Part I

Background

1

Environmental pollution as a problem of collective action

1.1 Can something be done?

The concern about environmental pollution in public policy and public opinion in the USA originates, according to former Vice President Al Gore, with the publication of Rachel Carson's *Silent Spring* (1962).[1] Its publication made everyone aware of the negative effect of pesticides (DDT) on agricultural production. The environmental movement in Europe got off the ground with *The Limits to Growth* (1972), the report of the Club of Rome. Concern with the natural environment is nothing new. It dates back to seventeenth-century air pollution in London and to Thomas Malthus's warnings in the eighteenth century about the negative effects of population growth.[2] However, there is an important difference between early and modern concerns. In the early days the public had no influence on the decisions of the political elite in handling environmental affairs. Nowadays, what politicians and policymakers propose or decide is closely followed by public opinion.

The publication of *Silent Spring* created a shock effect in the USA. As a result DDT was banned and laws protecting clean air, land and water were introduced. The notion of limits to growth of the Club of Rome created a political climate that made environmental politics and policy both possible and necessary. Since 1972, many other studies have been published on the ozone layer, global warming and the greenhouse effect, and the irreversible decline of biodiversity. But no report has yet been able to match the impact of *Silent Spring* or *The Limits to Growth*. The lack of effect of these later studies is not that most people disbelieve the scenarios. Aaron Wildavsky's exposure of the

[1] See Al Gore's Introduction in the new edition of *Silent Spring*.
[2] See Goodin, 1992: 1–18.

so-called weaknesses of the 'environmental crisis industry', in *But Is It True?* (1995), simply did not impress the public media.[3]

The real problem may be that people think 'It Is True', but also think that their individual contribution, or even that of their own government, to solving these global problems would be too insignificant to keep on bothering. In other words, the desire of people to act on facts about environmental pollution is not simply a matter of whether or not they believe that those facts are true. If the willingness of citizens depended solely on the reliablity of facts, environmental policy would no doubt be forced to respond more quickly to expert knowledge, such as the Intergovernmental Panel on Climate Change (IPCC). For example, in 1999, the IPCC released a report 'Aviation and the Global Atmosphere' that describes the impact of air travel on the atmosphere. The report compares estimates of changes in aircraft technology to the annual increase of flights, and warns that trends in aviation will lead to higher risks of global warming. Most passengers know that aircraft engines produce high emissions of gases, such as carbon dioxide, which contribute to the greenhouse effect and destroy the ozone layer.

That a continued expansion of air travel increases environmental risks of smog and associated health dangers is well established; that it leads to global warming and ultimately climate changes is contestable, up to a point. But as suggested, the real issue behind the failure to respond may be the collective action problem. Even if everyone in the world agreed about the facts on global warming, its probable consequences, and the most effective methods of counteracting it, rational actors, as Mancur Olson has it, 'will not act to advance their common or group objectives unless there is coercion to force them to do so'.[4] In global environmental issues like the ones described above, there are collective action problems at many levels. National governments cannot easily be forced to take action, in the absence of an international enforcement agency. At the national level, producers and consumers can be coerced to some extent by their governments, but only if there is robust political consensus to sustain coercive measures. Given the higher-level collective action problem, this consensus is not likely to be forthcoming. But even if it were, with effective legal regulation, tax incentives and the like in place, the licence to pollute would still remain at the micro-level of producer and consumer behaviour. Thus many collective action problems would exist even then, within a considerable space of private freedom. None of these is amenable to non-coercive solution. On the logic of collective action, then, there seems to be no hope whatsoever of solving even the most pressing global environmental problems. Yet somehow, one would be inclined to believe, the logic must be less compelling than it appears at first sight. For national environmental policies do exist,

[3] See Wildavsky, 1995. [4] See Olson, 1971: 2.

citizens sometimes show a concern for the side effects of their own behaviour as consumers, and there is at least a framework for international cooperation offering the hope of slow progress. Especially at the global level where the prospect of doom looms largest, there is a need for a perspective that would affirm the rational capacity of human beings for stepping up efforts of environmental cooperation.

