the different actors and by the institutional factors shaping the implementation process but also by the factors that shaped the opportunities and capacities for technological change within the regulated firms.

The Explanatory Value of the Different Theories of Cooperation and Collective Action

The preceding comparative analysis considered the interaction between the inter-dependencies, incentives and strategies that helped to shape the practical nature of each of the two case-study implementation processes. It also examined the influence of various institutional factors and the ways in which these factors combined to influence the outputs and outcomes of each implementation process. With this in mind, the analysis will now examine the extent to which the nature and influence of each implementation process can be explained by referring to the two contrasting theoretical perspectives on the basis for cooperation between inter-dependent actors, namely the rational choice and the new institutional perspectives. These perspectives were presented earlier in the thesis and are summarised in Table 8.1.

Within the results of the comparative analysis, qualified support for the rational choice perspective can be found in a number of forms. However, support for this perspective is

fundamentally limited as in every instance the factors that the rational choice perspective holds to be significant are themselves shaped by a range of important institutional dimensions:

Causality. As the rational choice perspective suggests, the resource inter-dependencies that were evident in each implementation process did indeed generate incentives for cooperation and collective action. However, these inter-dependencies and incentives became more apparent in the case of IPC where the regulators actively engaged with the regulated firms in an attempt to promote compliance than in the case of LAPC where the regulators adopted a more arms-length and sanctions-based approach. This adds an important institutional dimension to the analysis as it indicates that the inter-dependencies and hence the incentives for cooperation were not exogenously defined. Instead, they were created and shaped both by the institutional context within which the implementation processes took place and by the strategies adopted by the different actors.

Scope for reciprocity. As the theory proposed by Axelrod (1984) suggests, the analysis found that certain conditions, relating particularly to the scope for reciprocity and the potential for mutual benefit, had to be met if cooperation was to emerge. These conditions were met in the case of IPC where the actors were able to cooperate and exchange their resources to exploit the potential for those forms of compliance that would be both environmentally effective and economically acceptable. In the case of LAPC, by contrast, the basis for cooperation was more restricted as such opportunities for mutual benefit were less readily available and/or exploitable. As the rational choice perspective would predict, cooperation in the LAPC implementation process was therefore more limited than in the IPC process. Again, however, there are some important institutional dimensions as the potential for mutual benefit depended upon the resources that were available to each actor. Both the regulators and the regulated firms gained access to resources through their participation in wider networks. Furthermore, a critical resource, namely the ability of inspectors to argue that compliance could be achieved in economically acceptable ways, depended upon the expertise available in the regulatory agencies and the technological conditions that existed within the regulated firms.

Incentive structures and responsiveness. As is depicted in Figure 8.2a, the incentives structures associated with each implementation process can be presented in a way that reflects the game theoretic approach as proposed by Axelrod (1984). As each actor could choose whether to cooperate or defect in response to the incentives that they encountered, four possible scenarios emerged: mutual cooperation, top-down control, bottom-up capture or mutual adversarialism. Where there were resource inter-dependencies, and where each

Figure 8.2: Game theoretic perspectives on interactions in the implementation process.

a. Generic model (adapted from Axelrod, 1984).

		Regulatory Agency	
		Co-operate	Defect
Regulated Firms	Co-operate	Cooperation	Top-down Control
	Defect	Bottom-up capture	Adversarialism

1. Co-operative relations – regulators cooperate to promote compliance, firms cooperate to reduce costs of compliance and to avoid the imposition of sanctions.
2. Top-down control – regulators adopt a sanctions based approach. This approach is only available temporarily given firms ability to defect.
3. Bottom-up capture – firms adopt an uncooperative approach and fail to secure compliance. This approach is only available temporarily unless regulators lack capacity to detect or respond to cases of non-compliance.
4. Adversarial relations – firms fail to secure compliance, regulators recognise breaches and respond by adopting a sanctions based approach.

b. The case of IPC

		Regulatory Agency	
		Co-operate	Defect
Regulated Firms	Co-operate	1, 5, 9	2, 8
	Defect	4, 6	3, 7

1. Initial position upon inception of IPC regulations; cooperative approach to pollution control.
2. Regulator's brief attempt to adopt a more arms-length approach in the early days of IPC.
3. Firms' reaction to withdrawal of regulator's cooperation results in brief period of mutual defection.
4. Regulator responds to prospect of mass non-compliance by initiating the restoration of cooperative relations.
5. Firms respond by cooperating and working towards compliance.
6. Occasional and/or non-serious breaches occur, but defecting firms tend back to cooperation because of incentives and threatened/actual imposition of informal sanctions.
7. Serious or sustained breaches of compliance by defecting firms trigger regulator's defection and the imposition of formal sanctions.
8. Defecting firms avoid the imposition of further sanctions by regaining compliance and initiating the restoration of cooperative relations.
9. Forgiving regulators respond and cooperative relations are gradually restored pending further breaches.

c. The case of LAPC

		Regulatory Agency	
		Co-operate	Defect
Regulated Firms	Co-operate	2, 3, 7	6
	Defect	1, 4	5

1. Regulators take the initiative in order to operationalise the regulations.
2. Firms cooperate with the regulators to gain understanding and influence in the standard setting phase.
3. Firms with a strong culture of compliance continue to cooperate and work towards compliance in the absence of regular monitoring and/or complaints from the public or other firms.
4. Firms with a weak culture of compliance do little in the absence of regular monitoring and/or complaints.
5. Firms with a weak culture of compliance do little but where breaches are detected through complaints regulators respond by imposing formal sanctions.
6. Firms begin to cooperate with the regulators and work towards compliance to avoid the imposition of further formal sanctions.
7. Forgiving regulators respond by restoring cooperation but the response of firms is uncertain in the absence of regular monitoring and/or complaints.

actor could recognise and respond to the strategies of the other, the evidence supports the theory in that the 'first best' option for either actor (top-down control for the regulators or bottom-up capture for the regulated firms) was simply not available where there were sustained interactions between the different actors. This was because the tit-for-tat strategies that were adopted by the actors meant that defection from one would eventually trigger defection from the other. As a result, the actors had to decide whether cooperative or adversarial approaches represented the more desirable 'second best' option.

As is depicted in Figures 8.2b, the strategies that emerged in the IPC implementation process were responsive to these incentive structures. From an initial starting point of mutual cooperation (position 1), the regulator attempted to defect and shift to a pattern of top-down control (2). However, as this triggered a defection from the firms (3), the regulator offered renewed access to its resources (4) and the firms responded by cooperating themselves (5). Although occasional defections or breaches of compliance by the firms were detected (6), in most instances the imposition of informal sanctions and the threat of formal sanctions was enough to tempt defecting companies back into compliance. However, periods of mutual adversarialism sometimes occurred where the firms' defections were more sustained or where breaches of compliance were more serious (7). In such instances, the imposition of sanctions commonly encouraged firms to restore cooperative relations (8) in an attempt to encourage the regulators to move away from a sanctions-based approach towards a compliance-based approach based on mutual cooperation (9). Experience in the case of IPC therefore indicates that the interactions between the regulators and the regulated firms were highly responsive and that behaviour was shaped by the nature of the incentive structures facing the different actors.

As is depicted in Figure 8.2c, rather different dynamics emerged in the case of LAPC. When the regulations were introduced, the regulators took the lead and sought to cooperate with the reluctant or resistant firms in order to operationalise the regulations (position 1). Most firms responded by cooperating with the regulator during the standard setting phase where there were clear inter-dependencies (2). However, in the absence of the monitoring or the complaints that would have enabled the inspectors to recognise and respond to defections or breaches of compliance, once standards had been established the firms response depended upon their culture of compliance. Thus, those firms with a strong culture of compliance willingly cooperated (3) while those with a weak culture of compliance were able to defect undetected, unless there were complaints or serious breaches of compliance (4). Where breaches of compliance were detected, the inspectors responded by withdrawing their cooperation and imposing sanctions (5), a strategy which encouraged the firms to

cooperate and to come back into compliance in an attempt to avoid the imposition of further sanctions (6). As inspectors tended to be relatively forgiving, cooperative relations re-emerged once compliance had been regained (7), although without more detailed monitoring or further complaints the inspectors found it difficult to recognise subsequent defections. Experience in the case of LAPC therefore also suggests that the strategies of the different actors were shaped by the incentive structures but that responsiveness of the regulators was limited by their relative inability to detect defections amongst the regulated firms.

