7. Theoretical perspectives on international environmental regime effectiveness: a case study of the Mediterranean Action Plan

Sofia Frantzi[1]

Introduction

Many modern environmental problems are not occasional random events that suddenly arise, but are rather the result of long-term processes requiring effective management through time instead of instant solutions. Their causes and effects are complex issues, strongly interlinked with other aspects of social, political and economic realities. When these problems are of a transboundary, or global nature, then their management must be attempted through regional (bilateral or multilateral), or international agreements.

Traditionally the focus of academic research has been on issues associated with the challenge of achieving international cooperation, in other words on regime formation, but recently there has been an increasing interest in implementation issues, that is, regime effectiveness. This chapter aims to discuss the concept of effectiveness of international environmental agreements as debated within the academic literature. In the first section the major theoretical perspectives on international relations are presented as the context for understanding different explanations given to international cooperation. Different approaches to defining and measuring effectiveness of the agreements are then described in more detail. In the second section there is specific reference to a particular example of an environmental agreement. The Mediterranean Action Plan was chosen for this purpose since it has not been studied extensively and in addition its effectiveness is ambiguous according to different viewpoints. Finally in the last section, a new definition of effectiveness is given, drawing insights from the aforementioned literature, suggesting that for a regime to be effective it has to use a holistic approach, to have a pragmatic vision and to be of a dynamic nature. This perspective attempts to provide a new approach to the future study of international environmental agreements.

International environmental regimes

Modern environmental problems are often so extensive that they do not respect national boundaries and cannot be managed by one country acting alone. The need for international cooperation was at the forefront of concern about the environment in the 1970s, and since the 1972 United Nations Conference on the Human Environment, international environmental institutions have proliferated and over 60 multilateral environmental treaties have been signed. For example, new treaties have been established for the protection of stratospheric ozone, the protection of many regional seas from pollution, the control of European acid rain and the conservation of biodiversity amongst many others (Sands, 2003).

Extensive research has been devoted to the 'high politics' surrounding the negotiations of these international agreements. However, little attention has been paid to the actual effectiveness of implementation after these treaties come into force. The main question that has puzzled researchers is: 'Do regimes matter?' Generally the sequence of events is that scientists recognize an environmental problem, an international agreement is negotiated, a regime is established and operates for some time, but does the regime really make any difference? Some scholars argue that the environmental impact of agreements might be negligible. Others answer that it is the political benefits that are of significance and this diplomatic activity counterbalances any weakness in tackling the actual environmental problem. It can be argued that it is the combination or trade-off of benefits in both environmental and political terms, that is the key to a regime's success. However, it can also be argued that regimes make a difference irrespective of whether this difference is in the environmental or political field. Below, the main academic and research viewpoints considering effectiveness are described in more detail.

International relations and regime theory

The study of international environmental agreements has become an increasingly important issue in the literature of international relations. Historically the study of these agreements is based in realism, neorealism and neoliberal institutionalism, evolving into what is now called regime theory. In addition, international political economy approaches based on historical materialism have often been used to study cooperation on environmental problems. Some basic observations about these different theoretical perspectives are given below in order to demonstrate the background to explanations used for international environmental cooperation.

Realism The realist approach has descended from traditional texts such as Thucydides' *History of the Peloponnesian War*, Machiavelli's *The*

Prince and Hobbes's *Leviathan* and has been mainly concerned with state security (Haas, 1990, p. 35). Emphasizing the political sphere, the realist approach analyses relationships among states only according to issues of power and self-interest (Kütting, 2000a, p. 12). It assumes that states are only guided by national interest and that their purpose must be to maximize power, a process that ultimately leads to war as states compete amongst themselves. According to realists the actors (states) act rationally and prefer those options that best suit their interests, under the assumption that they have full awareness of world events and thus can estimate both costs and benefits of alternative solutions. Those solutions chosen concern the acquisition of power (Haas, 1990, p. 35). Hence only when the effectiveness of an international environmental agreement coincides with the interests of the states, can the agreement be effective (Kütting 2000a, p. 12). However, since international discussions about environmental problems are often concerned with common threats to livelihoods and not about power, there is a difference in focus between realist thought about war and power on one hand, and concerns about environmental degradation on the other. Moreover, Haas (1990, p. 36) notes that there has been substantial criticism about realism not being an appropriate model for the analysis of environmental cooperation because of the importance it places on matters of security, which are generally not salient features of environmental agreements. However, if security could be extended to matters of public health or security of borders then it could be included as a theme when studying international environmental agreements.

Neorealism Neorealism is the most recent version of classical realism in international relations and is also known as structural realism. With Kenneth Waltz (1979) as its main representative (Keohane, 1986), this approach describes and studies international relations according to the system's structure. Neorealists take methods from game theory and microeconomics in order to explain how states behave under anarchy, and how they negotiate among themselves, resulting in hypotheses about their motives and the results of this negotiation (Haas, 1990, p. 37). However, realism and neorealism share some basic principles such as the international system still operating under anarchy and the states still being the main actors within it. Neorealism, however, allows for some kind of cooperation among states so as to reach a shared goal as, for example, tackling a common environmental problem, since its centre of attention has shifted from war (Kütting, 2000a, p. 13). This form of cooperation can be explained in two different ways, first through hegemonic stability theory and second through game-theoretic approaches (Haas, 1990; Paterson, 1996).

Hegemonic stability: hegemonic stability theory suggests that cooperation is most likely to occur when it is imposed by a dominant state or a 'hegemon' within a system (Haas, 1990, p. 40). The difference between the states that just dominate and the hegemons is that the latter already have their power and leading role legitimately approved by the other states (Paterson, 1996, p. 94; Kütting, 2000a, p. 13). However, according to Kütting (2000a, p. 14) this theory can only explain the existence of cooperation among states but not the quality of that cooperation, because the latter is out of its remit and therefore doesn't have the appropriate methods. For this reason it is not appropriate for studying the effectiveness of international environmental regimes.

Cooperation under anarchy (rational choice and game theory): the 'cooperation under anarchy' tradition is another school within neorealism, which suggests that even in the absence of a hegemon cooperation is still possible. As Paterson (1996, p. 101) observes, scholars of this tradition, influenced largely by game theory, believe that cooperation is indeed possible under conditions of anarchy without, however, suggesting generally that this cooperation could change the primarily anarchic character of the international political order. Rational choice and game theory study and foresee the behaviour of the actors by calculating the best possible decision, under rational terms, for any actor under a particular state of affairs (Kütting, 2000a, p. 14). This school looks at game-theoretic work focusing primarily on repeated game situations such as the Prisoner's Dilemma, the Chicken Game and Stag Hunt. One of the best-known options in empirical research for measuring regime effectiveness by using rational choice and game-theoretic approaches is the so-called Oslo-Potsdam solution, for which further details are given later in this chapter.

A difference with the hegemonic stability school is that cooperation under anarchy suggests that various factors can cause the maintenance of the agreements by states after the decline of a hegemonic power that was initially necessary for the creation of these agreements. Moreover, the supporters of this school, in contrast to the realists, assume imperfect information, variable interest and choices of the actors, and only limited effort at seeking alternative solutions to the problem (Haas, 1990, p. 44). However, according to some authors (Paterson, 1996; Kütting, 2000a) rational choice, game-theoretic approaches and neorealist approaches in general, do not offer a major contribution to the study of the effectiveness of international environmental agreements for various reasons. First, they focus on the behaviour of units (states) and do not really include the object of cooperation (the environmental problem) in their analysis in the sense of dealing with the environmental degradation per se (Kütting, 2000a, p. 15). Second, their main assumption is that states can be treated as actors

with given interests on a particular matter, generated by their position in the international system, whereas on environmental issues the interests of states can vary according to their internal structure, for example, the interests of states in the climate change debate (Paterson, 1996, p. 108). Third, according to Young (2001, 2003), while specifically criticizing the Oslo-Potsdam solution, these approaches encounter many analytical and empirical problems that are largely to do with neglecting important factors when accounting for the hypothetical situation in the absence of the regime, and for the collective optimal solution.

Historical materialism and international political economy Another approach often used for assessing international cooperation is an international political economy approach based largely on historical materialism (Paterson, 1996, ch. 8). Historical materialism is mainly concerned with the distribution of economic resources and international equality, often expressed as the North–South divide. Historical materialists explain cooperation in terms of the control of powerful capitalist states (for example, North American and European countries) over weaker ones (for example, developing or Third World countries). According to them the world is broadly divided into three categories on the basis of the division of labour internationally. These are the highly industrialized Western countries, the industrializing countries and finally the developing countries (Haas, 1990, p. 47). Historical materialists identify a much less democratic and equitable structure of international relations (both economic and political) than the neorealists, by suggesting that in cases where effective cooperation does take place it always repeats the principles of capitalism, that is, reproducing the structures where the North takes advantage of the South (Haas, 1990, p. 47). Some authors have found the international political economy approach appropriate for understanding the complex patterns of cooperation with regard to international environmental agreements. For example, according to Paterson (1996, ch. 8) it has been useful in assessing the difficult negotiations among countries over global warming and the UN Framework Convention on Climate Change. However, economic globalization gives rise to complex relations between environment on one hand and global trade and investment on the other, and so raises debates (Stevis and Assetto, 2001; Clapp and Dauvergne, 2005, ch. 5). According to Clapp (2006) there are three different views within this debate. The first one can see positive effects for the environment from international growth and even in cases where some negative side-effects appear, then environmental issues can find ways around them without restricting economic relations. The second view is primarily negative, suggesting that international economic growth can only harm the environment, hence requiring

environmental agreements to restrict international economic relations. Finally, the last view is somewhere in between, admitting the potential for both advantages and disadvantages, arguing though that proper management of the global economy can generate benefits for both sides, environment and growth (Clapp, 2006). In this sphere of 'global governance' some writers suggest that in order for this link between trade and environment to work beneficially, the creation of a World Environment Organization (Biermann, 2000, 2006) might balance the negotiating power of the World Trade Organization. To conclude, according to the new perspective on the relationship between international political economy and the environment, the former could potentially offer some explanation of international environmental cooperation that differs significantly from historical materialism.

