# Same Same But Different?

## Domestic Actor Constellations and Institutional Effectiveness in Transboundary Fisheries Management and Transboundary Pollution Abatement

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**List of abbreviations:**

CCAMLR = Commission for the Conservation of Antarctic Marine Living Resources
CCSBT = Commission for the Conservation of Southern Bluefin Tuna
CFCs = Chlorofluorocarbons
CFP = (EU) Common Fisheries Policy
ECJ = European Court of Justice
EU = European Union
GPS = Global Positioning System
HCFCs = Hydrochlorofluorocarbons
ICCAT = International Commission for the Conservation of Atlantic Tunas
ICES = International Council for the Exploration of the Sea
IRD = International Regimes Database
MSY = Maximum Sustainable Yield
OLS = Ordinary Least Squares
RFMOs = Regional Fisheries Management Organizations
TAC = Total Allowable Catch

# 1. Puzzle and Explanatory Approach

International environmental politics is first and foremost concerned with the management of transboundary Common-Pool Resources (CPRs), which create a need for international cooperation. Various edited volumes have explored the factors that contribute to the effectiveness of international environmental institutions[1], which manage transboundary CPRs (S. J. Barkin & Shambaugh, 1999; Haas, Keohane, & Levy, 1993; Miles u. a., 2002). One broad pattern in institutional effectiveness has however not been dealt with in the literature: The ineffectiveness of Regional Fisheries Management Organizations (RFMOs) compared to institutions dealing with transboundary pollution abatement.

Institutional effectiveness has three dimensions: Output, outcome and impact (Young, 2004). Output herein refers to the commitments states make as the result of international negotiations; outcome refers to behavioral change by states and substate actors; impact refers to the effect of behavioral change on the underlying problem. In the context of CPR management, commitments typically specify reductions in resource use, behavioral change reduces actual resource use and the desired impact of regulation is an improvement in the state of the CPR (in terms of its quality or quantity).

RFMOs achieve very low levels of effectiveness on all dimensions. States' commitments in the context of RFMOs often disregard scientific advice and would

[1] In this text, I use the terms "institution" and "regime" interchangeably.

therefore often be insufficient to halt stock depletion even if compliance was perfect (ICCAT, 2009; NAFO, 2011). In fact however, noncompliance is also a major problem of RFMOs, meaning that they achieve insufficient behavioral change to stop stock depletion (J. S. Barkin & DeSombre, 2013a). Illegal, unreported and unregulated fishing has been detected as a major weakness in the fisheries governance system which persists despite increased international regulatory efforts (DeSombre, 2005; The International Consortium of Investigative Journalists, The Center for Public Integrity, 2012). Unsurprisingly, RFMOs have been unable to achieve their management goals, typically Maximum Sustainable Yield (MSY). Their impact on overfishing has so far been insufficient. This can clearly be observed in the biomass trends of fish species. Cullis-Suzuki and Pauly (2010) collected biomass data on the stocks of 15 of the currently 18 RFMOs and identify an almost universal trend of declining stocks. As an illustration of this trend, I include graphs of the fish stock biomass for three RFMOs in Annex 1: CCAMLR, the most effective RFMO according to the study, ICCAT, the median RFMO in terms of effectiveness and CCSBT, the least effective RFMO.

International institutions dealing with transboundary pollution abatement display higher levels of effectiveness. Although the UNFCCC demonstrates that effectiveness is not universal in the area of transboundary pollution abatement, there are several cases of institutional effectiveness. Especially western states have made ambitious commitments regarding emission reductions in the context of acid rain and stratospheric ozone depletion, the phase-out of waste-dumping at sea, riverine pollution and various design standards to prevent pollution from oil tankers (Haas u. a., 1993; Miles u. a., 2002; Mitchell, 1994). Compliance has been less problematic in the field of transboundary pollution abatement such that major behavioral change followed, often connected to the adoption of new technologies. Examples include catalytic converters, double-hull tankers and HCFCs, which have replaced CFCs. On the impact dimension, improvement of the respective CPR's state can also be observed in various cases. The recovery of the ozone layer, improvements in North Sea and Rhine water quality and the reduction of acid rain are cases in point.