It is apparent therefore that behaviour in each implementation process was responsive to the incentive structures that were encountered. However, as has been stated, these incentive structures both shaped and were shaped by the strategies adopted by the different actors. They were also influenced by the institutionalised modes of behaviour that emerged over time – for example, as cooperation generated social capital and reciprocal benefits, so the costs of further cooperation decreased while the benefits became more apparent. Strategies that had been cooperative in the past were therefore more likely to be cooperative in the future. In essence, this 'positive feedback' meant that certain forms of behaviour emerged and became institutionalised and self-reinforcing. This adds an important evolutionary dimension to the analysis that indicates that behaviour in the implementation process was responsive, but only within particular trajectories.

Temporal dimensions. The rational choice perspective suggests that each actor's decisions on strategy will be determined by the nature of the incentive structures that they encounter. However, the evidence suggests that change was not frictionless or costless and that the different actors needed to have access to resources to invest in the short-term if they were to realise the benefits of cooperation in the medium term. In the case of IPC, the inspectors were able to invest their resources to initiate cooperative relations, although the levels of investment needed were not great because a historical precedent had already been established that favoured cooperation in the implementation process. In the case of LAPC however, resource shortages meant that the regulators were not able to make the investments that were needed to move away from a more arms-length and reactive historical precedent. The evidence suggests that the presence of incentives for cooperation was not enough, therefore, as the actors also needed an ability to recognise and respond to those incentives, particularly by investing in the short term to realise benefits in the medium term, if cooperative strategies were to emerge.

The evidence indicates that the rational choice perspective has some explanatory value therefore as it helps to explain how resource inter-dependencies generate the incentive structures that encourage cooperation. It also helps to identify the conditions that need to be in place if actors are to recognise and respond to these incentives. However, the evidence suggests that many of the preconditions for cooperation that are associated with the rational choice perspective need to be qualified with an extra institutional dimension. Furthermore, the analysis suggests that the rational choice perspective ignores a number of other critical factors that can be included within a broader institutional analysis:

Institutional context. As the institutional perspective would predict, the resource allocations that shaped the inter-dependencies and thus the incentives for cooperation in each of the two case-study implementation processes were not exogenously defined. Instead, they were the result of the broader institutional context within which the implementation processes took place. Thus, factors such as historical precedent, legislative design, the structures, cultures and capacities of both the regulatory agencies and the regulated firms were all found to be significant in both cases.

Institutionalised modes of behaviour. The conceptual analysis highlighted the potential for various feedback loops to emerge between the inter-dependencies, incentives and strategies that shape the implementation process. However, rather than institutional factors exerting a general influence in the relations between all of the analytical variables (see Table 8.1), the empirical analysis found that these feedback loops took a number of specific forms (see above and Figure 8.1b).

These feedback loops were particularly apparent in the case of IPC where the compliance-oriented approach that was adopted by the inspectors increased their dependence on the willingness and ability of the managers to explore the potential of particular technologies and techniques. In turn, the managers became more dependent on the ability of the inspectors to offer the information, understanding and flexibility that they needed to innovate. As both actors sought to draw the other into the cooperative approach by adopting tit-for-tat strategies, experience accumulated and the capacity of the different actors to work together to secure the adoption of mutually beneficial outcomes developed. In this way, the cooperative approach became more deeply embedded over time.

In the case of LAPC, by contrast, the strategies that had been adopted by the different actors had not led to significant inter-dependencies, to accumulated experience or to further incentives to cooperate. The relative absence of cooperation in the past also meant that the

trust and mutual understanding that might have enabled cooperative interactions to take place were not as readily apparent as in the case of IPC. As a result, switching from the arms-length and reactive approach to a more cooperative approach would have required investments of time and resources that neither the regulators or the regulated firms were able to make.

The enabling and constraining role of networks With the added influence of the feedback loops discussed above, the evidence also indicates that the forms of interaction that emerged and evolved within each implementation process became institutionalised within different forms of network. Following Ostrom *et al* (1993) and Rydin and Pennington (2000), these networks can be likened to the 'social infrastructure' that makes cooperation and collective action possible in some settings. However, as Granovetter (1985) and Grabher (1993) argue, interactions within these networks can become so embedded that the opportunities for change are restricted, even where there are incentives for change. This reinforces the importance of the temporal dimensions outlined above, as it suggests that the investments needed to move away from an established approach, and to transform the networks that underpin it, can be significant. It also suggests that interactions within the implementation process may be responsive to incentives, but only within the broader trajectories associated with existing network forms.

In the case of IPC, a tightly-bound cooperative network emerged between the inspectors and the managers of the regulated firms based on their inter-dependence and the incentives for cooperation. The ways in which the different actors engaged with this network also depended upon their engagement with broader networks: the engagement of the inspectors depended upon their ability to secure resources from within the implementing agency, whilst for the managers their engagement depended upon their ability to access the resources needed to work towards compliance through their participation in intra-firm networks. While these networks enabled the actors to work together to secure effective and efficient forms of compliance, the extent of the inter-dependencies also restricted the ability of either actor to shift towards an alternative approach. In the case of LAPC, by contrast, a much more loosely-bound network emerged. Although the different actors cooperated at those stages of the implementation process where there were inter-dependencies, closer cooperation was precluded by the limited availability of resources in the regulatory agencies, by the lack of opportunities for mutual benefit and by the firms inability to access resources through intra-firm and inter-firm networks.

In essence then the analysis suggests that the boundaries of the rational choice perspective on the potential for cooperation and collective action are too narrow and that the proposed lines of causality which link resource inter-dependencies with incentives for cooperation are too simplistic. Because it extends the analysis to consider the significance of the institutional context and the role that feedback loops play in creating institutionalised forms of behaviour, and thus path-dependencies, in the implementation process, the analysis suggests that the explanatory value of the institutional perspective is much more complete.

The Validity of the Hypotheses

Having assessed the explanatory value of the contrasting theoretical perspectives, we can now consider the extent to which the analysis supports or refutes the validity of the hypotheses that were generated earlier in the thesis.

Hypothesis 1 – that implementation processes will be shaped not only by the ability of public sector regulators to resort to the hierarchical application of legal authority but also by the extent to which regulated actors derive influence in the implementation process from their access to a broader range of resources.

This hypothesis is supported by strong empirical evidence in each case. In each implementation process, both the regulators and the regulated firms sought to exert influence and to achieve their objectives by drawing upon a wide range of resources (see Tables 8.2 and 8.3). However, in each of the two cases, legal authority remained an important resource that the regulators could apply as they deemed necessary. Thus, the interactions between actors in each of the implementation processes can be seen to have taken place in the 'shadow of hierarchy'.

Hypothesis 2 – that various resource inter-dependencies will emerge in the implementation process which mean that compliance depends upon co-operation and the exchange of resources as regulatory objectives effectively become 'collective action problems'.

This hypothesis is fully supported in the case IPC where the regulators engaged with the regulated firms in an attempt to promote and/or shape compliance. This approach generated inter-dependencies which meant that securing particular forms of compliance did indeed become a collective action problem that could be solved through cooperation and the exchange of resources. In the case of LAPC, by contrast, the regulators adopted a more arms-length, reactive and sanctions-based approach which generated fewer

inter-dependencies and hence incentives for cooperation. In the absence of such incentives, the validity of the hypothesis depends upon the cultures of compliance amongst the regulated firms. Within those firms with a strong culture of compliance, compliance did not depend upon cooperation with the regulator and hence under these conditions the hypothesis is refuted. For those companies that lacked such a culture of compliance, compliance appeared to depend upon the regulators' ability to detect and respond to breaches of compliance through the application of their legal authority. However, where breaches were detected, incentives for cooperation again emerged based on the shared desire to avoid the negative impacts of sustained adversarialism. Once more, therefore, cooperative strategies were adopted to secure compliance and hence, for those companies with a weaker culture of compliance, the hypothesis is again supported.

Hypothesis 3 – that cooperative interactions within the implementation process will be institutionalised within different forms of network that will influence both the outputs (i.e. the practical nature of the demands made by regulators) and the outcomes (i.e. the ways in which the regulated firms responded to these demands) of the implementation process.