Neoliberal institutionalism Neoliberal institutionalism has dominated the study of international environmental agreements (Paterson, 2000, p. 12) and centres on the work of regime theorists such as Keohane, Young, Levy and others. This theory evolved from the development of traditions as old as those of Grotius and Kant (Paterson, 1996, p. 115; Kütting, 2000a, p. 15). In spite of the establishment of the United Nations after the Second World War, institutionalism faded mainly because it was considered to have failed in preventing international violence during the inter-war period (Paterson, 1996, p. 115). However, the strengthening of international reliance and collaboration and the emergence of regional integration in the 1950s and 1960s (in particular the European Community) led to its recurrence in an advanced form and its subsequent significance in the 1990s (Paterson, 1996, p. 115; Kütting, 2000a, p. 15). Neoliberal institutionalism, when studying the effectiveness of international environmental agreements, is closely interlinked with regime theory. Regime theory and a different approach within it, of great influence in the past decade, that of Haas's 'epistemic communities', will be discussed in detail below.

Regime theory: regime theory or neoliberal institutionalism evolved out of general developments in the international relations sphere and specifically out of neorealism, thus producing a whole new range of views about the role and importance of international institutions (Paterson, 1996, p. 116). According to Krasner (1983, p. 358), who was one of the first and more important authors on the subject, 'once regimes are established they assume a life of their own'. He suggests that there are many ways in which international institutions affect outcomes by influencing state behaviour. They can alter actors' capabilities including states', they can alter states' interests, they can be a source of power that states can appeal to and they

may alter the calculations of states concerning the maximization of their self-interest (Krasner, 1983, p. 361). So regime theory could in many cases be seen as synonymous with institutionalism as already described since both focus on the effect of the processes held to influence states' behaviour, and within which sovereign states are caught (Paterson, 1996, p. 117).

The best-known and cited definition of regimes was given by Krasner (1983, p. 2) who stated that:

> Regimes can be defined as sets of implicit or explicit principles, norms rules and decision-making procedures around which actors' expectations converge in a given area of international relations. Principles are beliefs of fact, causation and rectitude. Norms are standards of behaviour defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice.

This definition is closely related to Young's and Keohane's definitions of institutions. Young (1989, p. 32) defines institutions as social practices consisting of easily recognised roles coupled with clusters of rules or conventions governing relations between occupants of these roles'. Keohane (1989, p. 3) gives another definition as 'persistent and connected sets of rules (formal and informal) that prescribe behavioural roles, constrain activity, and shape expectations'. Moreover, Keohane et al. (1993, p. 5) extend the definition of institutions by adding that 'they may take the form of bureaucratic organisations, regimes (rule-structures that do not necessarily have organisations attached), or conventions (informal practices)'. Later Levy et al. (1994, 1995, p. 274) in their work 'The study of international regimes' (1995) define international regimes as 'social institutions consisting of agreed upon principles, norms, rules, procedures and programs that govern the interactions of actors in specific issue-areas'.

The above definitions, differing slightly one from another, all allow for the study of international agreements regarding them as regimes and explaining their attributes according to them. For the purposes of this study Krasner's definition will be the point of reference.

According to Krasner (1983, pp. 6–10) there are three orientations of regime theory. The realist/structuralist view sees the states as actors in the international system that want to maximize their power, thus they use regimes only as means to establish rules expressing their interests. It does not allow for regimes to have an independent impact on behaviour, so it views the regime concept as useless. The modified realist/structuralist view sees regimes as the outcome of negotiations and bargaining, often analysed by rational choice and game theory, and includes other factors of international cooperation such as social or technological, hence moving away

from the pure politics of maximization of interest. This view suggests that regimes may matter but only under fairly restrictive conditions, for instance when independent decision-making leads to unwanted outcomes. Finally, the Grotian view lays emphasiz on social factors, and even though it sees the states as still the main actors in the international sphere, it assumes that these actors are necessarily bound by specific norms and rules. This last orientation considers regimes as much more persistent and accepts them as a fundamental part of all patterned human interaction, including interaction in the international system (Krasner, 1983, pp. 6–10).

Nevertheless, the distinction among the above three orientations does not really play an important role. Regimes cannot always be irrelevant, and they cannot always be necessary. So the view that regimes may matter under certain conditions, is the most appropriate. Their effectiveness is of great importance, since only effective regimes may make a difference. More details will be given below on the way that regime theory is applied to the study of international environmental regimes when discussing how regime theorists define and measure environmental regime effectiveness.

Epistemic communities: a popular tradition within environmental international regime theory is that of 'epistemic communities' (Haas, 1989). This theory highlights the role of knowledge-based 'epistemic communities' consisting of specialists responsible for articulating policies and identifying the national interest. Initially, the term 'epistemic community' was used in literature on the sociology of knowledge. It was later borrowed by international relations specialists and adapted to describe a specific community of experts. This community 'shares a belief in a common set of cause-and-effect relationships as well as common values to which policies governing these relationships will be applied' (Haas, 1989, p. 384). The community, even though originating from various disciplines, operates within a common network where there is an exchange of ideas, concerns, results and solutions, aiming at the same political objectives (Haas, 1990, p. 55). This approach focuses on the groups of people who initiate cooperation rather than on which states are the leading actors who start the process. However, supporters of this theory do not suggest it should replace the older international relations theories, but rather complement them. For instance, as will be described below, Haas (1990) in his study about the Mediterranean Action Plan explains the cooperation by referring to 'epistemic communities', but he also offers other explanations from the perspectives of realism/neorealism and historical materialism.

Defining and measuring regime effectiveness

Within regime theory there have been many efforts from researchers to rigorously study international environmental regimes and try to identify

not only how these agreements were formed, but also if they were effective afterwards. There is a growing interest in the effectiveness aspect of regimes, but it is a matter of debate because quite different definitions are used, resulting in different ways of estimating effectiveness. As Kütting (2000a, p. 30) observes 'Within the effectiveness debate in regime theory. . .on one level effectiveness is seen in terms of institutional workings through good institutional structures. . .on another level effectiveness is measured on the basis of environmental impact'.

Usually regime theorists look at effectiveness as institutional performance and not as environmental improvement. Even though some of them recognize the need to look at the environmental impact, only a few actually try to measure it. For example, some of the Norwegian regime theorists (Wettestad and Andresen, 1991; Underdal, 1992) have considered the environmental problem but still focus on the institutional performance of a regime. Also, Haas et al. (1993, p. 7) ask the question whether the quality of the environment is better because of the regime but they do not indicate how such change could be measured and how much of it could be assigned to the regime itself, rather than to other external factors. Nevertheless, change itself is not a sufficient measurement of effectiveness (Kütting, 2000b). However, recently there has been an attempt by Kütting (2000a, 2000b) to introduce the concept of environmental effectiveness when studying environmental regimes by distinguishing the concept of effectiveness as seen in institutional terms from that of accounting for improved environmental quality, though still having a regime theory perspective.

Furthermore, the attempts to measure effectiveness have been mainly qualitative. These qualitative methods vary in whether their view is descriptive (trying to explain what did happen), predictive (trying to estimate what will happen), normative (looking at what should ideally happen) or explanatory (trying to explain the reasons why something happened) (Mitchell and Bernauer, 2002, p. 2). However, a small but increasing number of researchers have approached the subject quantitatively, recognizing the need for these methods to complement each other in order to produce more reliable results. A brief discussion of some of these methods is provided below.

Qualitative approaches In order to estimate whether international environmental institutions are effective, Haas et al. (1993) refer to certain conditions known as the three Cs. They measure the impact of international institutions on three conditions essential for effective action in environmental problems: high levels of governmental *concern*, a hospitable *contractual* environment in which agreements can be made and kept, and sufficient political and administrative *capacity* in national governments. In

each regime they examine three phases of activity; agenda-setting, international policies and national policy responses, which are referring to each of the three conditions respectively. Thus, a regime is deemed effective if it increases governmental concern, enhances the contractual environment and builds national capacity. They ask the question 'Is the quality of the environment or resource better because of the institution?', but due to lack of available data concerning changes to the state of the biophysical environment that can be actually assigned to the institution, they decide to focus on 'observable political effects rather than directly on environmental impact' (Haas et al., 1993, p. 7).

Young (1999) looks at causal connections and behavioural mechanisms. A regime is considered effective based on the extent it ameliorates the problem that led to the regime's creation in the first place. However, he admits that this approach is practically difficult to analyse since complex social and natural systems within which regimes operate do not allow for the observed changes to be assigned to the regime itself. According to the legal approach, the regime is effective to the extent it is followed by legal compliance, and in the economic approach if it incorporates the legal definition and adds a cost-efficiency criterion. In the normative approach, effectiveness equals achievement of values such as fairness or justice, stewardship and participation. Whereas in the political approach a regime is effective if it causes changes to the behaviour of actors, in the interests of actors, or in the policies and performance of institutions in ways that contribute to positive management of the targeted problem. Moreover, Young differentiates the effects of environmental regimes in three dimensions. First, he divides them into internal and external to the behavioural complex, which is the group of actors, interests and interactions on a specific issue area. Second, he separates them into direct and indirect effects. Finally, he divides them into good or bad according to the impact on the problem, in other words if they ameliorate or worsen it (Young, 1999).

