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Introduction

This book examines the success of seventeen Western nations in reducing environmental pollution since the early 1970s. Environmental conditions play an increasingly important role in the politics of advanced democracies. Increased human expansion has placed unprecedented strains on the resource base upon which the economy depends. Holes in the ozone layer, global warming, and the loss of biodiversity are only a few of the best-known problems connected with the environmental crisis. Also important are problems less global in scope, like acid rain or the disposal of wastes. Few dispute that historic trends in environmental degradation could hinder the ability to provide increasing levels of well-being into the next century. Current problems stem first and foremost from a failure to use natural resources effectively and from the implications of that failure on historic development paths.

The public has begun to recognize some of the environmental problems confronting the physical and economic sustainability of modern societies. Opinion polls since the 1960s show that large majorities in most economically advanced countries have consistently supported increased public action to ensure the protection of ecosystems and to reduce pollution. Policy makers have responded both to the growing evidence of long-term threats and growing public opposition to past practices by creating a variety of reforms to control environmental degradation. Today, most Western democracies have a wide array of measures to limit pollution and other forms of environmental degradation.

Public policies are essential to resolving many environmental problems because environmental quality is a collective good and thus will tend to be underprovided by the market alone. Even when market-type solutions can be relied on, they will require that political authorities set the appropriate

incentives or levels of acceptable pollution. But official public policies, such as product bans or pollution taxes, are not the only way to change behavior for the better. Environmental pollution is ultimately the outcome of individual actions and decisions that are themselves affected by economic choice and social behavior, in addition to government policy.

Understanding the relatively recent salience of environmental protection in politics is a large and complex task. The current literature has no shortage of explanations for growing environmental interest, nor is there a shortage of prescriptions for reforms to address environmental problems more efficiently or effectively. What has been largely absent, however, is an empirical assessment linking explanations and actual changes in environmental pollution. In other words, the impact of various explanations of environmental reform has not been investigated with regard to environmental outcomes.

A main purpose of this study is to provide such an analysis. In so doing, I hope to provide answers to the following questions:

- What is the role of wealth and economic structural change on environmental performance?
- Do cross-national differences in public concern about environmental problems and environmental values explain differences in environmental performance?
- Do strong organizations of economic interest groups operating in close cooperation with the government suppress or facilitate effective environmental reforms?
- What is the influence of basic democratic political institutions on the ability of societies to overcome concentrated interests in order to secure the diffuse benefits of environmental protection?

In answering these questions, this study fills several lacunae in the study of comparative politics generally and comparative environmental policy more specifically. First, the majority of the literature in comparative and environmental politics has focused either on the emergence of environmental pollution as a popular political issue (e.g., Dalton 1994; Dalton and Kuechler 1990; Hofrichter and Reif 1990; Lowe and Rüdig 1986; Rohrschneider 1988, 1990) or on analyzing official environmental policy outputs (e.g., Kamieniecki and Sanasarian 1990; Strom and Swindell 1993; Vail, Hasund, and Drake 1994; Vogel and Kun 1987). An important limitation of these studies is that they tell little about actual pollution outcomes. Indeed, some studies simply *assume* that policy is synonymous with

results. This book looks explicitly at progress in environmental outcomes (reductions in environmental pollution), or what I generally refer to as environmental performance, and it assesses the veracity of explanations suggested in the environmental policy and comparative politics literatures in accounting for variations in that performance. Comparing national environmental performance thus adds an important dimension to the understanding of the broader question of how societies deal with environmental challenges.

A second lacuna addressed in this book is the absence of systematic and simultaneous comparison of competing explanations of environmental outcomes. A characteristic of much of the comparative environmental politics literature is that it is limited to individual country studies or comparisons across a few countries in very specific environmental policy areas (Lowe and Rüdig 1986; Vogel and Kun 1987; Strom and Swindell 1993; Andersen 1994; Liefferink 1996). The persuasiveness and generalizability of such studies is severely limited by the existence of more explanations than there are cases under study (Lijphart 1971). Choosing among competing explanations in these kinds of studies is perilous, if not logically impossible. This study attempts to overcome some of these difficulties by conducting a comparison of a relatively large number of countries (seventeen), carefully laying out hypotheses found in the literature, developing a measure of environmental performance, and subjecting various explanations to multivariate statistical analysis. This approach allows for a more systematic comparison of competing explanations than has been done in previous studies and consequently permits more general claims about the determinants of environmental performance. Despite some inevitable compromises of detail, including the experience of as many countries as possible also permits an evaluation of competing explanations.