This hypothesis is fully supported in each case. Where inter-dependencies and hence incentives for cooperation were apparent throughout the implementation process, as in the case of IPC, the actors were drawn into a tightly-bound network where implementation was based on frequent interaction, mutual understanding and reciprocal exchange. The emergence of such a cooperative network influenced the outputs of the implementation process as cooperation led to negotiation, flexibility and compromise and hence to a weakening of the short-term demands made by the regulators. However, in the medium term, cooperation also influenced the nature of the regulatory outcomes, not by imposing standards but by building capacities for compliance. By drawing upon these capacities, the regulated firms were able to secure more effective (i.e. more preventative) and more efficient (i.e. more economically acceptable) outcomes. Where inter-dependencies did not emerge, as in the case of LAPC, networks were more loosely coupled with less frequent interaction, less trust and less reciprocity. While cooperation in the standard setting phase still led to weaker outputs, the subsequent lack of cooperation meant that the ability of the regulators to promote/shape compliance was reduced. In the absence of cooperation, the capacities for compliance among the regulated firms remained under-developed and the outcomes achieved were less effective (i.e. they were reactive) and less efficient (i.e. they generated significant costs and very few if any benefits) than those secured in the case of IPC.

Hypothesis 4 - that because of these inter-dependencies, the implementation process will display some of the advantages of co-operation (i.e. increases in administrative viability and an enhanced ability to secure compliance through collective action) and some of the disadvantages of regulatory capture (i.e. reduction of standards and loss of accountability).

This hypothesis is fully supported in the case of IPC where the regulators cooperated with the regulated firms in an attempt to promote or shape compliance. This cooperation led to more administratively viable but less publicly accountable regulatory decision-making processes. It also led to more effective and efficient regulatory outcomes. By implication, the hypothesis is also supported in the case of LAPC where the regulators adopted a sanctions-based approach. This approach generated fewer inter-dependencies, and was as a result less cooperative. In the absence of such cooperation, the accountability of the regulatory process was better maintained, but the regulators lost some ability to secure effective or efficient outcomes. They also come to depend more upon their ability to detect and respond to cases of non-compliance.

The validity of the hypotheses in these cases therefore depends upon the nature of engagement between the regulators and the regulated in the implementation process. Where the regulators adopted a hands-on approach in a proactive attempt to promote compliance, inter-dependencies emerged which generate incentives for cooperation. The cooperative networks that then emerged reduced the accountability of the implementation process but increased its ability to solve collective action problems and to secure more effective and efficient outcomes. Conversely, where the regulators adopted a more arms-length and reactive approach, fewer inter-dependencies emerged and so the incentives for cooperation were reduced. As a result, the accountability of the implementation process was better maintained while its ability to promote more effective and efficient outcomes was restricted.

Conclusions from the Comparative Analysis

On the basis of this comparative analysis, it can be concluded that resource inter-dependencies, and hence incentives for cooperation, are likely to emerge where regulators engage with the regulated firms in an attempt to promote particular forms of compliance. Under such circumstances, the validity of the hierarchical model of the implementation process, which assumes that compliance can be secured through the top-down imposition of legal authority, is challenged. However, the validity of the hierarchical model is more apparent where regulators

adopt an arms-length and reactive approach which seeks not to promote compliance directly, but instead to detect and sanction cases of non-compliance. In such instances, resource inter-dependencies are more limited and the basis for cooperation in the implementation process is restricted. Even in such instances, however, the analysis concludes that resource inter-dependencies are still likely to become apparent which encourage cooperative approaches to emerge at different stages of the implementation process.

Theoretically, the analysis concludes that the rational choice perspective on the basis for cooperation and collective action in the implementation process had only a limited amount of explanatory value. Whilst it highlights the degree to which resource inter-dependencies can generate incentives for cooperation in the implementation process, it ignores a range of important institutional dimensions that are likely to exert a defining influence on the behaviour of the different actors. As a result, it mistakenly suggests that behaviour within the implementation process can be readily changed by altering the nature of the resource allocations made available to the different actors and hence the extent of their inter-dependence. In contrast, the institutional perspective acknowledges the significance of the broader institutional context within which the implementation process takes place. Whilst accepting that the strategies adopted by particular actors can be responsive to the incentives that they encounter, the institutional perspective also suggests that various feedback mechanisms provide a basis for self-reinforcing modes of behaviour that can become so embedded that the potential for change within the implementation process is restricted. The wider implications of this institutional perspective on regulation and implementation will be discussed further in the final chapter.

More practically, the analysis concludes that under some circumstances cooperation in the implementation process might be seen to be desirable, most notably where it can build capacities for joint problem solving that enable regulation to secure more desirable outcomes. However, it also recognised that cooperation between the regulators and the regulated actors can reduce the accountability of the regulatory decision making process. Thus, the comparative analysis highlights the tensions that surround the question of whether it is more desirable to have *accountable regulatory decision making processes* or *more effective and efficient regulatory outcomes*. Different actors are likely to have contrasting perspectives on the desirability of these criteria. Simplistically, it might be expected that both the regulators and the regulated are likely to have a preference for cooperative approaches that lead to more effective and efficient outcomes. Similarly, it can be predicted that those stakeholders who don't trust regulatory agencies to cooperate and to exercise their discretion in ways that further the public interest are likely to advocate the adoption of less cooperative processes. The tensions between

these different viewpoints, which are of much broader policy relevance, will be discussed in more detail in the final chapter.

CHAPTER 9

Conclusions: The Wider Implications of an Institutional Perspective on Regulation and Implementation

Structure

- Introduction
- The origins and evolution of cooperation in the implementation process
- The influence of cooperation in the implementation process
- Cooperation without capture?
- Implications for broader notions of regulation and governance
- Suggestions for further research

Introduction

On the basis of the previous chapter's conclusion that the institutional perspective offers a much fuller explanation of the factors that shape the practical nature of the implementation process, the discussion that follows in this chapter will examine the wider implications of an institutionalist perspective on regulation and implementation. Thus, the discussion will consider the factors that shape the origins, evolution and influence of cooperative approaches to implementation. It will then examine the tensions between the different criteria for evaluation, recognising that whilst cooperation and collective action can generate more effective and efficient regulatory outcomes, these are achieved at the expense of the accountability of the implementation process and the extent to which it can be managed by governments or influenced by external stakeholders. The discussion then considers whether the trade-offs between these different criteria might be reduced by requiring regulators and regulated firms to operate within a transparent framework of targets and performance measures. Were such a framework adopted, it is argued that the implementation process could realise the benefits of cooperation whilst reducing the prospects for regulatory capture. Ultimately, the chapter

considers the implications of the conceptual and empirical analysis for broader debates on the future of regulation and the nature of governance.

The Origins and Evolution of Cooperation in the Implementation Process

Traditional conceptions of command and control regulation associate it with some degree of public sector control *over* private sector activities. However, this thesis has shown that hierarchical power, expressed in terms of the legal authority of the regulatory agency, is only one of a wider range of resources that both the regulators and the regulated actors can draw upon as they interact and attempt to exert influence within the implementation process. As has been illustrated, in addition to their legal authority, resources that are of particular importance to regulators include their ability to:

- exercise discretion as they interpret and apply the regulations,
- build capacities for compliance amongst the regulated firms by offering information, understanding, expertise and flexibility
- change cultures or build commitment amongst the regulated firms by identifying economically acceptable forms of compliance
- empower particular actors or interests within the regulated firms
- detect breaches of compliance and respond by imposing both formal and informal sanctions
- legitimise or de-legitimise regulated firms in the eyes of their stakeholders.

However, the analysis has also indicated that regulators depend upon some key resources that are controlled by regulated firms if they are to secure compliance with the regulations that they are charged with implementing. In particular, the analysis found that these include their ability decide whether or not to:

- Offer the regulator access to information
- Develop and draw upon some commitment to compliance
- Invest resources and take risks to work towards compliance
- Influence the costs and the reputation of the regulatory agency and its inspectors by appealing against the demands of the regulators or the legitimacy of the regulations.

As the institutional perspective suggests, and as the empirical analysis has shown, the extent to which particular regulators or firms can access these resources depends very much upon the specific institutional context within which they operate. For example, while some regulators are

able to access the resources needed to pursue a relatively expert and hands-on approach to regulation, others find it difficult to access the resources needed to meet even the most basic requirements of the regulations that they are charged with implementing. Similarly, while some companies are able to access the resources needed to explore the potential of the most effective and efficient forms of compliance, others face such severe resource constraints that in practice only the most expedient responses are available to them. In all instances, actors have some ability to seek out new resources and to draw upon existing resources in different ways. The resource allocations that shape behaviour in the implementation process do not simply exist therefore, they both shape and are shaped by the specific institutional contexts within which the different actors exist and operate.