I argue that the divergence in institutional effectiveness between RFMOs and pollution abatement institutions can best be explained by the different domestic actor constellations triggered by the two types of problems. Following a liberal approach (Moravcsik, 1997), I argue that the main difference between these multi-level problems can be found at the societal level (see also Zangl, 1999). At the societal level, the problem

of fisheries management conforms to the implicit assumption of “beneficiary supply” (Mitchell, 1999) made in collective action theory (Olson, 1965; Ostrom, 1990), while transboundary pollution does not. This difference at the societal level leads to different domestic politics, which explain the observed difference between the effectiveness of RFMOs and pollution abatement institutions respectively.

The term “beneficiary supply” refers to a situation in which both the costs and benefits of cooperation accrue to the same group of actors. Fisheries management leads to a beneficiary supply problem, since fishers have to bear the costs of cooperation (reduced present catch) and reap the benefits of cooperation (increased future catch). This is due to the fact that overfishing leads to “reflexive externalities” that affect the group that causes them. At the same time it creates few externalities towards other economic sectors or society at large. This constellation leads to a classical prisoner’s dilemma constellation between fishers at the transnational level while other actors are little affected and therefore unlikely to be mobilized. In the domestic arena of the involved states, the fishing industry has the most intense preferences regarding the issue area and can be expected to dominate it. Governments thus mainly represent their national fishing industry at the international level, thereby upscaling the prisoner’s dilemma constellation to the international level (Holzinger, 2008). Since this constellation constitutes a “problematic social situation” (Zürn, 1993) it is likely that the issue area will be institutionalized as fish stocks decline. The institutions that are formed in the area of fisheries management however face a strong enforcement problem.

Limited time-horizons compound this classical collective action problem since the benefits of cooperation on fisheries management accrue in the future, while costs accrue in the present. Since both fishers and governments can be expected to discount future benefits, international institutions dealing with fisheries management also face a commitment problem, because governments are pressured by their fishing industries to focus on short-term exploitation rather than long-term management.

The problem structure of transboundary pollution abatement does not conform to the "beneficiary supply" assumption made in classical collective action theory. Since pollution problems are usually regulated "upstream" (e.g. car design rather than drivers’ behaviour is regulated to reduce pollution), they usually involve costs for an industry and benefits for citizens and economic sectors affected by pollution. In this constellation, externalities are "nonreflexive“ i.e. they do not affect the group that causes them but

they do affect other groups. This leads to a "nonbeneficiary supply problem“ (Mitchell, 1999), in which one group is not interested in the supply of a CPR but has to bear the costs of provision ("nonbeneficiary suppliers“) while another group is interested in the supply of the CPR and does not have to bear the costs of provision ("demanders“). Nonbeneficiary suppliers are usually industries causing pollution while demanders are citizens or economic sectors affected by pollution. This transnational constellation leads to domestic conflict in the states affected by a problem. While nonbeneficiary suppliers advocate general noncontribution to a CPR; demanders advocate unconditional contribution.

Depending on the position governments take regarding this domestic conflict, nonbeneficiary supply problems can lead to different interstate constellations. The prisoner's dilemma at the interstate level is by no means the logical result of this constellation at the domestic level. If governments lean towards "nonbeneficiary suppliers" and represent their respective industries, no problematic situation arises at the interstate level and the formation of an international institution is unlikely (Zürn, 1993). Only when “demanders” have acquired political influence in some countries do problematic social situations arise and institutions are formed. The formation of an international institution in the field of transboundary pollution abatement thus usually means that there is significant political pressure from sectors that advocate not just conditional cooperation but unconditional contribution to CPR provision. Conversely, transboundary pollution problems which do not lead to a strong mobilization of “demanders” remain in the category of “nonregimes” (Dimitrov, Sprinz, DiGiusto, & Kelle, 2007). In the field of transboundary pollution management it thus seems that at least a moderate degree of goal achievement is relatively likely once an institution has been formed, since the very formation of the institution indicates that there are domestic groups, which may at later points act to alleviate the cooperation problems that arise in the context of CPR management (Zangl, 1999).