A third contribution of this book is to expand the understanding of national performance in the comparative politics of industrial societies. Comparative politics has long attempted to explain how societies address highly salient social problems directly. Powell (1982), for example, examined how political institutions affect regime stability and political violence. Others have examined the impact of a variety of structural, cultural, and institutional factors on national economic performance, particularly in Europe, North America, and Asia (e.g., Lijphart 1999; Garrett 1998). Still others have examined how industrial societies affect welfare outcomes and what things shape such outcomes (Esping-Andersen 1990; Hicks 1999). Curiously, however, comparative politics has not placed *environmental*

performance alongside economic or political performance as a central topic of comparative government, even though environmental protection is widely considered to be an essential government function that is inherently connected with long-term political stability and economic prosperity. Conversely, policy studies seldom utilize general insights from comparative politics in trying to understand environmental policy (Jahn 1998; Jänicke, Mönch, and Binder 1997; Jänicke and Weidner 1993; Strom and Swindell 1993; Kamieniecki and Sanasarian 1990). By systematically examining the variations in and determinants of environmental performance, I hope this book makes a lasting contribution to our understanding of comparative government and places the study of environment into the center of studies of national performance.

What Is Good Environmental Performance?

Good environmental performance can be defined as progress toward or achievement of a situation in which societal withdrawals from the stock of natural resources do not prevent future generations from having an equivalent stock. This is the conventional definition of sustainability provided by the environmental community (Pearce, Markandya, and Barbier 1989; WCED 1987). One might, for example, evaluate environmental performance much the same way as one would evaluate economic performance. One problem with this approach is that this idealized sustainable state is a moving target.

> Carrying capacities in nature are not fixed, static, or simple relations. They are contingent on technology, preferences, and the structure of production and consumption. They are also contingent on the ever-changing state of interactions between the physical and biotic environments. A single number for carrying capacity would be meaningless because the consequences for both human innovation and biological evolution are inherently unknowable. (Arrow et al. 1995: 620–21)

Moreover, sustainability is, in a highly interconnected world of global culture, trade, and production, a slippery concept. British coal use may seem much more sustainable to Britain than to the nations downwind. Moreover, the ability to export (or import) goods across borders complicates comparisons of countries' environmental progress.

In this study I define environmental performance as *evidence of reductions in a variety of common and pervasive pollutants*. The "pollutants" considered are human emissions of sulfur dioxide and nitrogen oxides, the generation

of municipal waste, fertilizer use, glass recycling rates, and the proportion of the population covered by wastewater treatment facilities. Reductions in the first four indicators and increases in the latter two imply direct reductions in the pressure placed on the ecosystem at large by human activity. These measures are meant to be indicative of overall national success in solving various pollution problems; they are obviously not an exhaustive list of environmental problems facing these countries. Chapter 2 provides more details about the selection of these particular indicators.

Identifying progress in environmental protection requires not simply a measure of pollution at a single point in time but also changes over time. Although the problems associated with environmental pollution policy date back many decades, most studies place special emphasis on the period since the late 1960s and early 1970s, when public concern and policy initiatives proliferated internationally, especially among countries in North America, Western Europe, and Japan. Thus, wherever possible, measures of environmental progress used in this book are based on changes in pollution indicators using data from the early 1970s to the mid-1990s.

This analysis is presented in Chapter 2. In summary, it suggests that there are considerable differences in the progress made among the advanced democracies, although there has been solid progress across the board (Ireland and Spain being possible exceptions). Thus, we can consider the first decades of the environmental era as a limited success, although some countries seem to have enjoyed greater success than others.

Explaining Performance

Students of environmental policy make two major claims about general, cross-national trends in environmental performance. First, studies of environmental policy often suggest that there has been a pronounced trend toward *convergence* in national environmental performance (e.g., Hoberg 1986; Knoepfel et al. 1987; Kopp, Portney, and DeWitt 1990; Vogel 1995). This argument tends to follow from the observation that national standards and policies have converged. Studies typically point to international treaties and the convergence of standards – due to the international epistemic communities, international coordination in organizations like the Organization for Economic Cooperation and Development (OECD), or pooled sovereignty in bodies like the European Union – as evidence for this trend in standards. Convergent performance follows from the presumption

that "laggard" countries catch up to the "pioneers" as the former enact and implement standards more closely resembling the standards of the "pioneer" countries (Andersen and Liefferink 1997).