Another approach to the measurement of effectiveness focuses on institutional factors and addresses a series of related questions based on the identification of problem structure, institutions and institutional fit and the analysis of legal and organizational issues that arise from this approach (von Moltke, 2000). This research strategy begins with consideration of a problem's structure. It then proceeds to identify the institutions that may be needed – and those that have been employed – to address the issue in light of its problem structure. Von Moltke's underlying hypothesis is that it is more likely for a regime to be effective when it achieves a good fit between problem structure and institutional characteristics, and that it is the desirable fit between problem structure and institutions that is a primary reason for its effectiveness. Moreover, he stresses the importance

of science assessment (the interpretation of the research for policy purposes), and the need for transparency and participation. He goes on to discuss the issue of dispute settlement mechanisms, without considering them necessary for environmental regimes since they pursue effectiveness and implementation in entirely different ways (von Moltke, 2000).

As mentioned earlier, one qualitative approach that is different from the others in the sense of introducing the concept of environmental effectiveness, is that of Kütting (2000a, 2000b). She suggests a distinction between institutional and environmental effectiveness, since most regime theories are interested in the structure of the institution and the behaviour of the actors in it, judging its effectiveness by the occurrence of change in this behaviour, which it is assumed would eventually lead to a positive environmental result. However, the change in actors' behaviour might not actually result in environmental improvement, and even if it does, this improvement might not be sufficient to solve the problem. In addition, the assessment of the state of the environment before and after the regime and how much of a change can be actually assigned to the regime itself poses another methodological problem. For this reason, Kütting regards the distinction between institutional and environmental effectiveness as necessary, stressing, however, that a good definition should incorporate both these dimensions since these are 'two sides of the same coin' (Kütting, 2000a, pp. 30–34). Her approach looks at four areas of environmental effectiveness, which describe the relation of an environmental problem to the particular regime established for its abatement, and the social structures within which they are found. These four determinants are economic structures, time, science and regulatory structures.

Economic structures include not only the structures concerned directly with the agreement but also refer to the economic organization of the society. Environmental problems can occur through the economic organization of the society but they can also be avoided through the same structures. Time is crucial when damage may be irreversible and this is frequently the case in environmental problems so the time plan of the environmental regimes has to account for that pressure. Science is necessary in policy-making in order to define the roots and the solutions to the problems, but according to Kütting its importance should not only be limited to being an input in the creation of the regime, but it should also be regarded as a social activity consistent with other social processes, emphasizing the constant interaction between science and policy. Finally, regulatory structures are mainly concerned with institutional design and effectiveness, referring not only to the structure of the agreement but also to the other bureaucratic structures within which the regime operates, and they are important because regime design matters (Kütting, 2000a, ch. 4).

Generally, when specific cases are studied in qualitative research, there is a problem about generalizing the results and assuming they will apply in all cases. Even though results may be reliable for a particular case, they cannot always be extended to others. Moreover, no matter how well a study of effectiveness is designed and carried out, its relative outcome depends heavily on the initial definition of effectiveness, and the criteria used to assess it.

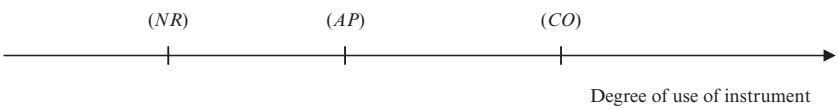
Quantitative approaches A discussion of the main quantitative approaches in the study of environmental regime effectiveness is given below. Some of them are described briefly, whereas others are given in more detail due to their complex statistical nature. One of the most well-known options in empirical research for measuring regime effectiveness is the so-called Oslo-Potsdam solution. This is an 'umbrella term' referring to two closely interlinked approaches, that of Underdal (1992, 2002) and that of Helm and Sprinz (2000).

Underdal (1992, 2002, pp. 5–6) focuses on the relationship between the regime's output – the institution established as a new set of rules and regulations; its outcome – the change in the behaviour of states; and its impact – the actual change in the state of the biophysical environment. He suggests that regime effectiveness has two components: changes in human behaviour and changes in the state of the biophysical environment itself. Moreover, he asks some critical questions. First, what is the object to be evaluated, because it makes a vast difference whether the evaluation concerns only the regime, or whether it concerns the whole problem-solving effort that might include various kinds of costs or positive side-effects associated with the process of its establishment and maintenance. Second, he discusses the standard against which this should be evaluated, stressing however, that effectiveness is only a relative term and should be defined in each regime independently. The issue he raises about standards is important since environmental scientists and activists on one hand and regime theorists on the other, could have diverse opinions about the nature of standards against which they measure effectiveness. Third, he raises the issue of methodology in order to measure the object of evaluation against the standard. Methodologically, Miles and Underdal use counterfactual analysis against certain behavioural and technical optima by comparing the actual regime versus no-regime and the regime versus the collective optimum (Miles et al., 2002, ch. 2). They use qualitative case studies (for example, the Vienna Convention and Montreal Protocol, the International Whaling Commission inter alia) to assess effectiveness on a 0–4 scale for behavioural change and on a 1–3 scale for environmental improvement. They then normalize the scales to range from 0 to 1 in order to make

comparisons between them. A weakness of this approach is the difficulty of estimating the counterfactual by assuming hypothetical conditions in the absence of the regime. This is largely true since assessing the current state of the environment is difficult in itself. Even more difficult, if not impossible, is the idea of estimating how the state of the environment would be today if the regime in question did not exist in the first place. Moreover, the basis of this technique is still qualitative since environmental improvement and behavioural change are still assessed through qualitative case studies.

Helm and Sprinz (2000) also use counterfactual analysis based largely on the questions Underdal posed about the object of evaluation, the standard against which it should be evaluated and the methodological approach used. According to them regime effects are improvements in the object of evaluation, measured by application of policy instruments leading to changes such as emission reductions. A lower bound is determined by the no-regime counterfactual (*NR*), which is the degree of policy-instrument application that would have occurred in the absence of the regime. An upper bound is established by the collective optimum (*CO*), the degree of application that would have been obtained by a perfect regime. Accordingly, the regime potential is expressed in units of policy-instrument use and is the difference between the no-regime counterfactual and the collective optimum. The actual policies executed by countries (*AP*) usually fall into this interval. Thus, the effectiveness of a regime can be measured as the percentage of the regime potential that has been achieved, where this score falls into the interval of 0–1 (Figure 7.1).

They estimate scores by using a combination of methods such as game theory, optimization or experts' judgments. However, their approach has been criticized. Young (2001, pp. 110–14) points out that use of the Nash equilibrium leaves no room for cooperation, since it assumes that all actors try not to be taken advantage of, and it might also produce results that are worse for everyone, compared with those that could be achieved through other potential ways of cooperation. Moreover, he argues that the interactive decision-making used to calculate the no-regime counterfactual



Effectiveness score $ES = (AP - NR)/(CO - NR)$
where (*NR*) = no-regime counterfactual, (*CO*) = collective optimum, (*AP*) = actual performance

Source: Helm and Sprinz (2000).

Figure 7.1 General concept for measuring regime effectiveness

leaves out many important factors such as political, technological, demographic and social factors. He has similar concerns about the collective optimum, pointing out that it neglects important side-effects of regimes when accounting for regime consequences. Empirically, Young suggests that the use of the counterfactual poses the same methodological problems discussed before since the use of expert judgments to estimate it are insufficient especially when they do not account for social or technological factors (Young, 2001, pp. 110–14). This critique led to a fruitful debate on the issue and on potential ways to improve these approaches (Hovi et al., 2003a, 2003b; Young, 2003).

Another approach to measuring effectiveness is given by Mitchell (2004) who, in order to evaluate international environmental regimes, uses regression analysis on panel data. He proposes a quantitative approach by developing a model for a single regime's effects. In this model he uses time-series data for one country at a time for the 1985 Sulphur Protocol of the European Convention on Long-range Transboundary Air Pollution (LRTAP). He specifies the following model to estimate national sulphur emissions for the LRTAP case (Mitchell, 2004, p. 127):

$$EMISS = \alpha + \beta_1 * MEMBER + \beta_2 * INCOME + \beta_3 * POP + \beta_4 * COAL + \beta_5 * EFFIC + \ldots + \beta_N * OTHER + \varepsilon$$

where *EMISS* is annual emissions of sulphur dioxide and *MEMBER* is coded as 0 in years of non-membership of the country to the regime and as 1 in years of membership. Generic drivers of emissions of most pollutants are also included such as per capita income (*INCOME*) and population (*POP*). Emission-specific drivers are included, such as the country's coal power plants (*COAL*) and their average efficiency (*EFFIC*). The model estimates difference in sulphur emissions and how these are explained by the different variables. For instance β_1 represents the expected difference in emissions that would arise from a country becoming a regime member, holding all other variables constant. The coefficients of the other independent variables β_2 through β_N correspond to the estimated increase in emissions that would arise from a one-unit increase in that variable. The *t*-statistic on the coefficients shows the statistical significance of the independent variables, whereas the goodness-of-fit (R^2) of the model equation as a whole provides an estimate of how completely the analyst has modelled the dependent variable.

Mitchell (2004, p. 129) advances his method by developing another model that allows comparison by combining data from different regimes. He uses time-series data and data across regimes. As an example he develops a model to assess the simple claim that sanctions are necessary for a

regime to significantly influence behaviour. An extension of this model could be used to evaluate how much a regime's effectiveness depends on contextual factors. For example, international conferences and reports might raise the importance of an environmental issue for a few years, and therefore lead to increased levels of implementation and compliance (Brown Weiss and Jacobson, 1998).

An advantage of this technique, and also of other quantitative methods, is that its conclusions can hold reasonably well across many cases even though they cannot completely explain any specific regime (Mitchell, 2004, p. 122). However, it is important to avoid confusion between the notions of statistical significance and policy significance of the independent variables (Mitchell, 2004, p. 128). For instance, a study might show that an independent variable is statistically significant, which means that it can definitely explain the variation in the dependent variable. Despite that, the change in the variation might be so small as to be environmentally meaningless.