In sum, the explanation for the higher effectiveness of pollution abatement institutions thus involves two elements. Transboundary pollution problems, which do not trigger strong mobilization by "demanders" are not institutionalised in the first place. Conversely, transboundary pollution problems, which have been institutionalised are alleviated by the mobilization of "demanders", which reduce commitment and enforcement problems at later stages of the regulatory process since they benefit from cooperation but do not have to bear the costs thereof. Fisheries management

institutions in turn face a domestic audience, which benefits from cooperation, but also has to bear cooperation costs. Regime formation is relatively unproblematic in this field due to the potential gains of cooperation, commitment and enforcement of regulation are however difficult due to the collective action and time horizon problems.

In the following, I will first address alternative explanations for the divergence in effectiveness between RFMOs and pollution abatement institutions. In section 2.1., I assess the hypotheses of alternative approaches at the theoretical level and by referring to the case study literature. In section 2.2., I include alternative explanations in regression models using data from the International Regimes Database (IRD). In section 3 I test my theoretical approach in a comparative case study between the Oslo Commission and the EU's Common Fisheries Policy (CFP). In section 4 I draw conclusions from my analysis.

# 2. Alternative Explanations

I discuss four categories of alternative explanations: The number of actors, the design of international institutions, problem understanding, and technology. In my case study I control for further alternative explanations such as state capacity and interstate relations through case selection.

## *2.1. Theoretical assessment and Case Study Literature*

### 2.1.1. Number of Actors

Since CPR management involves collective action problems, the number of actors, being the central variable of Olson's *Logic of Collective Action* (1965), must be taken into account as an alternative explanation for the observed pattern. Since we are dealing with multi-level collective action problems, the question arises, at which level the number of actors should be assessed (state level or societal level). The answer to this question depends on the stage of the regulatory process, which is being analysed. While a low number of states should facilitate ambitious decision-making (output-dimension) a low number of private actors should facilitate subsequent implementation (outcome-dimension).

Regarding the number of states involved in the problems, there is no systematic difference between RFMOs and pollution abatement institutions. If there is a difference,

the tendency is rather that transboundary pollution problems involve larger numbers of states, ultimately because pollutants travel further than fish. Including the number of states in regression models using IRD data hardly affects the correlation between the pollution dummy and goal achievement (see section 2.2.).

A stronger argument can be made regarding the number of private actors involved in the problems. Transboundary fisheries can involve very large numbers of vessels. ICCAT's Eastern Atlantic and Mediterranean bluefin tuna fishery for instance included 1707 vessels in the 2004/2005 season (ICCAT 2007: 109). The large number of private actors is compounded by their mobility, which makes fishing regulations arguably harder to monitor and enforce than many regulation on transboundary pollution. While the difficulty of monitoring regulations contributes to the ineffectiveness of RFMOs, this capacity problem is only a partial explanation of their failure. Various phenomena indicate that many states are very reluctant to strictly regulate their fishing industry even when they have the capacity to do so. First, this can be observed in the failure of RFMOs to set total allowable catch (TAC) at sustainable levels. Second, states often fail to levy adequate fines for breaches of fisheries law and in some cases impose discriminatory fines depending on the nationality of the vessel (Lequesne, 2005: 369; The International Consortium of Investigative Journalists, The Center for Public Integrity, 2012; Court of Auditors 2007: 17). Third, the common practice of subsidizing national fishing industries (Munro & Sumaila, 2002) while neglecting enforcement indicates that fisheries policy does not only suffer from a capacity problem but also from an incentive problem. At the societal level, the variable "number of actors" (and mobility of actors) thus contributes to the lower effectiveness of RFMOs but only provides a partial explanation thereof.