The main problem with this claim is that it has been empirically evaluated only for policy standards, not for actual outcomes. Because the true test of environmental policy lies in the outcomes, convergent standards may tell us little. Indeed, the evidence presented in Chapter 2 sharply contradicts the convergence claim. Although most countries did experience considerable improvement in environmental performance along many dimensions that I measure, I also find considerable divergence in comparative environmental performance among these developed countries.

A second claim suggested in the literature is that countries do not perform consistently in different areas of environmental policy; although countries may effectively tackle some problems, they perform poorly on others. On the contrary, I find that there is considerable consistency across the measures assessed in this study. Countries that do relatively well on one measure tend to do relatively well on others. Because the measures discussed here represent a wide diversity of environmental problems – point and nonpoint pollution, multiple media (air, land-soil, water), and spatial effect (local, national, regional) – the evidence suggests that different national performance outcomes (at least those I look at) are consistent.

The empirical analysis in this book relies on a multidimensional indicator of good environmental performance, which makes the analysis less vulnerable to the challenge that the factors associated with performance are idiosyncratic. Whereas countries may do well in one or two particular areas because of "natural" or accidental advantages in that area (e.g., starting off with particularly wasteful or pollution-intensive energy sectors), it is unlikely that countries would do consistently well in six areas for those reasons. Thus, the multidimensional indicator increases the validity of my contention that environmental performance is *systematically* related to structural, cultural, and institutional differences emphasized throughout this book.

Of course, the ultimate aim of environmental policy, and one of the aims of environmental policy research, is not simply to describe and analyze broad pollution trends but to explain them. The numerous explanations in the literature can be grouped into three broad categories of comparative politics: structural, cultural, and institutional.[1] Such categories of explanation

[1] The distinction is inspired by the approach in Lichbach and Zuckerman (1997).

are admittedly imprecise and are often simply analytical distinctions. At the margins (and sometimes more centrally) the categories fuse. My purpose is not to engage in turf battles over what is properly considered a structural, cultural, or institutional explanation; I am more interested in the substantive relationships.

Structural Change

Changes in the structure of societies, particularly the structure of economic demand and production, are often considered sufficient to explain environmental reform. Particular emphasis, for example, has been placed on the role of rising per capita income and the shift from industrial to a more service-oriented economy. Associated changes – from less pollution-intensive light industry (assembly and foodstuffs) to highly pollution-intensive heavy industry (steel and bulk chemicals) and then to "inherently" lower pollution-intensive high-technology industry (computers and pharmaceuticals) – have been found to be associated with lower pollution intensity (Hettige, Lucas, and Wheeler 1992). Such explanations are particularly prevalent in economics, where economic development is generically assumed to follow the trajectory of the first industrial nations. However, the importance of economic development also features in some political or sociological accounts of environmental policy performance (Jänicke 1992; Inglehart 1990).

There are two often diametrically opposed views about the role of rising incomes and changing economic structure on environmental quality. "Limits-to-growth" proponents tend to view rising income, as measured by gross domestic product (GDP), as part of the problem rather than the solution to environmental problems. The limits-to-growth view correctly points out that attention to the changing share of economic sectors obscures the fact that absolute production in most economic sectors continues to grow even as relative shares change. Environmental problems are sensitive to total pollution. The issue, as Daly (1991) has pointed out, is economic scale relative to natural systems and not the relative shares of activity within sectors of the economy.

In contrast to this "antigrowth" view is one that claims that economic development may be a sufficient condition for eventual improvements in environmental protection (Beckerman 1992). Rising income, so the argument goes, may initially damage the environment, but higher incomes increase the demand for environmental quality due to a decreasing marginal

utility for private goods (and income more generally) (Baumol and Oates 1988). As incomes continue to increase, there are absolute decreases in the negative environmental effects of production, because of a relatively greater willingness and ability to pay for environmental protection. Thus, pollution declines even though production increases.

Recent research has suggested that the link between income and environmental quality is in fact not linear but U-shaped (Grossman and Krueger 1995; Shafik 1994; cf. Harbaugh, Levinson, and Wilson 2002). Environmental quality declines as development proceeds from low-agricultural to moderate-industrial levels of development but later improves as middle-income countries grow faster. This U-shaped relationship is sometimes referred to as the environmental Kuznets curve (EKC).[2] The underlying explanations for the EKC suggest two means by which income affects environmental quality: through structure of production and through the structure of demand. Both explanations predict reinforcing effects in economically advanced countries: production structure shifts toward less polluting production *and* consumers shift toward demanding improved environmental quality.

One of the main problems with the EKC thesis is that empirical trends in particular measures of environmental quality vary considerably in their functional form. For some environmental indicators, such as the quality of drinking water, quality improves in line with rising income. Other indicators, such as carbon dioxide emissions, deteriorate as national income increases. Still others do indeed follow the U-shaped pattern suggested by the Kuznets curve.