Mitchell's approach is a promising new angle to assess effectiveness with the use of econometrics and by using actual scientific measurement of the environmental problem (for example, emissions). However, it largely depends on availability of similar data for other regimes. For instance, when measuring marine pollution, it is almost impossible to keep a long time-series record of pollutants released into the sea, which is necessary for this type of analysis. Methodological problems would include which pollutants to measure, at what locations (since pollution may be a localized phenomenon), and how to connect these releases directly to the regime's regulations. Moreover, the high costs of marine monitoring deters countries from keeping regular data. So this approach may prove innovative and useful in certain cases, but its applicability in others remains in question.

All the above quantitative techniques have many advantages, as they can be based on actual measurements and their conclusions can be valid for many cases. They counterbalance the problem of generalization of results that qualitative techniques face. However, they might ignore aspects that are difficult to measure numerically (for example, political benefits) and might not completely explain particular cases. In that respect, quantitative analysis should not replace qualitative approaches, but instead a combination of the two can enable an integrated study of regime effectiveness.

Other issues related to the study of regime effectiveness In addition to the definition and measurement of regime effectiveness some other issues related to the study of environmental regimes are worth mentioning, notably institutional economics, compliance and verification,

transparency, openness and participation, and environment and security. These issues can directly or indirectly affect the effectiveness of regimes, therefore they should be taken into account when studying a particular regime.

Institutional economics: within the framework of effectiveness of international environmental regimes, and since they belong to the broader category of institutions, an issue that is certainly worth looking at is economic efficiency or cost-effectiveness. This is the extent to which the production of the best economic outcome is produced by means of the least-cost combination of inputs. As North (1990) observes, transaction costs are the measure of economic efficiency of institutions. He stresses the message from Coase theorem that when it is costly to transact, then institutions matter (Coase, 1960). North's theory of institutions combines human behaviour with the costs of transacting. The key to the costs of transacting is the costliness of information. This is because transaction costs include the price of what is being exchanged, and the costs of protecting rights and policing and enforcing agreements. He also argues that it needs resources not only to protect property rights and to enforce agreements but also to define these rights and agreement rules beforehand. Environmental regimes must perform certain functions such as limiting use, coordinating users and responding to changing environmental conditions, which include the transaction costs of coordination, information gathering, monitoring and enforcement. It is easily possible to create a regime so costly to implement that it overcomes the benefits to be gained from its existence. Therefore, when examining the effectiveness of international environmental regimes, researchers should also take into account economic efficiency and transaction costs. No matter how effective a regime is in the amelioration of the problem it was designed for, it could not perform in the long term if it costs the countries too much.

Compliance and verification: when studying international environmental agreements and their effectiveness, Ausubel and Victor (1992) introduce the importance of verification of compliance. They suggest that verifiable international environmental agreements have more chances to have successful negotiation procedures and thereafter are more likely to be implemented properly by the participants. They define verification as 'the process determining whether or not a party is in compliance' (p. 4) and note that it has not been regarded as a significant aspect of most international environmental issues to date. In order to fulfil this criterion the creation of large costly new international or national organizational infrastructures is necessary, which in most cases has not been done, so most of the formal information under the regimes is collected, if indeed it is, by national organizations already existing before the regime was established. In many

cases other actors such as NGOs are involved in this process. However, verification is still mainly dependent on national reports, which might be unreliable or even false especially when national interests are at stake. Hence, practically, it could be the case that compliance is not achieved even if reporting indicates to the contrary. Furthermore, it is crucial to properly set the standards against which compliance will be measured so as to be meaningful (Ausubel and Victor, 1992). Only recently have studies paid attention to the issue of compliance in international climate regimes (Barrett and Stavins, 2003; Victor, 2003) noting that successful implementation means high levels of participation and compliance. Barrett and Stavins (2003), commenting on the Kyoto Protocol find that it does not induce significant participation and compliance and propose different approaches to improve it by offering positive or negative incentives. In the Montreal Protocol, for instance, a threat of restrictions on trade of CFCs or products containing CFCs between the countries participating in the agreement and those not participating proved successful in motivating more countries to participate. However, it is commonly acknowledged, especially in the case of the Kyoto Protocol, that compliance alone (even if fully achieved) cannot always mitigate the environmental problem, since some of the heavier polluters might not choose to participate in the agreement at all.

Transparency, openness and participation: one of the issues requiring attention from international environmental regime practitioners and scholars is transparency and openness. According to Ausubel and Victor (1992) transparency refers to the clear presentation of the regime's activities and information collected, whereas openness means access of actors to the negotiating process and information, irrespective of whether these actors come from within the government or not. They also note that successful environmental regimes should provide for these conditions, since in their case studies of arms control regimes the latter proved unsuccessful partly due to concealment and restricted participation (Ausubel and Victor, 1992). Moreover, von Moltke (2000) also stresses the importance of transparency and participation in environmental affairs in general, though remarkably few formal rules have been adopted in international environmental agreements to address these needs. A first step in this direction was the adoption in 1998 of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (von Moltke, 2000).

Domestic politics: another important factor that affects international environmental cooperation is change in the patterns of domestic politics. According to Weale (1992, p. 200), domestic public policy can naturally be affected by actors and procedures in the international sphere. However,

with the internationalization of political life, domestic actors and procedures may similarly affect and shape foreign policy-making. Active pressure groups may play a crucial role by shedding light on important issues and attracting media attention. This extra power can prove very useful with regard to international environmental agreements since it can be used to push governments into participating and complying with them. Moreover, as Carter (2001, p. 239) observes, domestic political pressure can originate from environmental groups, from the media, public opinion or political parties (especially the Greens). This pressure can persuade a government to change its position in the negotiations surrounding an international environmental regime, often resulting in that country becoming a 'lead state' with a key role in persuading or forcing other states to join efforts to form the regime. Carter gives as examples the swing of the West German government in the 1980s from veto to lead state on acid rain as a response to the Green Party becoming an electoral force and the decision of the Australian Labor Party to reject the Antarctic Minerals Treaty as a result of its pro-green position at the 1987 election, which aimed to win the support of environmentally conscious voters (Carter, 2001, p. 239). Finally, Haas et al. (1993, p. 17) argue that 'lead states' are subject to more intense domestic political pressure than other countries, something that led to US leadership on marine oil pollution in the 1970s and on ozone in the 1980s. This pressure, together with the frequently greater damage to the country from the environmental problem, and the advanced policies for that problem, increase governmental concern and capacity, resulting in promotion of institutional solutions to the problems by the 'lead states'.

Environment and security: traditionally, in political science, security has been considered as protection of a sovereign state from other sovereign states that might threaten it by means of military power (Morgenthau, 1978). Nowadays there is an increasing concern that environmental problems can threaten security by leading to violent conflict. According to Swatuk (2006) in the 1990s two different debates arose within the academic community. One is concerned with the redefinition of security in order to include environmental concerns, whereas the other focuses on the ways and extent that environmental issues may threaten security in the first place. The two sides have failed to reach a consensus. The first tries to interlink environmental change with the causes of conflict, identifying ways in which this might happen (Homer-Dixon, 1999). The other group, by contrast, suggests that whilst the high degree of global interdependence might result in environmental problems producing complex situations, it is rather unlikely to lead to violent conflict (Deudney, 1990).

Some argue that many environmental problems may present significant threats to human health and welfare, which in turn would affect the

well-being of nations themselves and therefore these problems should be taken into account when considering issues of national and regional security (Kullenberg, 2002). This necessity for combining security matters with environmental issues is most appropriate in many cases of environmental problems, and especially so when addressing maritime affairs (Kullenberg, 2002). Moreover, Carter (2001) observes that according to realists the environment could be considered a security issue in cases where global commons problems might cause conflicts among countries. Such cases where military conflict arose straight from disputes over environmental problems are rare. However, a significant emerging issue is the rising number of environmental refugees who, while trying to escape from natural disasters such as drought, famine, degraded land and deforestation, seek a more secure future by crossing national borders (Carter, 2001, p. 227).

As Paterson (2000, pp. 18–23) puts it, again according to a realist view, there are two senses in which environmental change can threaten security. It may lead to interstate war especially over shared renewable resources, traditionally water, although this is an unlikely possibility. It is likely to cause internal instability of states, especially when combined with or caused by population growth. In that case environmental change may lead to a complete collapse of the social structure by unplanned urbanization, spreading disease and ecological marginalization of poor people. Haas (1990, p. 36) also recognizes the threat that environmental degradation poses to international security. He admits that the realist view of security has received criticism concerning whether it is appropriate for environmental issues and he finds it ambiguous. If the idea of security includes public health, security of borders, social and economic stability, then cooperative solutions would be more easily achieved for environmental problems. Haas argues that countries might still underestimate the environmental issues when matters of national power are involved, describing, for instance, the political tension that persisted in the negotiations of the Mediterranean Action Plan, resulting from a Greek-Turkish diplomatic incident in the sea. No matter which side of the debate one takes, environmental degradation does seem to be associated with the security of nations, even if only in the sense of internal stability and social integrity, hence environmental regimes should also be assessed as an aspect of security.

The Mediterranean Action Plan and the Barcelona Convention

Having reviewed the literature concerning effectiveness of international environmental regimes in general, in this part of the chapter the discussion will focus on a particular environmental regime, the Mediterranean Action Plan. As mentioned earlier, it was chosen as a case because it has not been studied extensively (but see Haas, 1989, 1990;Skjaerseth, 1996,

2002; Kütting, 2000a, 2000b), and also its effectiveness is ambiguous according to different viewpoints.

The Mediterranean Action Plan (MAP) was created in 1975, under the auspices of the United Nations Environment Programme (UNEP), only three years after the Stockholm Ministerial Conference set up the latter programme. MAP was adopted as a Regional Seas Programme under UNEP's aegis. The UNEP Regional Seas Programme is a promising attempt to develop treaties and soft rules and standards at the regional level taking into consideration the different characteristics – both needs and capabilities – of the different regions (Sands, 2003). MAP was the first plan adopted and has worked since then as a model for designing the other plans.