The analysis has also shown that these institutionally-defined resource allocations can have a significant impact on the ways in which the different actors interact within the implementation process. As each actor tends to control resources that are needed by the other, resource inter-dependencies are likely to emerge that generate incentives for cooperation in the implementation process. Again, however, the analysis suggests that there is an important institutional dimension, as these inter-dependencies are not only the result of initial resource allocations, they are also influenced by the strategies adopted by the different actors. Indeed, the analysis indicates that compliance-based strategies are likely to generate more inter-dependencies, and hence greater incentives for cooperation, than sanctions-based strategies. From an institutional perspective, behaviour is not solely determined by resource allocations or by the broader institutional context, therefore, as actors have some ability to shape the incentive structures that both they and their counterparts encounter.

Although the empirical analysis concluded that resource inter-dependencies are likely to be more extensive where regulators adopt a compliance-based rather than a sanctions-based strategy, it also found that some resource inter-dependencies, and hence incentives for cooperation, are likely to emerge in either instance. While these inter-dependencies and incentives may provide the initial 'spark' that leads to the emergence of cooperative relations, thereafter the ability of the different actors to shape the incentive structures that they encounter in the implementation process remains. Thus, if cooperation generates mutual benefits, so the actors are able to adopt strategies that incentivise further cooperation. Furthermore, reflecting the findings of Ostrom *et al* (1993) and Rydin and Pennington (2000), the analysis indicates that successful cooperation can generate positive externalities where it leads to the development of social capital that reduces the costs and the risks and increases the benefits of further cooperation. Implementation processes that have been cooperative in the past are therefore more likely to be cooperative in the future. In this way, the empirical analysis provides support for the

institutional perspective by highlighting the ways in which cooperative strategies can emerge, evolve and become institutionalised over time.

However, the analysis also indicates that various conditions have to be met if cooperation is to evolve in this way. Supporting Axelrod (1984), the analysis suggests that cooperation depends upon repeated interaction, some scope for reciprocity and an ability amongst the interacting parties to recognise and respond to different forms of behaviour. Where these conditions are met, the optimum outcome for either actor, namely top-down control for regulators or bottom-up capture for regulated firms, is available only temporarily as the other actors are able to recognise and respond to these strategies by withdrawing their own resources, thereby triggering a period of adversarialism. However, with some iteration and learning, and some scope for reciprocal exchange or mutual benefit, cooperative approaches can emerge and evolve according to the conditions outlined above. Where these conditions are not met, as was illustrated in the case of the regulatory agency that lacked the capacity to monitor the behaviour of the regulated firms effectively, the basis for cooperation in the implementation process is undermined. In such instances, other options, such as regulatory failure or bottom-up capture, became available as the sustainable outcome.

However, the analysis also indicates that these were not the only conditions for cooperation. As Scholz (1984, 1991) recognises, and as will be discussed below, cooperation in the implementation process can also depend either on the regulators being trusted enough by external stakeholders to exercise their discretionary powers on behalf of the public interest or on the effective exclusion of mistrusting public interest groups. If these groups are able to constrain the discretionary powers of the regulatory agency, they have the potential to limit the resources available to the regulator and hence to restrict the basis for cooperation. The fact that they were not able to do so in either of the cases examined suggests again that the broader institutional context is an important factor shaping the basis for cooperation in the implementation process.

Where these conditions are met, both the institutional perspective and the empirical analysis indicate that, after some initial cooperation has been triggered by resource inter-dependence, cooperative approaches can assume their own dynamic and evolve according to their own internal logic. This is critically important as it indicates that cooperative forms of behaviour can become self-reinforcing, and that over time they can become deeply embedded in the institutional structures that evolve to support them. Such an institutionalisation can simultaneously encourage and enable further cooperation whilst constraining the ability both of the actors themselves and of external stakeholders to instigate change and to promote a switch to an alternative, less cooperative approach. Thus, while the interactions between regulators and

firms can be responsive to a range of factors at the micro-level, at a higher level the implementation process can become highly path-dependent. The institutional perspective and the empirical analysis therefore indicate that behaviour within the implementation process can be seen to be responsive to the influence of a range of different factors, but only within broader trajectories.

The institutional perspective therefore paints a picture of the implementation process where institutional factors are important both externally, as the nature of the implementation process is shaped by the institutional context within which it takes place, and internally, as within that context particular forms of interaction can become highly institutionalised over time. As the institutional perspective highlights the potential for cooperative approaches to emerge, evolve and become institutionalised over time, the question is whether such cooperation is in the broader public interest.

The Influence of Cooperation in the Implementation Process

From a rational choice perspective, the fact that cooperative strategies exist in some settings suggests that cooperation can be in the interests of the actors that exert influence within the implementation process, most notably the regulators and the regulated firms. Where the day-to-day interactions between these actors are out of the control of governments and away from the influence of other stakeholders, cooperation in the implementation process may be a feature of a self-serving bureaucracy and a self-interested community of regulated firms. From a broader public interest perspective, this still doesn't tell us whether cooperation leads to collective action or to regulatory capture. The answer to this question depends on the particular criteria for assessment that are adopted and on the perspective of the assessor.

If administrative viability, efficacy and efficiency are the central criteria for evaluating the feasibility of regulatory processes and the desirability of regulatory outcomes, then the analysis indicates that cooperation may be in the public interest. The empirical examination found that without cooperation regulators may not get access to the resources they need to operationalise regulations and to secure compliance. It also found that while cooperation can lead to some short-term reductions in standards, in the medium term it can build commitments to, and capacities for, compliance and so can enable the realisation of more effective and efficient regulatory outcomes. This is particularly the case where economic behaviour is embedded within existing habits and routines and where companies lack awareness about, and confidence in, alternative approaches. In such settings, by engaging in sustained processes of interactive

learning with the regulated firms, regulators can collect, analyse and transfer information and understanding between firms which can reduce the costs and the risks, whilst also emphasising the benefits, of alternative approaches. As is discussed below, this suggests that regulation and implementation can be as much about facilitating and enabling more desirable forms of social and economic activity as about controlling and sanctioning the negative side-effects of such activity.

By contrast, if consistency and accountability are the key criteria for evaluating regulatory processes, then the analysis suggests that cooperative approaches to implementation do not perform well. As the empirical analysis has shown, many of the resources that regulators draw upon to exert influence in the implementation process stem from their ability to exercise their discretion and to be flexible in the way that they interpret, apply and enforce regulations. As discretionary decision-making processes can be unpredictable and unaccountable, judgements on whether or not regulators exercise their discretion in ways that further their own or the wider public interest must be taken on trust, particularly in the absence of clear measures of regulatory performance. If stakeholder groups are suspicious about the desirability of cooperative approaches to implementation but are excluded from influence, then discretionary approaches can continue, although the legitimacy of such approaches is likely to be questioned. Alternatively, if stakeholder groups have the ability to influence the implementation process, for example by lobbying governments or by resorting to legal action to challenge the discretionary behaviour of the implementing agency, then regulatory agencies must be trusted to exercise their discretion in the public interest if cooperative approaches are to continue (see Scholz, 1984, 1991).

Regardless of which of these criteria are used to assess the desirability of cooperation in the implementation process, it is also important to consider the extent to which governments and other stakeholders are able to manage or control the implementation process. The analysis suggests that cooperative approaches can become highly institutionalised and deeply embedded because of the influence of self-reinforcing modes of behaviour. As a result, external actors may find it difficult to disrupt existing approaches and the networks that surround them in order to install alternatives that better reflect evolving public preferences or emergent political priorities. As was illustrated by the empirical analysis, in some settings cooperative approaches to implementation can become so deeply embedded that they can survive the introduction new legislation, the reorganisation of implementing agencies and the introduction of initiatives to adopt more arms-length approaches. Highly institutionalised cooperative approaches to implementation are therefore to some extent immune to the influence of governments and other stakeholders. Taking the 'manageability' or 'controllability' of the implementation process as

another criterion for evaluation, the analysis indicates that cooperative approaches to implementation again perform badly.