1.2 Environmental dilemmas and the logic of collective action

In this book, however, we are not in the business of suggesting, or even discussing policy solutions to truly global environmental problems. Our brief is far more limited. We want to look at how these problems appear at the micro-level of individual citizen behaviour, against the background of a reasonably vigorous and highly visible set of environmental policies in the Netherlands. Our reason for focusing on the Netherlands is not merely that being Dutch, it is the country we know best, nor that the country is a small one, heavily exposed to polluting emissions elsewhere, with a large population density, an open economy, and a high level of education; it is also that, no doubt partly due to these factors, from 1989 onwards, Dutch environmental policymakers have been systematically pressing firms and citizens to undertake voluntary action for the sake of precisely defined objectives of national environmental policy. The background of this is described in chapter 2. We shall be saying more about these matters of policy in section 1.5 below. Here it is important to state that a main aim of this book is to use a suitably refined framework of rational choice theory, in order to assess the viablity of environmental policies that try to inform, educate and persuade, rather than to regulate behaviour by legal restrictions and monetary incentives. The framework of rational choice theory will be loosely expounded in the course of this chapter. But the details of our approach are spelled out in chapter 3, which concludes the first of the three parts that comprise this book.

Our orientation to policy assessment fits into the perspective of empirical social science, and it will utilize some simple quantitative methods. We have not been conducting in-depth interviews; nor have we been engaging in participatory observation. We use a dataset based on a large-scale survey that was conducted in the spring of 1994. The core of the survey is described in the five chapters of part II. It involves studying the responses of the thousand people whom we interviewed, to questions that are designed to bring out their attitude towards voluntary collective action in a way that fully respects the format of rational choice theory. If there is anything novel in our research, it is our attempt to join together insights into rational behaviour in collective action situations with the empirical methods of survey research. To present this research design, and to invite a discussion of its merits, is the other main aim of the study.

The results of the survey will be applied specifically to the context of the policies we wish to assess. This is done in the five chapters of part III. Since what goes on in the field of environmental policies that tries to draw on the moral resources of citizens is rather complex, the application of the survey results is not straightforward. The concluding part of the book, therefore, will proceed at a leisurely pace, allowing the reader to check, step by step, how we deal with problems of interpretation. It will also try to clarify some major theoretical issues concerning the role of moral commitment, self-interest and reciprocity that arise along the way.

In this chapter, we present an overview of the main argument. We start by addressing the logic of collective action. By that logic, clearly, the attempts of Dutch policymakers to enlist the citizens in projects of voluntary collective action are just a waste of time. For as stated above, the logic holds that the (undoubtedly) large group of individual citizens in the Netherlands will need to be *coerced* into environmentally friendly behaviour. It will not be enough just to ask them politely to behave, nor even to appeal to their consciences. For since citizens on the whole are rational actors, the nature of most environmental decision problems prevents them from voluntarily contributing to any commonly recognized objective. The reason is a quite general one. It is that each individual realizes that cooperative action is costly, while incurring the cost does not have a noticeable impact on the attainment of the common objective. These features of the situation will move a rational actor to avoid the cost, whatever the other citizens may be doing. Thus, if most citizens are rational actors, their voluntary action will simply defeat their common objective. In order to achieve the objective, they will have to be forced to contribute. And they will also have a good reason to accept being forced, on reflection, because each of them will then be better off than he or she would be in the absence of coercive measures.

Our response to this challenge is as follows. While we are prepared to accept that most people are rational actors most of the time, it still remains of interest to ask in what environmental contexts individuals may fail to respond rationally, in so far as that can be observed at all. But even if everyone responded rationally all the time, the logic of collective action, we maintain, is too restrictive to be compelling as an account of rational action. In the present context, it is restrictive in two respects. On the one hand, it assumes too quickly that environmental problems of the kind that are commonly discussed as such, do indeed involve 'common objectives' to which voluntary action might then respond in the negative way predicted. On the other hand, given that an environmental problem does clearly involve a common objective, rational actors may have good grounds for doing their bit to to achieve it, even if they recognize perfectly well that their own actions, taken separately, do not noticeably alter the state of the environment.