The Barcelona Convention was signed in 1976 and forms the legal part of MAP, in force since 1978 and amended in 1995. It includes six Protocols, namely, the Dumping Protocol, the Prevention and Emergency Protocol, the LBS (Land-based Sources) Protocol, the SPA (Specially Protected Areas) and Biodiversity Protocol, the Offshore Protocol and the Hazardous Wastes Protocol. The Barcelona Convention is complemented by a research component (MED POL), policy-planning programmes (Blue Plan and Priority Actions Programme) and financial/institutional arrangements.

The Mediterranean Action Plan (UNEP/MAP) involves 21 countries bordering the Mediterranean Sea, as well as the European Union, which are Contracting Parties to the Barcelona Convention and its Protocols.

MAP's main objectives (UNEP, 1995b: Annex IX) are:

- to ensure sustainable management of natural marine and land resources and to integrate the environment in social and economic development, and land use policies;
- to protect the marine environment and coastal zones through prevention of pollution, and by reduction and, as far as possible, elimination of pollutant inputs, whether chronic or accidental;
- to protect nature, and protect and enhance sites and landscapes of ecological or cultural value;
- to strengthen solidarity among Mediterranean coastal states in managing their common heritage and resources for the benefit of present and future generations; and
- to contribute to improvement of the quality of life.

Origins, negotiations and formation of the Mediterranean Action Plan

Haas (1990, ch. 3) gives a detailed overview of the history and negotiations up to the adoption of MAP, which is summarized below. Early worries

about Mediterranean Sea pollution arose between the late 1960s and 1974 when some Mediterranean officials expressed for the first time a need for action and governments sought ways to obtain information on the extent of marine pollution by identifying sources and types of pollutants and on possible ways to deal with the situation. Since adequate information was not yet available the attention focused on oil pollution resulting from maritime traffic and accidental spills, as this was the most visible form. Afterwards however, several scientific meetings and conferences revealed a variety of pollutants and their sources, with the most important being the land-based, so in 1974 a first draft of a treaty was prepared by the Food and Agriculture Organization. However, later the same year, Mediterranean governments approached another United Nations organization, the United Nations Environment Programme (UNEP) to guide and support this regional effort, which in turn with the help of 40 Mediterranean marine experts, developed a comprehensive plan. Finally, in 1975 the Mediterranean Action Plan was adopted including seven monitoring and research projects, for an entire set of pollutant types and sources, and several pilot demonstration projects (Haas, 1990, ch. 3). Thereafter MAP gradually widened its scope through creation of Protocols covering land-based sources of pollution, marine dumping, tanker oil pollution, as well as pollution transported by rivers and in the atmosphere and by extending the lists to include more pollutants. The environmental assessment component of MAP also evolved as the research and monitoring projects increased from seven to 12 and some interim standards were developed (Haas, 1990, ch. 4).

However, following the 1992 UN Conference on Environment and Development 'Earth Summit' in Rio and the requirements of the Rio Declaration on Environment and Development (Agenda 21), MAP attempted to translate the results of the summit onto the regional Mediterranean level, and adapted Agenda 21 to the Mediterranean context by setting up Agenda MED 21. This led to adoption of the Action Plan for the Protection of the Marine Environment and Sustainable Development of the Coastal Areas of the Mediterranean (MAP II) on 10 June 1995 (UNEP, 1995b). MAP II reflected both increasing concern for the pressures exerted on the Mediterranean environment and commitment of Mediterranean states to the ideal of sustainable development.

International environmental cooperation and the creation of the Mediterranean Action Plan

Regional cooperation was necessary to create a treaty aimed at protection of the Mediterranean against pollution. Environmental cooperation, as with any other international relations procedure, requires different actors

or states to coordinate decisions and actions with the other actors involved. Reaching an international political agreement is difficult and there are different explanations about the conditions under which cooperation in the Mediterranean Basin was achieved through the framework of MAP and Barcelona Convention. Haas (1990) summarizes these different interpretations into the main categories described below, explaining the causes of cooperation, its effects and its forms in each one of the views.

Realism and neorealism are concerned mainly with the relationship between state power and order in security affairs and the political economy of advanced industrialized societies. Realists and neorealists would relate cooperation to the distribution of power between the Mediterranean states. Under this perspective the regional hegemonic leadership of France would play a key role in developing cooperation under conditions of international anarchy. This hegemony would dictate that the scope of the agreements would mainly cover pollutants of interest to France but also extend to other issues of national French interest. The strength of cooperation – how weak or binding it is – would be dependent on French power and might also depend on information available. Under a realistic view the duration of the cooperation – how persistent it is – would also vary with the two previous factors and the effects of the cooperation would be to strengthen the influence of France in the region and achieve common benefits for all the Parties. However, this explanation did not prove adequate when, after the decline of the regional French hegemony, MAP continued to exist and to receive increased support both from the hegemon and also from weaker states, showing that it is difficult to predict potential change in the motives of the states (Haas, 1990, ch. 6).

Historical materialism, as discussed earlier, is basically concerned with distribution of economic resources and international equality, very often expressed as the North–South divide. Historical materialists explain cooperation in terms of the control of powerful capitalist states (that is, European countries in the case of the Mediterranean region) over weaker less-developed ones (that is, North African and/or Middle East countries in the same case). According to them the imperialism of European states would lead to cooperation under conditions of capitalism. The scope of the cooperation would not be clear but it would strengthen areas where European states have interests. Both strength and duration of the cooperation would vary with European dominance and effects of cooperation would be imposition of unwanted forms of development on less-developed countries excluding alternatives, and the provision of relatively more benefits to European states, thus increasing commercial dependence of the less-developed countries on them. So, in the context of MAP, under a historical materialist interpretation, northern Mediterranean countries

would try to impose capitalist policies on the southern Mediterranean developing countries. However, the negotiations proved to be a compromise where both sides' interests were equally represented, indicating that historical materialism was not able to provide a satisfactory explanation of cooperation (Haas, 1990, ch. 7).

A third set of explanations introduced by Haas (1989, 1990) involves the 'epistemic communities' theory. This theory highlights the role of specialist knowledge-based 'epistemic communities' in formulating government policy and altering national interests and finally leading to international cooperation. The 'epistemic community' approach gives a more flexible character to the cooperation, having a broader scope than the other explanations. According to this approach the acquisition of new information and the negotiations between the states would lead to cooperation under conditions of scientific uncertainty. The scope of the cooperation would be broad and specifically outlined by the 'epistemic community' and the strength and duration of the cooperation would vary with extent of the involvement of the 'epistemic community' and coalitions within the states. This cooperation would lead to adoption of convergent pollution control policies, and would eventually inspire Mediterranean governments to design and implement new models of comprehensive environmental policy. Indeed, the countries where scientific experts were strong had deeper involvement in MAP and became its strongest proponents, and vice versa. The 'epistemic communities' explanation complements the previous two theories, since it accounts for variability in the preferences of the states through time, an aspect missing from other explanations (Haas, 1989, 1990, ch. 8). However, even though this theory has been useful in explaining the negotiations and creation of MAP, it is open to question whether the current operation of the regime is based on 'epistemic communities'. Moreover, the generalizability of the theory to explain other regimes is not yet proven.

Structure of the Mediterranean Action Plan and its components

According to Raftopoulos (1993) Regional Action Plans usually consist of five components: the assessment component, the management component, the legal component, the institutional component and the financial component. The basic characteristics of each MAP component are described below.

The legal component of MAP MAP seeks to achieve all its objectives through its legal component, the Barcelona Convention and related Protocols. The Convention for the Protection of the Mediterranean Sea against Pollution, was signed in 1976, and has been in force since 1978. In

1995 it was replaced by an amended version taking into account recommendations of the 1992 Rio Conference on Environment and Development and it was recorded as the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, being in force since 2004. The amended version of Barcelona Convention introduces new principles such as Environmental Impact Assessment (EIA), the polluter pays principle and the precautionary principle and also suggests time limits for environmental regulations (UNEP/MAP, 2005a). The 22 Contracting Parties to the Barcelona Convention are: Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, the European Community, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Serbia and Montenegro, Slovenia, Spain, Syria, Tunisia and Turkey.

As described in Article 1.1 of the Convention (UNEP/MAP, 2005a) geographically, it covers:

> the maritime waters of the Mediterranean Sea proper, including its gulfs and seas, bounded to the west by the meridian passing through Cape Spartel lighthouse, at the entrance of the Straits of Gibraltar, and to the east by the southern limits of the Straits of the Dardanelles between Mehmetcik and Kumkale lighthouses.

As is obvious from the above definition, the internal waters of the Contracting Parties are excluded in the provisions, as are the Black Sea, the Sea of Marmara and the Bosphorus, since the 'demarcation line' is the southern limit of the Straits of the Dardanelles. In the following provisions, the Convention may be extended to include coastal areas as defined by each Contracting Party within its own territory, and also any Protocol to the Convention may extend geographical coverage to that which the particular Protocol applies.

In Article 2(a) pollution is defined and described as:

> the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results, or is likely to result, in such deleterious effects such as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of seawater and reduction of amenities.

The Protocols to the Barcelona Convention, also summarized in Table 7.1, are the following:

- *Dumping Protocol.* The full title is 'Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft'. It was signed in 1976 and has been in force since 1978.