Another objection to the EKC thesis is that many causes of environmental destruction are independent of income and ultimately institutional or cultural in origin. Such objections imply that higher income is at best a necessary condition for reductions in environmental pollution. The ultimate mechanism for good performance then is appropriate institutions (Arrow et al. 1995). A third problem with the EKC literature is that the results showing a Kuznets curve with "maximum" pollution at middle incomes also find a second inflection point at very high levels of income (Grossman and Krueger 1995: 366; Shafik 1994). In other words, beyond a certain point (just below the income level in the United States, Canada, and Switzerland), more wealth is indeed bad for the environment.

[2] The Kuznets curve was a popular observation about the U-shaped relationship between average income and income equality in the United States (Kuznets 1955).

Introduction

An examination of the relationship between environmental performance and wealth in Chapter 3 of this book suggests that the effects of income and economic structure are important. First, the level of income per capita is associated with increased aggregate environmental performance, but only up to a point. After that, greater wealth is associated with worsening environmental performance. This implies that the limits-to-growth pessimists are not necessarily incorrect in claiming that all rich, Western countries are "overdeveloped." Even at very high levels of income – equivalent to the incomes in Italy or the Netherlands – my analysis suggests that more per capita income has improved environmental performance in the first three decades of the modern environmental era. On the other hand, beyond a certain income (less than that in the United States), relative environmental performance declines as income increases. This finding is thus consistent with results elsewhere and suggests that there could indeed be some practical limits to growth. Chapter 3 also examines the relationship between economic structural change and environmental performance. The results suggest that, while structural change is associated with changes in per capita income, it is not associated with differences in environmental performance, at least among developed democracies.

In addition to the effects of income and economic structure on environmental performance, several other structural factors have been put forth as plausible explanations of differences in national environmental performance. Perhaps the most important of these are geographic size and population density. Country size is often suggested as an explanation for differences in environmental performance because larger countries have large "pollution sinks" that effectively obscure (or mitigate) pollution problems. Of course, using country size to account for environmental performance does not take into consideration the population inhabiting the space in question. Perhaps for this reason population density, rather than country size, has been suggested as an explanation for differences in environmental performance. Crowded countries, no matter their absolute size, are considered more likely to address environmental pollution problems because larger proportions of their populations confront a given environmental insult. These additional structural characteristics of countries are also examined in Chapter 3. The evidence suggests that neither factor matters much individually, but the combined effect of size and population density is important in helping to account for differences in environmental performance. Small, densely populated countries tend to have better performance than large, sparsely populated ones.

Public Opinion and Environmental Mobilization

Many view structural factors as unconvincing explanations for change in environmental pollution. Even if structural factors enhance or retard environmental performance, society itself (or more properly individuals composing society) acts to cause or correct pollution problems. Perhaps for this reason many social scientists studying environmental politics and policy focus on expressed social concerns about environmental protection.

In all Western industrial democracies, there is clear evidence from various surveys of popular opinion that public support for environmental protection has increased since the late 1960s. There are two closely related explanations for this public support. The first is an extension of the income thesis just discussed: as wealth increases, the demand for quality-of-life issues like a clean environment increases relative to the demand for material goods. For instance, Inglehart's explanation of "postmaterialist" culture, which claims to be closely associated with greater demand for higher environmental quality, is rooted in the economic principle of "diminishing marginal utility of income" (1997: 33). According to the postmaterialism thesis, environmental concern has grown in the West because the long-term material prosperity since World War II has led subsequent generations to take material abundance for granted.

A second explanation of public support for environmentalism also focuses on the underlying values of mass publics and elites but explains demand for environmental quality as the result of a more general social learning process (Dunlap and Mertig 1995; Jamison, Eyerman, and Cramer 1990; Milbraith 1984; Paehlke 1997). In this explanation – sometimes referred to as the "new environmental paradigm" greater knowledge about environmental processes, not economic security, has transformed people's understanding of human interaction with the environment, thus altering the nature and extent of the traditional economic development process.

The distinction between these economic-resource and knowledge-learning explanations is not always clear. For instance, evidence to distinguish clearly between their effects is not readily available. Cross-nationally comparable surveys of citizen attitudes, values, and preferences are insufficient to distinguish between attitudes reflecting a new paradigm or simply the indirect effects of prosperity. Moreover, at a conceptual level, distinguishing cultural change (in economics the equivalent of a change in preference) from a simple income effect is fraught with