If both of these caveats need to be made, then many decision structures on which Olson's reasoning focuses should be analysed in a less dogmatic way. As will be explained in chapter 3, one should conceive of these decision structures as *potential* collective action problems rather than *actual* ones, that is to say, situations in which a common objective is necessarily defeated by individual rational actions. Throughout the book, we shall often be referring to a potential collective action problem by using the shorthand expression of an 'environmental dilemma'. Our main claim is that empirical investigation will have to determine whether or not the logic of collective action holds good, hence whether environmental dilemmas are actualized or not.

To clarify this, let us look at the general structure of an environmental dilemma which citizens face, without assuming that there is a common objective in play. This structure is radically simplified, but it contains all the ingredients for making the point about potentiality versus actuality.

(1) In some area of action, citizens act in either of two ways: they pollute (p) or they do not pollute (np), and np is more costly than p for each citizen, in terms of time and resources.
(2) The impact of any single citizen's action (p or np) on the state of the environment is hardly noticeable.
(3) If almost all citizens np, the environment will be significantly less polluted (NP) and if almost all p, it will be significantly more polluted (P).
(4) Each citizen assumes that (almost all of) the others either p or np.

What is involved in the existence of a common environmental objective, given this structure? The question is often passed by quickly, but it needs to be addressed with care. For obviously, an environmental dilemma can only become actualized, if attaining NP through voluntary action is indeed the common objective. The structure itself does not determine whether or not this is the case. What one can reasonably say, perhaps, is that citizens will be likely to have the structure in their minds, if indeed there is a social presumption that NP, considered as a less polluted state of the environment, is a good thing. In extremely clear-cut cases of environmental pollution, there is more than such a presumption, however. For example: suppose it is known by all that P spells imminent, inescapable and large disaster. Then the question of the common objective is simply answered. The disaster must be avoided. Voluntary action to achieve NP is obviously held to be a good thing as well.

But the environmental dilemmas among citizens that we have in mind are not like this. If they were, it would be likely indeed that the citizens had already taken the further step of massively voting for government to enforce NP, just to be on the safe side of the logic of collective action, however inconclusive that logic may be in general. So we are looking at less clear-cut cases. For

example, *P* may sensibly be held to *play a part* in bringing environmental disasters about, in the longer run. And such disasters may or may not occur, depending on what happens elsewhere in the larger domain of voluntary action, and on what is taken out of that domain, to be henceforth regulated legally. The collective goods involved in environmental dilemmas among citizens, such as toxic waste disposal, cutting down on energy consumption, cycling or walking to the neighbourhood supermarket instead of driving the car, buying organic products at higher prices and so on, are not typically decisive goods. If they come about, that makes a difference for the better, to be sure, but it does no more than contribute to a 'cleaner environment' in the end. Given this, it is not always certain that the social presumption that *NP* is a good thing will carry much weight, in any local case of the dilemma. In some areas of environmental degradation, failure to undertake voluntary action may be considered less of a big deal for other reasons as well. The joint outcome *P* may not spell disaster. Instead, *P* may be likely to contribute to loss of environmental qualities, for example wildlife, or more generally biodiversity. Such qualities are valued very differently by citizens.[5] Again, it is less certain that *NP* will be a common objective, in the relevant sense.