Table 7.1 MAP Protocols

Protocol	Entry into Force	Description
Dumping Protocol Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft	Adoption: 1976 Entry into force: 1978 Amendments: 1995 but in force the oldest version	Aims at prohibiting discharge of wastes and other materials by committing states to ban dumping of certain substances – the 'black list' – and issue permits for the dumping of less hazardous substances – the 'grey list'
Prevention and Emergency Protocol Protocol Concerning Cooperation in Preventing Pollution from Ships, and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea	Adoption: 2002 Entry into force: 2004 Replaced the oldest version in force since 1976	Focuses on promoting means of combating oil pollution through multilateral cooperation, by committing states to notify each other in case of an oil spill and to cooperate in the clean-up
LBS (Land-based Sources) Protocol Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources	Adoption: 1980 Entry into force: 1983 Amendments: 1995 but in force the oldest version	Focuses on eliminating persistent toxic substances by committing states to ban or strictly limit a number of compounds such as organohalogen, organophosphorus & organotin compounds, heavy metals, chlorinated hydrocarbons, inter alia
SPA (Specially Protected Areas) and Biodiversity Protocol Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean	Adoption: 1995 Entry into force: 1999 Replaced the oldest version in force since 1982	Encourages creation and development of marine parks to safeguard representative types of coastal and marine ecosystems and their biodiversity, endangered habitats and species and sites of aesthetic or cultural importance

Table 7.1 (continued)

Protocol	Entry into Force	Description
Offshore Protocol Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil	Adoption: 1994 Not yet in force	This Protocol requires authorization by national authorities for any offshore activity, which should be granted only after the examination of a study of the activity's potential effects on the environment (Environmental Impact Assessment)
Hazardous Wastes Protocol Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal	Adoption: 1996 Not yet in force	The Protocol requires Parties to take all appropriate measures to eliminate pollution resulting from the transboundary movement and disposal of hazardous wastes to the fullest possible extent and to eliminate such movements if possible

This Protocol was amended and recorded as the 'Protocol for the Prevention and Elimination of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea'. It was signed in 1995 but still awaits entry into force. The Dumping Protocol commits states to banning dumping of certain substances – the 'black list' – and issue permits for dumping of less hazardous substances – the 'grey list'. Factors to be considered when establishing criteria governing issue of permits include characteristics and composition wastes or other matter, features of the dumping site and method of deposit of matter to the site. An exception to the Protocol's provisions is the case of force majeure due to stress of weather or any other cause when human life or the safety of a ship or aircraft is threatened.

- *Prevention and Emergency Protocol.* The full title is 'Protocol Concerning Cooperation in Preventing Pollution from Ships, and, in Cases of Emergency, Combating Pollution of the Mediterranean

Sea'. This Protocol was signed in 2002, and has been in force since 2004, replacing the existing 'Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency', which was in force from 1976. The Prevention and Emergency Protocol commits states to notify each other in case of an oil spill and to cooperate in the clean-up. In the event of an oil spill or other emergencies UNEP and also any other state likely to be affected must be informed. Moreover, in the framework of this Protocol, a regional activity centre (REMPEC – Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea) has been established in Malta, administered by the International Maritime Organization and the United Nations Environment Programme to deal with the implementation of this Protocol. Cooperation in the clean-up includes salvage or recovery of packages containing hazardous or noxious substances released or lost overboard. The Protocol also provides for other actions such as dissemination of reports and information. The article about assistance allows for it to be asked for and given by the regional activity centre or by any other signatory state in the form of equipment, products and facilities, expert advice and the costs of any action shall be borne by the requesting Party.

- *LBS (Land-based Sources) Protocol.* The full title is 'Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources'. It was signed in 1980 and has been in force since 1983. This Protocol was amended as the 'Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities'. The amendment was signed in 1995 but still awaits entry into force. The LBS Protocol covers some sectors of activity, including heavy metal industries, agriculture, energy production and waste treatment, binding the countries to adopt new industrial, agricultural and waste treatment practices. It also commits states to ban or strictly limit a number of compounds such as organohalogens, organophosphorus compounds, organotins, heavy metals, chlorinated hydrocarbons, radioactive substances and thermal discharges inter alia. The Protocol in itself does not define specific emission or time limits, however, it provides that states should progressively adopt such guidelines and measures. Following this, in 1997 the MED POL programme assisted countries to design and adopt the 'Strategic Action Programme to Address Pollution of the Mediterranean Sea from Land-based Activities (SAP)', which entails more specific emission and time limits for pollution reduction.

- *SPA (Specially Protected Areas) and Biodiversity Protocol.* The full title is 'Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean'. This Protocol was signed in 1995, and came into force in 1999, replacing the existing 'Protocol Concerning Mediterranean Specially Protected Areas', which came into force in 1982. The SPA Protocol was outside of the scope of the programme as this was initially anticipated in the Barcelona Convention and MAP and this is why it is considered different from the other Protocols, which were provided for in the Convention. It encourages creation and development of marine parks to safeguard representative types of coastal and marine ecosystems and their biodiversity, endangered habitats, and habitats critical to the survival of endangered species. The Protocol also provides for protection of sites of particular importance because of their scientific, aesthetic, cultural or educational interest. It suggests the regulation of certain activities such as fishing, hunting and trade of animals, and the passage, stopping or anchoring of ships. Moreover, it suggests the establishment of a 'List of Specially Protected Areas of Mediterranean Importance' or 'SPAMI List'. A regional activity centre has been established in Tunis (SPA/RAC) to deal with issues of protected areas. However, the Protocol only encourages development of specially protected areas and does not oblige the signatory states to take any form of action, so the question of whether this issue should be treated in the form of a Protocol remains unanswered.
- *Offshore Protocol.* The full title is 'Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil'. It was signed in 1994 but still awaits entry into force. This Protocol requires authorization by national authorities for any offshore activity, which should be granted only after study of the activity's potential environmental effects. It includes lists of harmful or noxious materials and substances, the disposal of which is either prohibited or requires a special permit, and provides for monitoring of planned installations for environmental and safety effects. In addition to this the Protocol provides that each Party shall prescribe sanctions to be imposed for breach of obligations and that as soon as possible appropriate rules and procedures for the determination of liability and compensation for damage resulting from relevant activities should be formulated and established. Delay in adoption and ratification of this Protocol is attributed to involvement of offshore industries, especially the oil industry, in the decision-making of the governments.

- *Hazardous Wastes Protocol.* The full title is 'Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal'. It was signed in 1996 but still awaits entry into force. The Protocol requires Parties to take all appropriate measures to eliminate pollution resulting from the transboundary movement and disposal of hazardous wastes to the fullest possible extent and to eliminate such movements if possible. Contracting Parties are obliged to generally prohibit the export and transit of hazardous wastes to developing countries and the Parties that are non-EU members should prohibit all imports and transits. Moreover, the countries directly or with the help of competent authorities should implement programmes of financial and technical assistance to developing countries for the implementation of this Protocol. Lists of hazardous wastes and hazardous characteristics of substances are also described, and provisions for liability and compensation for damage resulting from the transboundary movement of hazardous wastes are also included in the Protocol. The delay in the adoption and ratification of this Protocol is also considered to occur for the same reasons as for the Offshore Protocol, that is, due to conflicting interests with the oil industry.

In addition there is a seventh Protocol under preparation concerning Integrated Coastal Zone Management (ICZM). In most cases the Protocols have been revised and supplemented. Most of the amendments, including the new Barcelona Convention, are still in the process of ratification as summarised in Table 7.1.

The Barcelona Convention and Protocols raise the issue of dealing with a legally and institutionally complex scheme, because it concerns an international environmental order, which develops 'diachronically rather than synchronically and contextually rather than in isolation from its relational foundation' (Raftopoulos, 1993, p. 42). The legal component of MAP is divided in two broad categories, the common environmental norms and rules and the community membership norms and rules. The former relate to specific environmental provisions, whereas the latter give standard 'membership' powers and duties to each 'Contracting Party' (Raftopoulos, 1993).

The institutional component of MAP The institutional component of MAP, as defined within the framework of Barcelona Convention, is structured in such a way as to give authority to two organs: the Meetings of the Contracting Parties and the Secretariat. The highest authority in decision-

making is given to the Meetings of the Contracting Parties, which occur every two years, and reflect shared interests of all the Parties. They also make sure that current legal obligations are met, and oversee formation of new rules. The second authority is the Secretariat of MAP, based in Athens, which supports its operation, by carrying out all the administrative tasks that secure its smooth implementation but which also helps to integrate stakeholder interests into the legislative goals (Raftopoulos, 1993, p. 73).

Moreover, following launch of the MAP II process and a shift towards a 'sustainable development' orientation, the Mediterranean Commission on Sustainable Development (MCSD) was set up as an advisory body to MAP in 1996 as a think-tank on policies for promoting sustainable development in the Mediterranean Basin. Moreover, the operation of MAP is supported through six Regional Activity Centres, (RACs) in six Mediterranean cities, which help in a more decentralized way of operation under supervision of the Secretariat, each offering expertise in specific fields of action for facilitating the operation of MAP, as shown in Table 7.2.

The environmental assessment component of MAP The environmental assessment component of MAP, stated in the official text of UNEP (1978) as the 'Co-ordinated Pollution Monitoring and Research Programme in the Mediterranean' is widely known as MED POL. It is the most straightforward technical aspect of MAP and has played 'an important cohesive role for the development of a concrete, scientifically based, regional approach to the problems of the Mediterranean pollution' (Raftopoulos, 1993, p. 5). MED POL operates in phases. Its first phase, MED POL – Phase I, lasted from 1975 until 1980. At that time there was not enough scientific expertise either in the number of trained scientists or in terms of facilities established, therefore it was constructed upon pilot projects. This was considered a necessary condition, bearing in mind that full-scale regional assessments require identified pollution problems common to all the participating states (Raftopoulos, 1993). Initially there were seven pilot projects approved in 1975 followed by several others to support the programme. States had designated national research centres to participate in the pilot projects, and the planning and carrying out of necessary actions was a collaborative effort of UNEP with several international organizations (ECE, UNIDO, FAO, WHO, WMO, UNESCO, IAEA and IOC of UNESCO). According to Raftopoulos (1993, pp. 8–9) MED POL – Phase I proved largely successful in transferring technology and scientific expertise to many Mediterranean states, especially in less-developed countries since UNEP at the time followed a policy of allowing most of the resources to those needing them most.