### 2.1.2. Design of International Institutions

Another alternative explanation for the divergence in effectiveness between RFMOs and pollution abatement institutions is the design of international institutions (Koremenos, Lipson, & Snidal, 2001). Pollution abatement institutions may be more adequate for managing CPRs than RFMOs. The most common design principles for CPR management are those presented by Ostrom (1990: 90), which reflect the challenges of collective action more generally although they were derived in the context of local CPR management:

1. Clearly defined boundaries
2. Congruence between appropriation and provision rules and local conditions
3. Collective-choice arrangements
4. Monitoring
5. Graduated Sanctions
6. Conflict-resolution mechanisms
7. Minimal recognition or rights to organize

For CPRs that are parts of larger systems:

8. Nested enterprises

In the case study literature there is however no indication that pollution abatement institutions match these design principles better than RFMOs. To the contrary, many effective pollution abatement institutions did not monitor or enforce states' commitments (Brack, 2003; Dai, 2007; Skjærseth, 2002). RFMOs on the other hand have increasingly been strengthened regarding monitoring, enforcement and the exclusion of free-riders so that many of them come much closer to meeting Ostrom's design principles. Measures that were taken to improve the monitoring and enforcement of commitments in RFMOs include sattelite-based Vessel Monitoring Systems (VMS), port state control measures, international observer programs, vessel blacklists and trade sanctions against states that provide "flags of convenience" (DeSombre, 2005; Webster, 2009). According to the design of international institutions it should thus rather be expected that RFMOs are more effective than most institutions dealing with pollution abatement. The regressions in section 2.2. also show that institutional design features do not affect the correlation between the pollution dummy and goal achievement (see section 2.2.).

### 2.1.3. Problem Understanding

Institutional effectiveness requires an adequate understanding of the underlying problem. Differences in institutional effectiveness may thus be the result of differences regarding the scientific understanding of a problem (Haas, 1992; Stokke, 2012). Two types of uncertainty regarding the underlying problem can be distinguished: Uncertainty about causal relationships and uncertainty about the state of the world (Koremenos u. a., 2001). On both dimensions, higher levels of certainty should lead to higher institutional effectiveness.

*Uncertainty about causal relationships* cannot explain the observed divergence in institutional effectiveness. While the causal connection between overfishing and stock depletion is trivial, establishing basic causal relationships has often been difficult in the field of transboundary pollution abatement (e.g. the connection between CFCs and stratospheric ozone depletion or the connection between emissions in continental Europe and acidification of water bodies in Scandinavia).

The *uncertainty about the state of the world* however has some explanatory power. The abundance of fish stocks can fluctuate quickly and it is therefore difficult to estimate sustainable catch rates. Since fish tocks are "moving targets", it is arguably more difficult to detect their size than to detect the level of pollution e.g. of a water body. However, the inadequacy of knowledge about fish stocks is at best a partial explanation for overfishing. After all, RFMOs often disregard scientific estimates (output dimension) and subsequently fail to achieve compliance with their catch limits (outcome dimension). Even if scientific estimates of fish stocks were accurate, stocks would therefore be overfished. The IRD variable on problem understanding also does not eliminate correlation between the pollution dummy and institutional effectiveness (see section 2.2.).

### 2.1.4. Technology

Technological change can significantly affect the behaviour of private actors and is thus a further alternative explanation for the observed pattern. From this perspective, the change of private actors' behaviour was not the result of political regulation but of technological innovation. This argument is common in the context of the Montreal Protocol, which benefitted immensely from the substitution of CFCs with HCFCs. It can however also be applied to other transboundary pollution problems.

Technological solutions have clearly contributed to problem-solving in the area of transboundary pollution abatement. Regulation has often been focused on technological standards rather than actor behavior, which has facilitated the enforcement of regulations (Urpelainen, 2010). Examples of technological solutions include catalytic converters, double-hull tankers and substitutes for toxic chemicals.

In fisheries management on the other hand, technological change has exacerbated the problem of overcapacity. Especially the use of sonar and GPS has increased the efficiency of fishing fleets (J. S. Barkin & DeSombre, 2013b). Even deliberate reductions in fishing

capacity can be offset by ongoing technological change, which leads to increases in fishing capacity ("technological creep").