The social presumption that *NP* is a good thing may still be widespread, despite possible reasons for discounting its weightiness on the part of individual citizens. Nonetheless, the view that attaining *NP* through voluntary action is a good thing as well, might not be predominant. For *NP* to become a common objective, there must be a widely shared agreement of another kind. The collective cost of achieving the less polluted state of the environment should be perceived as worth incurring. To explain, features (1) and (3) of the above decision structure imply that *NP* will come about only when (almost) all incur the cost of *np*. So whether *NP* is accepted as a common objective also depends on how individual citizens evaluate that cost. This should be distinguished from the familiar question about whether individual citizens will be disposed to pay the cost themselves *given* that there is a common objective. For, from feature (2), the attainment of *NP* does not depend on an individual's own action, even marginally. But attaining *NP* still presents costs to the many others, whose actions are jointly decisive. Thus, even if certain individuals consider *NP* to be preferable to *P*, they may think that the accumulated cost of *np* (not necessarily including the cost to themselves) outweighs the prospective benefit to all of *NP* (including the benefit to themselves). They will then tend to disagree that *NP* is a common objective of collective action.

This issue is perhaps more important than is often recognized. For it shows that many citizens may be opposed to both voluntary collective action *and* to governmental regulation of their behaviour, even if they are aware of

[5] See Miller, 1999.

environmental issues, and even if they are not indifferent about the risks involved. In any such case of the environmental dilemma, action may be non-cooperative because most citizens hold that no one should reasonably be asked to perform the action *np*, because that is simply asking too much. Obviously, this is not a case where the environmental dilemma is being actualized. From the point of view of those facing the choice, there is no compelling reason not to continue polluting, since there is no common objective in the first place. It follows that citizens will object to coercive measures for reducing pollution in these environmental dilemmas, unless the cost of compliance is somehow lowered. The government may nevertheless hold coercive measures to be justified. But if it were possible to implement those measures, then the policymakers cannot say that government is stepping in to 'solve a collective action problem'. They can only say that government is taking responsibility for redressing a situation that the citizens should have properly viewed as a collective action problem, in the opinion of the policymakers. In a democratic regime, this is of course a much more risky line to take in defence of a coercive policy. All this suggests that one should not assume too quickly that mere awareness of environmental dilemmas automatically brings into existence a common objective of voluntary action on behalf of the environment. Therefore it is important to inquire what citizens actually think, with respect to the issue of the common objective, in each separate case of an environmental dilemma.

Compared to the unfortunate cases just sketched, the ones Olson has in mind are less problematic. If *NP* is accepted as a common objective in the sense we have just specified, then indeed the failure to attain it is suboptimal from the point of view of the citizens themselves. Coercive policies would then seem to be called for. Yet, in a free society coercive policies may often be infeasible, even if citizens might not strongly object to being coerced. Such are the cases on which we will be focusing below. These are also the cases in which one wants to know whether the logic of collective action really holds good.

Given the general structure set out above, this depends on the validity of a particular inference. This is the inference from its features (1) and (2), to the conclusion that rational actors will choose to pollute. But that inference, clearly, is not a valid one. To make it valid requires an additional premise: rational actors whose action is (1) costly in terms of time and resources, and (2) sure not to make a noticeable difference to the outcome of joint action, will best serve their interests by avoiding the cost, regardless of the actions of the others. This additional premise will close the inferential gap. But it is not obvious why it should be true, when there is a common objective in play. The truth of the additional premise generally depends on how rational actors compare the significance of the common objective to the significance of the resource cost of refraining from a polluting action, in terms of their perceived interests. The decision structure of the environmental dilemma does not logically fix these

interests. So it seems that premises about individual interests must be brought in, so as to guarantee that the insignificance of the actions *p* or *np*, coupled to the cost of *np*, rationally mandates action *p*.

Much can be said about individual interests in the abstract, and we shall further look into this in chapter 3. Rather than dwelling on it here, one thing can be mentioned in advance. Even if one has no trouble with the additional premises that close the gap between the logic of collective action and the decision structure on which it is predicated, it is still important to try and find out what is actually going on. This is what we propose to do, by studying some environmental dilemmas in depth, by means of survey data.