Table 7.2 Regional Activity Centres (RACs)

Regional Activity Centre	Establishment	Description
REMPEC Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea	Year: 1976 Place: Manoel Island, Malta Status: Centre under IMO/ UNEP agreement, administrated by IMO	Aims at preventing and combating pollution from oil and other harmful substances by helping Mediterranean coastal states to be prepared for major marine pollution incidents and to cooperate for the clean-up
BP/RAC Blue Plan Regional Activity Centre	Year: 1977 Place: Sophia Antipolis, France Status: National Centre, with an NGO status, with regional function	Adopts a systemic and prospective approach to Mediterranean environment and development issues using observation and evaluation tools, generating indicators and publishing several studies accordingly
PAP/RAC Priority Actions Programme Regional Activity Centre	Year: 1980 Place: Split, Croatia Status: National Centre with regional function	Aims to improve the Mediterranean environmental situation by addressing priority actions. It is mainly concerned with integrated coastal area management to lessen development problems in built up coastal areas
SPA/RAC Specially Protected Areas Regional Activity Centre	Year: 1994 Place: Tunis, Tunisia Status: National Centre with regional function	Focuses on biodiversity issues and is involved in the protection of Mediterranean species, their habitats and ecosystems by producing inter alia strategies for biodiversity conservation
CP/RAC Cleaner Production Regional Activity Centre	Year: 1995 Place: Barcelona, Spain Status: Public Company put at the disposal of MAP	Focuses on promoting and disseminating cleaner production technologies for industrial sector in order to reduce industrial waste at source of the Mediterranean industrial sector

Table 7.2 (continued)

Regional Activity Centre	Establishment	Description
INFO/RAC Information and Communication Regional Activity Centre previously *ERS/RAC* Environment Remote Sensing Regional Activity Centre	Year: 2005 INFO/RAC Year: 1993 ERS/RAC Place: Rome & Palermo, Italy Status: Public body put at the disposal of MAP	Aims to provide information and communication services and technical support to MAP also by enhancing public awareness (Initially ERS/RAC would promote and introduce remote sensing and GIS for environmental monitoring and sustainable development)

Phase II of MED POL lasted from 1981 until 1990 and was named the 'Long-term Pollution Monitoring and Research Programme'. For effective implementation of its specific objectives it was divided into four distinct components: monitoring, research and study topics, data quality assurance, and assistance. Overall coordination of Phase II was in the hands of the Mediterranean Action Plan Coordinating Unit (the secretariat of the Barcelona Convention) acting on behalf of UNEP, even though the countries were fully responsible for monitoring activities as stated in Article 12 of the Barcelona Convention and in Article 8 of the Land-based Sources Protocol.

MED POL has recently finished its Phase III, which started in 1996 and lasted until 2005. Just before the end of Phase II important events at both international and regional levels took place, which guided MED POL to change its directions. These events were the adoption of Agenda 21 in Rio 1992 and the Global Plan of Action (GPA) in 1995 in Washington (UNEP, 1995a) to address pollution from land-based sources and activities, and creation of the Mediterranean Commission for Sustainable Development (MCSD) together with the amended LBS Protocol at regional level. Hence there was a slow change from pollution assessment to pollution control, with MED POL becoming a tool for the countries to properly manage their marine and coastal areas. MED POL Phase III, adopted in 1995 and called the 'Programme for the Assessment and Control of Pollution in the Mediterranean Region', was directly concerned with implementation of the two relevant Protocols (Dumping and LBS), since it focused more on management of pollution control (UNEP, 1999). It included activities such as pollutant trend monitoring and assessing effects of contaminants to living organisms as well as inventory of pollution sources and loads and finally the setting up of a database. Regarding control, compliance

of the countries is monitored by an annual report discussing the country's existing action plans, programmes and measures for pollution control and how well these comply with national, regional or international legislation. All the above activities have to be described in agreements between each country and MED POL.

From 2005 until 2013, a new phase of MED POL has come into operation as put forward in the 13th Ordinary Meeting of the Contracting Parties to the Barcelona Convention (UNEP/MAP, 2003). However, the starting point for its objectives and goals are those set out in Phase III, which was considered adequate for supporting the overall objectives of the Convention and the Protocols. In that respect it will continue to operate with the same tools (monitoring, compliance monitoring, assessments, capacity building, and so on). However, taking into account recommendations of the evaluation of Phase III (UNEP/MAP, 2005b), it focuses more on some aspects of Control and Assessment and Public Participation and it tries to use the Ecosystem Approach more widely in all its aspects (UNEP/MAP, 2005c).

The environmental management component of MAP The MAP environmental management component is called 'Integrated Planning of the Development and Management of the Resources of the Mediterranean Basin' (UNEP, 1978) and was the first of the main aspects of MAP to be implemented. Its aim is also to protect the Mediterranean marine environment but instead of focusing only on pollution sources, it integrates development issues of the region in the sense of environmental management. From the beginning it was divided into a long-term research and study programme, the Blue Plan and a more straightforward and immediate programme aiming at performing specific actions, the Priority Actions Programme (Raftopoulos, 1993).

To assist implementation of the Blue Plan, a Regional Activity Centre was established in France, namely the BP/RAC. Initially the Blue Plan performed 12 investigative thematic studies with the help of experts both from North and South Mediterranean in each study. Later on a more thorough and complete scientific study was performed in order to examine the potential for integrating social and economic development in the region to enhance environmental protection. A synthesis and presentation phase was also planned in order to guarantee dissemination of the results of the above studies, nevertheless the Blue Plan was criticized for not being able to achieve that goal (Raftopoulos, 1993, p. 27). According to Raftopoulos it has not succeeded in getting through to the non-expert Mediterranean community such as stakeholders, or the wider public mainly due to a poor communication network.

For the Priority Actions Programme (PAP), another Regional Activity Centre was established, namely the PAP/RAC. Contrary to the Blue Plan, it involved particular actions to be taken on issues considered as priorities at the time. Following the example of MED POL it was designed to be implemented through demonstration and pilot projects. At that time there was inadequate scientific awareness on the integration of environment and development for the purposes of environmental management so this approach was the only solution (Raftopoulos, 1993).

However, according to Raftopoulos (1993, p. 32), the environmental management component, consisting of the Blue Plan and the Priorities Action Programme, even though a rather large and important aspect of MAP, was clearly not covered in the Barcelona Convention. This means its ideas and findings were not translated into legal provisions, so to a large extent integration of environment and development was only in the form of words and not action.

The financial component of MAP Finally, the financial component of the Mediterranean Action Plan is mainly covered by the Mediterranean Trust Fund. This is a fund that all the Contracting Parties to the Convention contribute to, according to their respective national wealth. The Contracting Parties may also contribute to the operations of MAP through in-kind contributions (for example, through participation of their national institutes in MED POL programme especially in MED POL Phase II). Additionally some Contracting Parties may provide extra voluntary contributions to the Mediterranean Trust Fund, even on a regular basis such as, for instance, the European Union. The financial arrangements of MAP are also supported on certain occasions by UNEP through project funding, as this was the case especially in the first years of MAP's operation.

Effectiveness of the Mediterranean Action Plan

Effectiveness of the Mediterranean Action Plan has not been extensively studied by international relations academics. A few exceptions include Haas who brought MAP to the attention of the academic community by praising it as a success and some others like Skjaerseth and Kütting who were more critical. Other types of studies carried out discussed certain aspects of MAP or tried to assess specific features (for example, legal perspectives) of its operation (Boxer, 1978; Raftopoulos, 1993, 1997; Jeftic, 1996; Pavasovic, 1996; Vallega, 1996; Massoud et al., 2003; Raftopoulos and McConnell, 2004 inter alia).

Haas's study of 'epistemic communities' (Haas, 1989, 1990) did much to bring the Mediterranean Action Plan to the attention of the academic

community. He suggests that many studies focused on regime negotiations and their creation but few attempts have been made to investigate their real and practical significance and their direct impact on the behaviour of actors (states). He proposes that MAP derives its effectiveness from the influence of 'epistemic communities'. He considers it a success because it 'altered the balance of power within the Mediterranean governments by empowering a group of experts who then contributed to the development of convergent state policies in compliance with the regime' (Haas, 1989, p. 377). He concludes that MAP may signal the emergence of an entirely new international political order for the environment and he stresses the role of 'epistemic communities' in promoting stronger national pollution controls (Haas, 1990). Nevertheless, more than 15 years after Haas's study, this enthusiasm is missing from other researchers of MAP.

Skjaerseth (1996, 2002) also studied MAP but he was not convinced about its success. He notes that the reasons for signing up to Barcelona Convention did not always have much to do with environmental concern. For the less developed countries it was an opportunity to receive training and equipment for monitoring pollution, since the financial burden, at least until 1979, was carried by UNEP. Also it was a diplomatic opportunity to establish political/diplomatic ties between countries traditionally in conflict. Therefore the states probably had mixed motives that were not necessarily entirely environmental. Moreover, Barcelona Convention goals were vague, and even though a main goal of MAP in its second phase was to produce specific targets with specific deadlines for the Parties to the Convention, it failed to do so. In addition, the states have not been very willing to provide adequate reporting on the national implementation of their commitments. Therefore, due to the lack of clear targets and the inadequate state reporting, it is difficult to estimate whether there has been behavioural change among target groups. Skjaerseth also considers the MAP budget to be very limited compared with the wide scope of its demands. It is even more difficult to assess the impact of MAP on the state of the marine environment since there is lack of reliable and continuous pollution and water quality data. It has to be noted though that the collection of these scarce data is largely a result of MAP's establishment. However, even if there is an improvement in the marine environment it is rather difficult to attribute it all to the regime, since other factors such as general socioeconomic and technological change or natural environmental variation have to be taken into account. Moreover, for many countries, much environmental national legislation was also required by other organizations such as the European Union. Skjaerseth concludes that MAP is considered a collaborative political success since it produced a complete plan for de-polluting the Mediterranean Sea and furthermore

because it increased the general environmental awareness and preparedness through regional cooperation and transfer of knowledge. However, its impact on behavioural change among target groups is not so clear (Skjaerseth, 1996, 2002).