While the availability of technological solutions has favoured transboundary pollution abatement over fisheries management, this argument should not be taken too far. After all, technological innovation did not occur independently of political regulation. Neither HCFCs, nor catalytic converters nor double-hull tankers succeeded in a free-market environment. Rather, they served a political demand for technological solutions. Successful regulation was thus often the result of an interaction between political regulation and technological innovation (Oberthür, 1996). Furthermore, pollution abatement institutions have achieved problem-solving also in the absence of favourable technological development. Waste dumping at sea remains cheaper than waste disposal on land (especially regarding nuclear material) but various institutions have been successful in phasing out the practice (Skjærseth, 2002; Stokke, 1998). The IRD does not contain a comprehensive measure of technological change (although the aspect is covered as part of some variables). The alternative explanation technological change is thus not addressed in regressions of IRD data.

### *2.2. Assessing alternative explanations using IRD data*

In the following, I assess some of the alternative explanations using data from the International Regimes Database (IRD) (Breitmeier, Young, & Zürn, 2006), which contains data on 23 environmental regimes consisting of 92 regime elements. I exclude from this sample all environmental regimes that do not deal with CPR management and regime elements that deal with the same CPR problem and overlap regarding their time dimension[2] (see Annex 2 for the resulting list of 48 observations). I then create a dummy variable that indicates whether a regime element deals with a resource extraction problem (mainly fisheries management) or transboundary pollution. The category "resource extraction" contains mainly regime elements dealing with fisheries management however also other problems of resource extraction such as the conservation of whales, seals and two cases of water management. Due to the small sample size, I decided to not exclude these cases but to include them in the category "resource extraction" together with fisheries management cases. This is based on the

[2] For instance, the IRD contains one regime element "Montreal Protocol 1990-1998" and another regime element "London Amendment 1990-1998". Many measurements regarding these regime elements are identical. In such cases, I exclude regime elements in order to avoid "double-counting" empirical phenomena. In the above case, I excluded the regime element "Montreal Protocol 1990-1998".

assumption that other resource extraction problems display similar dynamics in their domestic politics as fisheries management. In order to measure effectiveness, I use the IRD variable 304A on regime impact[3].

| | (1) PrbImprove | (2) PrbImprove | (3) PrbImprove | (4) PrbImprove |
|---|---|---|---|---|
| Pollution | 0.841* | 1.017** | 0.756 | 1.305*** |
| | (0.462) | (0.397) | (0.477) | (0.417) |
| Nmbr_States | -0.329 | | | -0.390 |
| | (0.195) | | | (0.381) |
| Rule_Depth | | 0.626** | | 0.546* |
| | | (0.231) | | (0.266) |
| Cntrl_Mon | | -0.452 | | -0.287 |
| | | (0.329) | | (0.612) |
| Decntrl_Mon | | -1.150*** | | -1.225*** |
| | | (0.363) | | (0.359) |
| Enforcement | | 1.673*** | | 1.629*** |
| | | (0.348) | | (0.437) |
| Management | | 0.171 | | 0.412 |
| | | (0.374) | | (0.646) |
| PrbUndrstd | | | 0.481* | 0.213 |
| | | | (0.251) | (0.315) |
| _cons | 3.630*** | 1.872*** | 1.250 | 1.870 |
| | (0.392) | (0.539) | (0.934) | (1.194) |
| N | 47 | 48 | 48 | 47 |
| adj. R-sq | 0.059 | 0.275 | 0.099 | 0.305 |

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

**Table 1: Regression results from IRD**

I implement four models following the order of the alternative explanations in section 2.1. Model 1 thus introduces the number of states, model 2 institutional design features and model 3 problem understanding. Model 4 includes the independent variables of

[3] For this variable, case study experts were asked "How did the state of the world change during this period with respect to the problems addressed by the regime?" The response scale ranges from 1 = "The problem worsened considerably" to 5 = "The problem improved considerably".

models 1 to 3. Annex 2 contains detailed information on the coding of variables and the underlying IRD variables. I report robust clustered standard errors in order to account for the fact that observation of regime elements are nested within 17 regime families.