It is therefore apparent that trade-offs may have to be made between the efficacy and efficiency of cooperative approaches to regulation on the one hand and the accountability and manageability of such approaches on the other. Given the tensions between these different criteria, is it possible to come to an overall conclusion on the desirability of such approaches to implementation? Here, Hutter's (1997) distinction between the conflict and consensus theorists as discussed in Chapter 1 becomes particularly relevant. While the conflict theorists argue that regulations are so weakened through negotiation and compromise that they come to serve the interests of the dominant groups within society rather than the society at large, the consensus theorists suggest that regulations can deliver social benefits, even if they are not as demanding as those who are primarily concerned with the social and environmental benefits of regulation would want or as lenient as those who are primarily concerned with the costs of compliance would prefer. With this in mind, it would appear that cooperative approaches to implementation can display aspects of both collective action (i.e. that they can be effective and efficient) and regulatory capture (i.e. that they can be unaccountable and unmanageable), with judgements on which is the more prevalent or important depending upon the perspective of the adjudicator.

Cooperation without capture?

As stated in Chapter 1, the search for better regulation has included the search for forms of regulation that are politically acceptable and administratively viable and that generate effective, efficient and equitable outcomes through accountable and in some instances participatory regulatory decision-making processes. While all of these criteria are important, as discussed above, the empirical analysis suggests that trade-offs may have to be made between the different criteria. However, based on both the empirical cases and the wider theoretical literature, it can be speculated that the extent of these trade-offs may not be fixed and therefore that it may be possible to have accountable regulatory processes that generate effective and efficient regulatory outcomes.

The responsive regulation concept as proposed by Ayres and Braithwaite (1992) and Gunningham and Grabosky (1999) is particularly pertinent in this respect. As has been stated, within the cases examined empirically the inspectors adopted 'responsive' approaches whereby they offered those firms that cooperated and complied access to their resources, such as information, understanding and flexibility, which the firms could draw upon to build their

capacities and to reduce their costs of compliance. However, when faced with an uncooperative or non-compliant firm, the inspectors gradually withdrew access to these resources, whilst eventually resorting to the application of their legal authority and drawing upon their ability to de-legitimise the regulated firms in the eyes of their stakeholders. The ways in which the firms responded to this 'tiered' or responsive approach depended upon the value that they attached to the resources held by the regulatory agency and upon their own cultures of compliance. Although there were some exceptions, in general the regulators were able to achieve their goals by adopting such responsive approaches.

However, as well as depending to a great degree upon the ability of the regulators to recognise and respond to breaches of compliance, the empirical analysis suggests that the ability of the regulators to adopt a responsive approach depends upon their ability to exercise discretion when deciding how to apply their resources. As is discussed above, it is the flexible application of these discretionary resources that renders the implementation process unaccountable and at times inequitable. While at first sight it may appear that the implementation process would become much less responsive if this discretion was removed, it may be possible to formalise the various tiers of enforcement and the factors that would lead to a movement from one tier to another so that the process became more transparent and accountable. This has been done in some cases through the adoption of clear and explicit enforcement policies and, increasingly, this is being pursued through the development of 'worst-first' or 'risk-based' approaches to implementation and enforcement. However, in the absence of a complete pre-conditioning or programming of the implementation process from above, discretionary elements are likely to remain as a central feature of the micro-level interactions that define the implementation process in practice. Concerns about the accountability of flexible and discretionary implementation processes are likely to remain therefore.

Ayres and Braithwaite (1992) and Gunningham and Granosky (1999) suggest that it is possible to enhance the accountability of such approaches to implementation by involving not only the regulators and the regulated firms in the decision-making process but also external stakeholders. While there are issues relating to the extent to which particular stakeholder groups can claim to represent the wider public interest, Ayres and Braithwaite (1992) suggest that these can be resolved ensuring that the role of 'guardian of the public interest' is readily contestable. However, significant problems relating to the willingness and ability of public interest groups to engage with a large number of complex and iterative regulatory decision-making processes remain. Although the incentives for public interest groups to engage in debates relating to the broader legislative principles and over-arching regulatory structures are clearer, at the micro-

level, where discretion is regularly exercised on a case-by-case basis, the expected costs and benefits of engagement are likely to be much more limited.

Thus, instead of seeking to promote accountable regulatory decision-making *processes*, it may be more feasible to introduce frameworks of targets and performance measures against which stakeholders can judge regulatory *outcomes*. From an institutional perspective, the introduction of such a framework could be significant as it would allow governments to allow highly institutionalised and deeply embedded cooperative approaches to remain in place whilst changing the context within which they operate to ensure that they are more goal-oriented and accountable. However, there may be some resistance to the introduction of performance measures as for some the absence of such measures can be highly convenient. By adopting flexible regulatory principles and maintaining discretionary regulatory decision-making processes, the micro-level conflicts and compromises that are an integral facet of many regulatory frameworks take place away from the gaze of public scrutiny. Thus, whilst stakeholders may call for greater accountability, governments and regulators may prefer to be left to do the best that they can with the available resources. The gradual erosion of public trust in the regulatory functions of government, if indeed this is the case, may suggest that such an approach is no longer tenable however.

While the formulation of such a framework of targets and performance would require a process of deliberation and negotiation, if such a framework was adopted the benefits of cooperative approaches could be maintained as the regulators and the regulated firms could be allowed or even encouraged to work together to decide how best to meet their targets. As long as reliable data was provided on the impact of such forms of collective action on regulatory outcomes, external stakeholders would be able to tell whether these cooperative approaches actually generated effective social outcomes. In order to provide such reliable data, it would be necessary to divide responsibility for implementing regulations from responsibility for judging performance however, and consequently broader issues emerge relating to the question of who regulates the regulator.

Another alternative is to adopt a purely goal-oriented approach to regulation where regulated firms are set targets and where sanctions are imposed if they fail to meet these. Such an approach is compatible with the arms-length, sanctions-based approach to implementation discussed above. Arguments for such an approach have been put forward on the basis that it is the regulated firms that know best how to achieve particular targets and that regulatory interference merely distorts market behaviour. However, the empirical analysis suggests that proactive and hands-on approaches to implementation where there is regular interaction

between regulators and business can play a critical role in challenging preconceptions, changing cultures and in transferring information, understanding and expertise and, therefore, in raising capacities for compliance and for continuous improvement. Without these approaches, the analysis suggests that responses to regulation that are expedient in the short-term rather than effective and efficient in the medium-term will prevail and that the costs of further improvements in environmental performance will escalate more rapidly. Some combination of process-oriented and goal-oriented approaches to regulation would therefore appear to be preferable to an approach which relied entirely upon either one.

Implications for broader notions of regulation and governance

By emphasising the influence of inter-dependence rather than hierarchy in the relations between the regulators and the regulated, and by highlighting the role that regulation can play in encouraging and enabling as well as controlling and sanctioning, the thesis has developed a different conception of regulation from that associated with traditional notions of command and control. Whilst accepting that the cases examined and the context within which they exist are not necessarily representative of the broader range of experiences, a number of issues arise from the thesis that are of relevance to wider debates on regulation and implementation. These relate to the role that command and control regulations can play as part of a broader policy mix and to the ways in which cooperative approaches to regulation can be applied as part of a broader strategy for governance.

In relation to the influence of command and control regulations, the thesis suggests that they need not merely control the negative side-effects of economic activities, they can also play a role in changing the nature of those activities. Hands-on and cooperative approaches to implementation that seek to promote compliance are therefore more interventionist than arms-length and deterrence-based approaches that seek to detect and sanction cases of non-compliance. As a result, where cooperative approaches emerge, the implementation process can come to resemble a partnership between the public and private sectors where regulators become an important player in the change or innovation process.

By highlighting the ways in which cooperation in the implementation process enables regulators to change cultures and build capacities for change within regulated firms, the thesis has suggested that some of the traditional criticisms of command and control regulations, namely that they are static and rigid and that they fail to incentivise improvements in performance, are not necessarily valid. Instead, the thesis has found that, under some conditions, cooperative

approaches to the implementation of command and control forms of regulation can be dynamic as compliance is continuously renegotiated as capacities for compliance are built and as new opportunities for further improvement arise. It has also found that they can be flexible enough to reflect the varying circumstances of different sectors and firms, including differences in their cultures, capacities and costs of compliance. And finally, it has found that they can generate a range of incentives and disincentives as regulators reward companies that seek to exploit the potential of socially desirable regulatory outcomes.