1.3 Surveying environmental dilemmas from the actor's perspective: rational choice

Our research strategy is described in part II of the book. It is introduced in this section and the next two. We confront a representative sample of Dutch citizens with three cases of household behaviour that can be recognized as having the structure of an environmental dilemma: bringing toxic waste to a neighbourhood recycling point (*Chemical Waste*), economizing on energy at home (*Energy Saving*), and forgoing holiday travel to foreign destinations for the sake of reducing air pollution (*Holiday Destination*). Our reasons for selecting these three cases of the environmental dilemma will be elaborated in chapter 4. The respondents are asked to put themselves in the position of someone facing the dilemma, and our first aim is to let them state their preferences and choices, in order to study the issue of rational choice.

As noted in section 1.2, we consider the logic of collective action to be far too restricted an account of rational choice to be a sensible general predictor of people's behaviour. The way in which we shall study rational choices empirically will reflect this point of view in the strongest possible way. For we do not impose any restriction on preference orderings whatsoever. From the *perspective of the actor*, we say, following Arrow and Riker's 'thin-theory of rationality', all that rationality requires in respect of preferences over states of the world is that these states are ranked by a complete and transitive ordering. This means that our respondents will be candidates for the respectable status of rational choosers if they are able to rank all possible outcomes of an environmental dilemma consistently. They do *not* need to satisfy the assumptions of the logic of collective action in order to qualify as rational actors.

What they do need to satisfy, however, is a plausible rule of rational choice. As will be explained in chapter 5, we work with the least controversial of such rules, the 'dominance rule'. This rule simply says that if, among the available strategies of action, there is one that will make you better off than any other

strategy, regardless of what the other players do (hence 'dominant strategy') then you ought to choose that strategy.

To explain the underlying rationale of a research design based on the actor's perspective, let us specify first how the decision structure that characterizes the environmental dilemma (see section 1.2) can be converted into a game form with four possible outcomes.[6] Represented in terms of strategy choices by the 'players', the four outcomes are labelled as P = (D,C), Q = (C,C), R = (D,D) and S = (C,D). The game form corresponding to the decision structure of the environmental dilemma has only one real decision-making agent, whom we call 'Individual'.

Individual is the person facing the environmental dilemma, whose possible actions, or 'strategies', are listed first within the brackets describing each of the four outcomes P, Q, R and S above. Given the fact, noted earlier, that the structure of the dilemma will usually involve at least the presumption that a less polluted state of the environment is preferable to a more polluted one, we shall follow the usual convention of labelling the non-polluting act *np* as the *cooperative strategy* (C) of the game form, and the polluting act *p* as the *non-cooperative or defect strategy* (D).

The second player in the game form is called 'The Others'. The second player is no real decision-making agent. According to feature (4) of the decision structure, 'The Others' simply represents the possible actions *np* or *p* of the many others, which Individual takes into consideration in his decision to act within the dilemma, on the assumption that (almost all) of them act in the same way. In the game form, then, Individual may form a preference ordering over the four outcomes, and he may rationally act upon these preferences, by choosing one of the two strategies, C or D. Each person included among 'The Others' can in turn assume the role of Individual, and become the decision-maker in an equivalent game form. In this way, the *n-person* structure of an environmental dilemma is broken up into as many individual game forms 'Individual vs The Others' as there are agents facing the dilemma.[7]

The survey questionnaire, of course, does not put the story in this extremely abstract way. As will be described in chapter 4, we ask each respondent to place himself/herself in the position of Individual, the decision-making agent who is faced with the environmental dilemma. We then ordinally measure the

[6] A 'game form' is a game-theoretical structure specifying how the strategies of the players jointly determine the possible outcomes, without specifying the utility pay-offs that the players attach to each of the outcomes.

[7] The outcome of the n-person game corresponding to an environmental dilemma will thus depend on the strategy choices of each of the n players in the 'Individual vs The Others' game form. If the players are rational, then strategy choices will depend on their preferences over the four outcomes. However, for our purposes, it is not being assumed in advance that the players are rational, as will be explained below.