The main result of the regression models is that improvement in the underlying problem is higher for regimes that deal with transboundary pollution problems than for institutions that deal with resource extraction problems. This effect is significant in three of the four models. The IRD data cannot be used to test my explanatory approach since they include little information on domestic politics. They do however indicate that there is a divergence in institutional effectiveness, which persists if some common explanatory factors are taken into account. Apart from the pollution/resource extraction dummy variable, the existence of enforcement mechanisms (sanctions) is correlated with high levels of problem improvement while the existence of decentralized monitoring systems is – surprisingly – correlated with lower levels of problem improvement than the absence of monitoring mechanisms. It is hard to make sense of this latter finding. It would be desirable to test it using an integrated scale of different monitoring mechanisms rather than relying on dummy variables as has been done here. Rule depth (i.e. the specificity and density of rules) is positively correlated with problem improvement at the 10 percent level.

The findings must be interpreted with caution due to the small sample size. The OLS estimator is also not ideal to capture the structure of the dependent variable, which has a limited range (1-5) and is categorical. The small sample size however does not allow the application of an ordered logistic regression.

### *2.3. Overall Assessment of Alternative Explanations*

Of the alternative explanations, institutional design can be ruled out relatively clearly. In fact it adds to the puzzle rather than solving it. The other explanatory approaches explain some of the divergence in institutional effectiveness but cannot explain important aspects of it, especially RFMO's weakness on the output dimension and states' lack of enthusiasm in sanctioning breaches of fisheries law once detected. Technological change has the strongest explanatory power of the four factors. At the same time it does not operate independently of domestic politics but rather interacts with it. Alternative explanations therefore leave room for an explanation based on the domestic politics of the two problem types.

# 3. Comparative Case Study

In order to test my explanatory approach, I conduct a comparative case study. I select two cases with the aim of a) controlling for as many alternative explanations as possible ("most similar systems design") and b) representing the universe of cases.

I thus choose one relatively successful institution, which deals with transboundary pollution abatement: the 1972 Oslo Commission (which merged with the Paris Commission to form the OSPAR Commission in 1992). I compare this institution with the relatively unsuccessful EU Common Fisheries Policy (CFP), created in 1983. Although the latter is not an independent international institution but a policy of the EU, it lends itself to a comparison with the Oslo Commission since it covers the same institutional functions as international institutions (decision-making, dispute-settlement, monitoring etc.) and involves the same states as the Oslo Commission (since both institutions regulate the North-East Atlantic and especially the North Sea).

Through the case selection, I can control for various potential explanatory factors. Since the same states are involved, general features of individual states and the relationships between the states can be excluded as explanations for the divergence in institutional effectiveness. Being embedded in the EU's institutional structure, the CFP comes much closer to meeting Ostrom's design principles than the Oslo Commission, especially due to the role of the European Court of Justice (ECJ). Institutional design thus suggests that the CFP should be more effective at CPR management rather than the Oslo Commission.

## *3.1. Dependent variable: Institutional Effectiveness*

### 3.1.1. Oslo Commission

Regarding the output dimension, the record of the Oslo Commission, which was formed through an international agreement in 1972, was weak in the 1970s and early 1980s (Skjærseth, 2002). In the context of the North Sea Conferences, which were first organized in 1984, international commitments were however strengthened and the 1987 London Declaration for the first time stipulated the phase out of waste dumping in the North Sea by 1990 and the phase out of marine incineration by 1995. Following North Sea Conferences strengthened these commitments by moving deadlines forward.

Regarding the outcome dimension, the Oslo Commission has achieved major behavioral change. The United Kingdom was the most reluctant party in implementing the international commitments but by 1993 it had also phased out the dumping of industrial waste in the North Sea. By the early 1990s, the Oslo Commission had essentially become superfluous since the activity it regulated had been phased out (Skjærseth, 2002) and it was merged with the Paris Commission.