More generally, it can be argued that by imposing imperatives, incentivising improvement and building capacities command and control regulations display many of the features of the complementary policy mix that is often advocated. While it is likely their influence could be enhanced if they were applied in concert with a range of other instruments, the analysis suggests that command and control measures do more than merely establish minimum standards. In other words, they have a fuller role to play than being the 'instrument of last resort' within a broader policy mix, particularly where they are applied within a context where the performance of regulators and regulated firms can be readily scrutinised.

In relation to the relevance of the thesis to broader debates on the changing nature of governance, the thesis suggests that cooperative approaches to regulation represent something of a transition from what Baldwin, Scott and Hood (2000) recognise as being the narrowest definition of regulation, namely the top-down imposition of controls, towards a broader definition where governments seek to encourage and enable as well as impose and enforce. The provision of information to empower stakeholders so that they can more readily hold regulators and regulated firms to account could also contribute to the emergence of the wider forms of social regulation. Indeed, as the thesis has illustrated, the emphasis that some regulated firms appear to place on the ability of regulators to legitimise or de-legitimise their operations in the eyes of their stakeholders suggests that this form of information-based regulation could be very influential (see also Khanna, Quimio and Bojilova, 1998 and Tietenberg, 1998).

It appears therefore that in some settings at least there has been a transition from traditional forms of *government* towards a position where regulations are one element of a broader framework of *governance* as discussed by authors such as Glasbergen (1998) and Rydin and Pennington (2000). In part, this transition has been driven by an implicit acknowledgement that the state's capacities for control are limited (see Hanf and Jansen, 1998). However, it also reflects changes in the broader nature of public-private relations and the emergence of a 'facilitator' rather than a 'controller' state (see Ostrom, 1990). While for many such a transition is seen to be desirable, models of governance which recognise the inter-dependence of the range

of different actors are inherently more complex. As this thesis has shown, inter-dependencies mean that each actor, including those that are the targets of regulation, is able to exert influence within regulatory decision-making processes. With a weak state and stakeholders that have failed to mobilise or that are excluded from influence, it may be that it is the regulated actors themselves that control the pace and direction of change. However, with a stronger and more goal-oriented state that actively empowers its stakeholders, this thesis has suggested that new approaches to regulation might emerge that have the potential to deliver effective and efficient improvements within accountable decision-making processes.

Suggestions for Further Research

By adopting a qualitative, case-based approach to comparative policy analysis, this thesis has developed both a conceptual and an empirical understanding of the origins and influence of cooperation in the implementation process. This approach has had a number of clear advantages:

- by basing its empirical study upon an examination of different theories of cooperation and collective action, the thesis was able to identify clear hypotheses conceptual perspectives to be tested and the empirical study was able to be more focused and incisive.
- by adopting a qualitative and case-based approach to empirical research, the thesis was able to build a detailed understanding of the wide range of factors that combine to shape the nature and influence of the implementation process in practice.
- by adopting a comparative approach which examined two very similar regulatory frameworks that were applied in broadly similar contexts, the thesis was able to isolate the influence of certain factors and to illuminate the factors shaping the relations between different actors in different contexts.
- by examining these cases in detail, and by considering the perspectives of both the regulators and the managers of the regulated firms, the study has built a critical understanding of the factors shaping the performance of two significant regulatory frameworks that have seldom been examined before.
- by relating the empirical findings back to the conceptual research, the thesis has been able to reject some perspectives and to support or refine others. Aside from its case-based relevance, the major contribution of the thesis relates to its development of an institutional perspective on regulation and implementation.

However, this approach has not been able to examine the influence of every factor that exerts an influence on the implementation process in equal detail. Thus, there are also some areas where further research is needed:

- By focusing on the interactions between the two main sets of actors, namely the regulators and the regulated, the thesis has not always fully explained the influence of other actors, notably governments and external stakeholders. Consequently, there is scope for further research on the broader networks shaping the implementation process.
- By basing its qualitative analysis on the perceptions of the regulators and the managers of the regulated firms, the thesis has taken their views, for example on the efficacy and efficiency of different approaches to implementation, as being true. There is scope for these views to be verified through quantitative research, looking for example at the influence of different approaches on the performance of regulated firms and on the costs of compliance.
- Although the analysis confined itself to an examination of regulatory practices that are already in place, in the conclusions it also claimed that the adoption of broader frameworks of targets and performance measures could allow cooperative approaches to implementation to continue whilst also reducing the prospects for regulatory capture. As such frameworks have yet to be adopted, at least within the context of the cases examined, their actual influence is unclear. However, as they have been adopted in other settings, there is scope for comparative research to support or refute the predictions made in this thesis.
- Finally, the need to understand the wide range of factors that combine to shape the nature and influence of the implementation process meant that the thesis pursued a depth rather than a breadth of analysis. As it is not clear how generalisable the findings of the case-based empirical study are, there is scope for the validity of the results of the thesis to be examined in other settings.

Appendix A: Details of the UK's Framework for Pollution Control

The Origins and Evolution of Pollution Control Regulations in the UK

Although some regulations relating to pollution control in the UK date back to the 14th century, the contemporary framework of industrial environmental regulation has its origins in the mid-to-late 19th century. At this time, various regulations were introduced to protect public health and the environment from the effects of increasing industrialisation and urbanisation. The Alkali Acts of 1863 and 1874 for example imposed emissions limits on a range of industrial processes as a response to widespread concern about the social, economic and environmental impacts of acidic air emissions from alkali works. Similarly, the first Public Health Act of 1848 established various municipal and industrial water pollution controls while the Rivers Pollution Prevention Act of 1876 made it a criminal offence for any body to pollute the water environment (NSCA, 1998).

Rather than prohibiting emissions from regulated processes entirely or establishing uniform emissions limits, early environmental regulations in the UK adopted a more pragmatic approach that linked levels of environmental control to the availability of control technologies. The early Alkali Acts for example required regulated industrial processes to apply the 'Best Practicable Means' to control emissions to air. Similarly, the Rivers Pollution Prevention Act allowed polluters of the water environment to defend themselves against criminal prosecution by showing that they had adopted 'the best practical and available means' to render harmless their discharges to the water environment (NSCA, 1998).

By basing environmental regulation upon these technology-based principles, the early Acts demanded that the various regulatory agencies that were responsible for implementation and enforcement interpreted and applied legislative requirements on a case-by-case basis. Although the various agencies that have since been charged with the implementation of environmental legislation have exercised the discretion awarded to them in different ways, legislative flexibility and administrative discretion have been an important if not a defining feature of the framework of environmental regulation in the UK since its inception in the mid-to-late 19th century.

The Acts that defined the nature of environmental regulation from the late 19th century have since been amended and extended on numerous occasions¹. However, the flexible,

¹ Of the many legislative changes, the Clean Air Act of 1958 and the Control of Pollution Act of 1974 brought significant changes to the framework of air pollution control whilst the Water Resources Act of 1963 and the Water

discretionary, technology-based principles for pollution control that were adopted in the early legislation remained at the heart of UK's framework of environmental regulation for over a century. In recent years, significant changes have been made to the framework of environmental regulation because of the increasing influence of European Union regulations and the adoption of domestic legislation such as the 1990 Environmental Protection Act, the 1991 Water Resources Act and the 1995 Environment Act and most recently the 1999 Pollution Prevention and Control Regulations which will revise the central aspects of the IPC framework and some aspects of the LAPC framework (see below). However, in the central aspects of industrial environmental regulation, various commentators have suggested that the evolution of the framework of environmental regulation in the UK has been characterised by a high degree of continuity rather than change (Jordan, 1993; Smith, 1997). Contemporary approaches to the implementation of environmental regulation therefore continue to reflect the regulatory cultures and traditions that have been established for well over a century.

The 1990 Environmental Protection Act: IPC and LAPC

The Environmental Protection Act (EPA) of 1990 was introduced as an enabling Act under which various regulations could be issued relating to a range of environmental issues. Part 1 of the 1990 EPA established the two separate but closely related frameworks of regulation that provide the focus for the thesis, namely the systems of IPC as implemented by the Environment Agency in England and Wales and the Scottish Environmental Protection Agency (SEPA) in Scotland and the system Local Air Pollution Control (LAPC) as implemented by various local authorities in England and Wales and by SEPA in Scotland. The following discussion, and the empirical analysis contained within the thesis, focuses solely on the implementation of the IPC and LAPC frameworks in England and Wales.