Kütting (2000a, ch. 5) is also critical of MAP. Even though admitting that the regime has been successful in starting and maintaining a cooperation process for a significant period of time in a region traditionally characterized by many political conflicts, she finds that overall it can not be considered as successful either in terms of institutional or environmental effectiveness. Moreover, she argues that basically MAP faced the typical North–South divide that underpins so many global environmental problems, although in this case at a regional scale. She also considers that MAP has been rather disregarded by the international relations academic community because traditional international relations research focuses on matters of national economic interest when examining international agreements and this was not the case in MAP, as it was formed due to environmental concern. She even asks the question why MAP 'exists at all since there is an apparent lack of motivation?' (Kütting, 2000a, p. 7). Overall, Kütting suggests that MAP may have been a political success but in terms of amelioration of the environmental problem, it has not offered a lot (Kütting, 2000b).

MAP may have succeeded in fulfilling some activities but it is not clear how much can really be assigned directly to it. As mentioned earlier the most important part of the Mediterranean Action Plan is that which deals with combating pollution from land-based sources, since these are the main polluters of the Mediterranean marine environment. More than 20 years after the LBS Protocol's entry into force, its effectiveness cannot be clearly estimated. There have been several noteworthy actions, such as construction of sewage treatment plants in many Mediterranean cities, nevertheless it is quite likely that some of these actions would have been taken anyway.

In conclusion the focus should be on areas where the Mediterranean Action Plan has undoubtedly been successful. Even if it has not achieved an enormous change in the state of the biophysical environment, it has certainly enhanced cooperation, stability and security in a traditionally unstable and politically heterogeneous region. Moreover, MAP has promoted environmental awareness and capacity-building especially in the less developed countries of the southern Mediterranean. In some ways the political, rather than scientific, success of MAP is ironic as it was the expert scientific 'epistemic community' that first created the international collaboration responsible for launching the Barcelona Convention. But the legacy is diplomatic rather than scientific.

A new approach to defining and measuring effectiveness

In the first part of this chapter various theories about international environmental regime effectiveness and a range of efforts to define and measure this effectiveness in applied cases were reviewed and examined. What is evident is that there is no one way to define and measure such a concept, especially when dealing with complex interactive systems consisting of socioeconomic factors, policy and politics and the global environment. The second part presented an overview of an international regime and a critical discussion of its effectiveness as a case study. The assessments of MAP made by different academics and practitioners largely varied according to which criteria they used in assessing the regime.

The theories of realism and neorealism are primarily concerned with state security and national interest. They do not include environmental concerns in their analysis, and assume that states have given interests, which is not the case in environmental issues. Looking at the formation of MAP, as Haas noted, an explanation through the hegemonic stability strand failed once France declined as the hegemon. MAP continued to exist and be supported by both the lead and weaker states. Historical materialism and international political economy, especially with the dominance of economic globalization, can in some cases explain environmental cooperation better, but in the case of MAP these theories also failed since interests of both sides, developed and less-developed states, are represented equally in the regime. Therefore, neoliberal institutionalism and strand regime theory are the most suitable traditions to explain international environmental cooperation. The distinction between Krasner's different orientations is not important because regimes may matter under certain conditions, meaning that effective regimes do matter.

Concerning the different approaches used when defining and measuring effectiveness, most of the regime theorists focus on institutional performance of a regime. Even those that consider the environmental problem do not clearly define how this aspect can be assessed. A different approach by Mitchell gives an example of such an assessment, but it leaves out of the calculation factors that cannot be easily measured by numbers, such as the political benefits of cooperation. Kütting makes clear the need for a distinction between institutional and environmental performance, although looked at from a regime theory perspective. As far as qualitative and quantitative techniques used in the study of regime effectiveness are concerned, the former usually explains a case well, since time and effort are spent in researching that particular case, however generalizability poses problems. On the other hand, quantitative approaches can be valid for many situations, but they might miss important case-specific factors. For instance, in counterfactual analysis it is difficult to estimate the

hypothetical situation of the absence of a regime, and Mitchell's econometric approach depends heavily on the availability of data, which renders it difficult to apply. Therefore a new approach, which would take into account both institutional and environmental parameters using complementary qualitative and quantitative techniques would be ideal to assess the effectiveness of regimes.

Looking at the case of the Mediterranean Action Plan, the handful of important studies on its effectiveness show a varied set of opinions, demonstrating that assessing effectiveness depends primarily on defining the criteria used for this process. Haas's prominent study on 'epistemic communities' found the regime successful and argued enthusiastically that it would introduce a new concept in international environmental cooperation. His theory can provide a satisfactory explanation for the role of scientific groups in creation of MAP, but its continued success was mostly political. It remains highly questionable whether these scientific groups are the power behind its implementation, or if these groups are instigating such processes in other international environmental regimes as well. On the contrary, the study of Skjaerseth is more critical about the achievements of MAP. Even though he recognizes its political contributions to cooperation and its overall enhancement of general environmental awareness, he notes that the desired change in behaviour of the actors is not very evident. Finally, Kütting, distinguishing between institutional and environmental effectiveness, concludes that unfortunately MAP was not successful in the long term in either of the two aspects. According to her criteria, its only real achievement is the instigation and continuation of a cooperation effort in a politically very difficult region of the world. Drawing from the previous three studies, and their different outcome on the same case, it is essential to define effectiveness before any attempt to assess it.

Undoubtedly, for a scientist, only improvement of the environment is the raison d'être of an environmental regime. However, the regime's institutional performance is equally important as an indirect way to achieve this as a means to an end and not as an end per se. Hence, the institutional and environmental aspects of effectiveness do not need to be separated, but rather integrated in order to provide a holistic view. The need for an interdisciplinary approach is the first and foremost rule in that respect. So far academics that study environmental regime effectiveness come mainly from a political science background rather than a scientific one. On the other hand scientists might not rigorously research international relations issues. 'Epistemic communities' drawing expertise from all disciplines and using both qualitative and quantitative methods of analysis might prove useful in order to design and implement these regimes. For instance in the Mediterranean Action Plan, the first question would be: is

the Mediterranean cleaner than before? Or at least cleaner than it would be without MAP? Then methodological problems such as how to measure cleanliness would arise, which could only be superseded by proper design of long-term environmental assessment and more importantly by a proper feedback mechanism between science and policy. In the absence of a clear scientific answer the question might be asked how well is MAP performing? Then the political aspects would come into play, combining all the relevant issues, whether the regime enhances international cooperation and security, creates structures, changes the behaviour of the actors, allows for multi-stakeholder participation and so on. Such a holistic approach could be the first rule for effective international environmental agreements.

Furthermore, practice has frequently deviated from theory. High expectations, ambitious plans and disregard of social and economic considerations have sometimes led to the establishment of regimes that are difficult to implement. A general drawback of international law is its voluntary nature, as it cannot legally bind any state, apart from those willingly participating in the regimes. For this reason a regime should provide incentives to its members for participation, and also for compliance in the long term, irrespective of whether these incentives would be of a political or economic nature. Even the imposition of rules such as sanctions might deter countries from agreeing, thus achieving even poorer results. Economic considerations should also be taken into account in terms of financial resources for all the parties to implement the provisions of the agreement, but also in terms of fair social policy. It may be that the environment is the object of protection, but in no way should this happen at the expense of human needs. People in developing countries need bread to eat before saving the earth and the sea, and even in developed ones governments might not accept strict agreements requiring, for instance, the closure of polluting industries, for fear of unemployment. Hence the environmental and time limits of an agreement should be specific but at the same time realistic. Only regimes with a pragmatic vision have more chance to succeed in the long term.

Ultimately, so far the discussion has focused on the criteria used when assessing effectiveness of environmental regimes. Various scholars define various criteria accordingly. Hence they examine each case by using this set of criteria and how the regime performs in each one of them at a given moment in time. Nevertheless, times change and with them whole new concepts in the environmental and political sphere arise. Some regimes have a life of more than 30 years such as the Mediterranean Action Plan. Which leads to the logical question: how can the effectiveness of MAP be assessed today, since other criteria were used for its design 30 years ago? Even concepts such as marine pollution had a different meaning before the

introduction of ideas such as habitat degradation or coastal zone management. In that respect a regime should always be ready to adapt properly and quickly to new needs, new definitions and new realities. It should have such an institutional structure that would allow for right and rapid amendments, and would eradicate any trace of bureaucracy. It should influence other international or national policies and politics and be open to be influenced by them. Effective regimes are the alive ones, which can move through time being older and wiser, not older and weaker. Hence regime effectiveness could not be assessed by static criteria, the only exception to this being the criterion of the regime's dynamic nature.

This new perspective on effectiveness would require a regime to: use a holistic approach based on science, policy and their interaction, have a pragmatic vision for its ultimate goals and be of a dynamic nature to evolve through time.

Meeting all the above conditions is hard but perhaps it might prove successful in the quest for effective international environmental regimes. Bearing in mind that the above definition presents a very broad approach, it will be further developed in forthcoming studies and particularly applied in a specific case study, that of the Mediterranean Action Plan.

Conclusion

Environmental problems, instead of a solution per se, demand an effective management through time. Since this management especially in the case of global or transboundary environmental problems is very often in the hands of international environmental regimes, special attention should be paid to the design and implementation of these regimes, as well as their assessment. The new perspective on international environmental regime effectiveness might perhaps prove a helpful tool towards this direction.

Nevertheless, further research is needed in order to specify new ways that would bridge the gap between science and policy, which would provide realistic solutions reconciling conflicting interests and that would give life to human-made institutions.

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