- Implementing Agencies

In England and Wales, responsibility for the implementation of the IPC system was initially delegated to Her Majesty's Inspectorate of Pollution (HMIP). However, the 1995 Environment Act established the legal provisions that in 1996 led to the creation of a new Environment Agency. This Agency combined the pre-existing functions of HMIP with those of the Waste Regulation Authorities and the National Rivers Authority. Its primary functions are to protect the environment and to protect against floods and other natural hazards. As HMIP represented a

Acts of 1973 and 1989 also lead to important changes to the framework of water pollution control. The Control of Pollution Act in 1974 also established legislation governing the collection and disposal of solid waste.

relatively small part of the broader agency, internal relations between the different functions are often seen to be significant (see for example Carter and Lowe, 1995).

The 1995 Environment Act established the frameworks that govern the powers and duties of the Environment Agency as well as its funding, responsibilities and accountability mechanisms. In accordance with the provisions of the Act, the Agency is managed by a board of directors that is appointed by and is answerable to the Secretary of State and the relevant Ministers in both the UK Government and the devolved Welsh Assembly. As well as setting the budget of the Agency, guidance on the objectives, functions and modes of operation to be adopted by the Agency can be issued by the central government through the Secretary of State and the relevant Ministers. Appeals against any decision made by the Agency can also be taken by the Secretary of State who has the power to over-rule any decision made by such an executive agency. Ultimately then the Environment Agency with responsibility for implementing IPC is politically controlled and is accountable to the relevant Secretary of State. Aside from its relations with central government, the Agency is also obliged to co-ordinate its activities with those of other agencies and authorities and to give regard to the concerns of various statutory consultees. It must also appoint and consult with a variety of advisory committees relating to its various functions at the regional and local levels. As well as being subject to various forms of central control, therefore, the Agency is also influenced by regional and local interests and conditions as articulated through the consultative links that it is legally bound to establish with various other agencies.

By contrast, responsibility for the implementation of the LAPC system in England and Wales is delegated to a large number of district and borough councils in England and to county and county borough councils in Wales. Various port health authorities throughout England and Wales are also responsible for the implementation of LAPC for industrial processes located in port areas (DETR, 1999). The local authorities responsible for the implementation of the LAPC system are also responsible for a number of other aspects of environmental protection and for a wide range of other functions including the promotion of economic development and the provision of land-use planning controls. Environmental protection in general, and air pollution control in particular, are therefore only a small part of a much wider range of functions undertaken by local authorities. The external interactions between different local authorities and the internal interactions between the different functions within each individual authority are therefore likely to be significant.

In England and Wales local authorities are democratically accountable at the local level. However, they are also governed by the statutes and by the funding decisions of central

government. Local authorities therefore exist and operate in what Rydin (1993, p190) describes as an 'uneasy partnership with both claiming authority because of their elected nature but with central government clearly in a position of greater power through various financial and administrative controls'. These aspects of the relationship between the central and the local are reflected in the implementation process that operationalises the LAPC system. Under the conditions of the EPA, while they are charged with the interpretation of BATNEEC for each regulated process, local authorities must give regard to the guidance issued by central government on the implementation of the LAPC system. Appeals against the decisions taken by local authorities during the implementation process can also be taken by the Secretary of State who has the power to over-rule any decisions made at the local level. Consequently, there is a significant element of control in the relationship between central and local government that governs the implementation of the LAPC system. However, there is also an element of co-operation as local authorities have access to various forms of central support, most notably through the advice and information that is made available through central government and the DETR. Again therefore central-local interactions are therefore significant.

- Target Actors

The IPC system regulates emissions to air, water and land from approximately 2,000 larger and more environmentally significant processes while the LAPC system regulates emissions to air only from approximately 13,000 smaller and less environmentally significant processes. Both the IPC and the LAPC systems came into force for all new or significantly altered regulated processes from 1991 and at various times between 1992 and 1996 for existing processes in different sectors.

Under the requirements of the Part 1 of the 1990 EPA, processes regulated under either IPC or LAPC must not be operated without an authorisation from the relevant implementing agency. To obtain such an authorisation, operators of prescribed processes must submit an application for authorisation to the implementing agency that should contain:

- details about the operator and the location of the process;
- a description of the proposed process and of the proposed technologies and techniques to be used to prevent or minimise emissions of prescribed substances and to render harmless emissions of all substances to air for LAPC and to air, water and land for IPC;
- assuming the technologies and techniques have been fitted and are operational, details of the source, nature and amount of current and/or anticipated emissions from the process;

- for processes regulated by IPC, an assessment to demonstrate that any proposed emissions to air, water or land are compatible with the BPEO or, where the BPEO has not been selected on cost grounds, a justification for this;
- an assessment of the likely environmental consequences of any emissions to air for LAPC and to air, water and land for IPC;
- proposals for monitoring, sampling and measurement of emissions to air for LAPC and to air, water and land for IPC ;
- for existing operations, an outline programme for upgrading to new plant standards for BATNEEC (DoE, 1991a; NSCA. 1998).

Thus, regulated actors are legally obliged to collect information and to present it to the regulatory agencies as part of the authorisation process. Upon submission, applications for authorisation must also be accompanied by the relevant application fee, the level of which is set centrally. Application fees and the subsequent subsistence charges that are levied on holders of authorisations are designed to enable implementing agencies to recover the costs associated with the implementation and enforcement of the IPC and LAPC systems. In essence then the regulatory function should be financed at least to some degree by the fees paid by regulated actors.

- Interpreting Regulatory Principles

All applications received from operators of prescribed processes are then considered by the relevant implementing agency. All applications for authorisation to operate a prescribed process must then be sent by the implementing agency to a range of statutory consultees for comment. For IPC applications, details must be sent to the local authority for the area within which the process is operated and to the range of bodies responsible for agriculture, fisheries, conservation and heritage. For LAPC applications, details must be sent to the relevant environment agency and to the range of conservation and heritage bodies. Thus, although responsibility for implementation is formally delegated to a single agency, a broader network of different organisations has been given the right to input into the implementation process.

Within any authorisations that are issued, implementing agencies must set out conditions that are designed to ensure that the regulated process is operated using BATNEEC to prevent and minimise emissions of prescribed substances and to render harmless any substance that may be emitted (DETR, 1999). To promote consistency in the way that BATNEEC is interpreted and applied, a number of General Guidance Notes (GG Notes) and a series of Process Guidance Notes (PG Notes) have been issued by the Department of the Environment (DoE), now the

Department of the Environment, Transport and the Regions (DETR). At a generic level, the various components of BATNEEC have been defined in general guidance as set out in Table A1.

In addition to the general guidance that has been issued on the interpretation of BATNEEC, a series of PG Notes has been issued by the Secretary of State for the Environment, Transport and the Regions. These PG Notes attempt to establish a definition of BATNEEC for each of the prescribed processes regulated under IPC and LAPC. These guidance notes are formulated on the basis of dialogue between central government, relevant government agencies, associations and enforcing authorities, trade associations and individual firms and a subsequent phase of wider consultation. Although they do not prescribe particular technologies or techniques, they usually contain details of indicative emissions limits and controls, monitoring, sampling and measurement requirements, general maintenance and training requirements and provisions for the response to accidents and abnormal emissions (DoE, 1991b; NSCA, 1998). Such PG notes are periodically reviewed to reflect changes in environmental conditions and advances in technology and scientific understanding (DETR, 1999).

By issuing both general guidance and process-specific guidance notes, central government has sought to programme or to precondition the implementation process associated with the IPC and LAPC systems which operationalises the legal principles established by the 1990 EPA. General guidance for the LAPC system for example suggests that 'Process Guidance Notes should be regarded by local authorities as their primary reference document for determining BATNEEC in drawing up authorisations' (DoE, 1991b, p9). However, reflecting the long established tradition of flexibility in regulatory processes in the UK, it is also acknowledged for LAPC (DoE, 1991b, p9) that:

In general terms what is BATNEEC for one process is likely to be BATNEEC for a comparable process. But in each case it is in practice for local authorities (subject to appeal to the Secretary of State) to decide what is BATNEEC for the individual process and the local authority inspector concerned should take into account variable factors such as configuration, size and other individual characteristics of the process when doing so.

Thus, notwithstanding the influence of the controls exerted by central government on the implementing agencies as discussed above, the implementation process is not fully programmed or preconditioned from above. Instead, implementing agencies and inspectors are given some amount of discretion in determining what may constitute BATNEEC for a particular process.

Table A.1: The Interpretation of BATNEEC

- 'Best' must be taken to mean the most effective in preventing, minimising or rendering harmless polluting emissions. There may be more than one set of techniques that achieves comparable effectiveness – that is there may be more than one set of 'best' techniques.
- 'Available' should be taken to mean procurable by the operator in question. It does not imply that the technique is in general use, but it does require general accessibility. It includes a technique which has been developed (or proven) at a scale which allows its implementation in the relevant industrial context with the necessary business confidence. It does not imply that sources outside the UK are "unavailable". Nor does it imply a competitive supply market. If there is a monopoly supplier the technique counts as being available providing that the operator can procure it.
- 'Techniques'... embraces both the process and how the process is operated. It should be taken to mean the concept and design of the process, the components of which it is made up and the manner in which they are connected together to make the whole. It also includes matters such as numbers and also the design, construction, lay-out and maintenance of buildings.
- 'Not Entailing Excessive Cost' needs to be taken in two contexts, depending on whether it is applied to new processes or existing processes. For new processes, the presumption should be that the best available techniques are used, but that presumption can be properly modified by economic considerations where the costs of applying the best available techniques would be excessive in relation to the nature of the industry and the environmental protection to be achieved. For existing processes, the best available techniques should be applied whilst taking into account the environmental situation and the desirability of avoiding excessive costs for the plants in question, having regard to the economic circumstances of the industrial sector concerned.
- In relation to the emissions standards, clearly BATNEEC may be expressed in technological terms – i.e. a requirement to employ specified hardware. It may also be expressed in terms of emissions standards. Having identified the best techniques and the emissions values they are capable of producing, it will be possible to express BATNEEC as a performance standard: that is, a technique which produces emissions standards of X or better where X are the values yielded by the identified BATNEEC. The process guidance notes generally express BATNEEC in these terms so as not to constrain the development of cleaner technologies or to restrict unduly operators' choice of means to achieve a given standard.

Source: Adapted from DoE (1991b).

- Establishing Regulatory Controls

Once comments have been received from the various statutory consultees and attention has been paid to the relevant guidance, authorisations can be formulated which interpret BATNEEC to establish site-specific operating conditions and emissions limits for a particular process. Particularly in relation to LAPC, this process is subject to a range of general guidance notes that set out the criteria to be used in drafting authorisation conditions (DoE, 1991c). This guidance suggests that implementing authorities need to take care in drafting specific conditions to ensure enforceability, clarity, relevance and workability. Thus, the general guidance suggests that authorisations should:

- include clear conditions which clearly and precisely state what is required of the operator and which can be objectively measures so that they are readily capable of enforcement in the courts should this prove necessary;
- create certainty by only including conditions that are unambiguous and explicit so that industry knows exactly what basic standards it must achieve;
- be designed for the purpose of reducing air pollution and relate only to the control of air pollution from the process in question;
- only include conditions that have a clearly defined purpose and that are capable of achieving that purpose.

Once authorisations have been issued, the application and all subsequent details of compliance conditions, inspection, monitoring, upgrading requirements and responses to non-compliance must then be put on the public register unless a case can be made that the publication of such information would breach commercial confidentiality or that it would prejudice national security.

- Monitoring and Enforcement

To ensure compliance with any conditions and standards that are included in the authorisation, implementing agencies have powers of entry, inspection, sampling, investigation and seizure of articles or substances that are a cause of imminent danger or serious harm (DETR, 1999). For both IPC and LAPC, implementing authorities have the powers to issue a range of different notices relating to compliance and non-compliance. These notices can take a variety of forms:

- variation notices which can be issued if current conditions no longer represent BATNEEC; enforcement notices which require action to be taken in cases of actual or potential non-compliance;
- prohibition notices which require an operator to close down all or part of a process where there is an imminent risk of serious pollution; and
- revocation notices where authorisations are withdrawn if the annual subsistence charge relating to authorisation has not been made or where the process has not been operational within the last 12 months.

Operators of prescribed processes can appeal to the Secretary of State both against the conditions set out within the authorisations and against the various forms of notice that can be issued by implementing authorities. In addition to any enforcement activities, implementing authorities can also prosecute offenders. Such prosecutions can be taken against both offending companies and against responsible officers within those companies where it can be shown that the offence was committed with their consent or because of their neglect. Prosecution can lead to up to 6 months imprisonment and/or a £20,000 fine in the Magistrates Courts of up to 5 years imprisonment and/or an unlimited fine in the Crown Court. The full costs associated with any investigations and legal proceedings can also be recovered from the offending organisation or individual.

Contemporary Policy Developments and the Continued Relevance of IPC and LAPC

Since the introduction of the 1990 EPA and its phased introduction for different processes throughout the early and mid 1990s, additional changes have been made to the broader framework of legislation relating to air pollution control and air quality management, notably by the adoption of the 1991 Water Resources Act, the 1993 Clean Air Act and the 1995 Environment Act. Although this legislation contains provisions that are distinct from those of the 1990 EPA, there are links between the provisions of the 1990 EPA and the objectives of other legislation that establishes environmental quality objectives (EQOs). Consequently provision is made within the requirements of the 1990 EPA to vary emissions standards or destinations according to the need to achieve particular EQOs.

The contemporary framework of industrial environmental regulation in the UK is also being revised to comply with the requirements of various international agreements and EU Directives. A notable development in this respect has been the adoption of the EU Integrated Pollution Prevention and Control (IPPC) Directive in 1996 which has been transposed into the UK legislative framework through the introduction of the 1999 Pollution Prevention and Control

(PPC) Regulations which for pre-existing industrial processes are scheduled to come into force on a rolling schedule until the last processes switch from IPC or LAPC regulations to the new PPC regulations in 2007.

The coverage of the IPC system will also be extended by the 1999 Pollution Prevention and Control (PPC) Regulations. However, local authorities in England and Wales will retain regulatory responsibilities for some of the installations that will be transferred from the current LAPC system into the new system of PPC Regulations when they eventually take effect. The coverage of the LAPC system, which is currently implemented by local authorities in England and Wales and SEPA in Scotland, will be slightly reduced by the introduction of the 1999 PPC Regulations.

Despite these important changes, which are summarised in Table A.2, the principles that underpin IPC and LAPC will remain largely intact within the new PPC system which will regulated approximately 6,000 industrial processes whilst approximately 11,500 processes will continue to be regulated under the existing framework of LAPC in England and Wales. Studies on the implementation and impact of IPC and LAPC therefore continue to be of relevance both because some of the regulations are still in place in the UK and because the principles which underpin the regulations are being extended and adopted in other areas of the UK policy framework and throughout the EU as member states adopt and enact the legislation which is called for by the IPPC Directive.

Table A.2: The Evolving Framework of Industrial Environmental Regulation in the UK

<i>The 1990 Environmental Protection Act – Part 1</i>	
<p>Integrated Pollution Control (IPC)</p> <p>Regulations adopted for approximately 2,000 industrial processes</p>	<p>Local Air Pollution Control (LAPC)</p> <p>Regulations adopted for approximately 13,000 industrial processes in England and Wales.</p>
<i>The 1999 Pollution Prevention and Control (PPC) Bill</i>	
<p>Pollution Prevention and Control (PPC)</p> <p>Regulations adopted for an estimated 6,000 industrial installations including:</p> <ul style="list-style-type: none"> - 2,000 IPC regulated industrial processes* - 1,500 LAPC regulated industrial processes* - upto 3,000 landfill sites - upto 2,500 installations in the food, drink and intensive livestock sectors. <p>* Industrial <i>installations</i> regulated by the PPC Regulations may contain more than one of the industrial <i>processes</i> previously regulated by IPC/LAPC Regulations.</p>	<p>Local Air Pollution Control (LAPC) Regulations</p> <p>These regulations remain in force for approximately 11,500 industrial processes in England and Wales that will not be directly affected by the introduction of Pollution Prevention and Control (PPC) Regulations.</p>

Appendix B:

Details of the interactive workshop

In order to feed the preliminary results back to the regulators, the managers of the regulated firms and the broader range of stakeholders, an interactive workshop was held at the Eco-Management and Auditing Conference that took place at the University of Leeds in July of 1998. This workshop, which lasted for 90 minutes, presented the findings of a preliminary analysis of the empirical results. This analysis focused on the influence of the central analytical variables and the significance of various forms of interaction within the implementation process. Although the discussion validated the central findings of the preliminary assessment, it also encouraged a re-conceptualisation of other aspects, relating particularly to the pros and cons of cooperative approaches and to the influence of third parties.

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