Since waste dumping at sea is only one factor affecting water quality in the North Sea, it is difficult to assess the exact impact of the Oslo Commission on pollution levels. The complete phase-out of waste dumping however means that the Oslo Commission has achieved the maximum possible impact on the underlying problem.

### 3.1.2. Common Fisheries Policy

On the output dimension, the effectiveness of the CFP is very low. The yearly TACs set by the Council of the EU routinely exceed sustainable levels such as indicated by the International Council for the Exploration of the Sea (ICES). Villasante et al. ( 2011) calculate that EU TACs exceeded scientific advice by 19% on average between 1992 and 2001 and by 21% on average between 2002 and 2008.

On the outcome dimension, high TACs and low compliance have meant that behavioural change is insufficient to solve the problem of overfishing. According to the 2009 Commission Green Paper on CFP reform, 88% of EU stocks for which assessments were available were fished beyond MSY (COM(2009)163 final: 7).

On the impact dimension, CFP regulations have been insufficient to stop stock depletion. According to the European Commission, 30% percent of EU stocks were outside safe biological limits, meaning their depletion may be irreversible (COM(2009)163 final: 7).

## *3.2. Independent variable: Domestic Politics*

I analyze the role of private actors, actors from the executive branch (ministries) and actors from the legislative branch (party positions) in the major countries involved in the two cases in order to identify the dominant advocacy coalition in the issue area (Sabatier, 1998). Regarding the CFP I analyze the domestic politics of the UK, France and Spain; regarding the Oslo Commission the domestic politics of Germany, the UK and France.

### 3.2.1. Advocacy Coalitions around OSPAR

At the societal level, the dumping of waste at sea triggered considerable protest starting in the early 1970s. The triggering event was apparently the attempt of the coaster *Stellar Maris* to dump 650 tons of toxic waste in the North Sea in 1971 (Skjærseth, 2002), which sparked protest both at the societal and government level and thereby contributed to the formation of the Oslo Commission one year later. Waste dumping nonetheless continued relatively unchanged throughout the 1970s and early 1980s while the environmental movement gained in organizational strength. Starting with the German green party in 1983, green parties were represented in an increasing number of parliaments in Western European states (Kelemen & Vogel, 2009: 16). Environmental NGOs gained in membership at the same time and Greenpeace launched its first major North Sea campaign in 1986 (Skjærseth, 2002). Enviromentalists received support from fishermen in protesting against waste dumping at sea. Newly established environmental ministries gained competence for the regulation of waste dumping starting in the middle of the 1980s (Haas, 1993: 137) and arguably increased the strength of the coalition between green parties, NGOs and fishermen. Based on this rather anecdotal evidence, the increased effectiveness of OSPAR can plausibly be linked to changes in the domestic politcs of North Sea riparian states regarding the issue area.

### 3.2.1. Advocacy Coalitions around the CFP

At the societal level, the issue of fisheries governance hardly received attention from environmental NGOs until the middle of the 1990s (Dunn, 2005). Rather than protest against overfishing, protest against restrictions to fishing is common especially in France and Spain. Of the major fishing nations (UK, Spain and France), only France has a strong green party, which however only started picking up the issue of fisheries governance in its 2002 party manifesto (Benoit, Bräuninger, & Debus, 2009). The major parties in Spain stress the need to support the national fishing industry in their party manifestos while neglecting the issue of overfishing. This tendency is stronger for the *Partido Popular* (PP) than for the *Partido Socialista Obrero Español* (PSOE), which has started to mention the need for sustainable regulation in its party manifestos. The situation is similar in the UK, where the Labour Party has started to address the

unsustainability of fisheries regulation after ignoring the issue in the 1980s and 1990s. The Conservative Party is more reluctant to acknowledge overfishing in its manifestos and frequently stresses the importance of the national fishing industry and the need to support it. In France finally, major parties hardly mention the issue of fisheries governance so that their positions are difficult to infer.

Regarding the executive branch, fisheries management has not become a competence of environmental ministries but remains in the realm of agricultural ministries in almost all Western European states (European Commission 2014). Hoof et al. (2005) find that the fishing industry is privileged over environmentalists regarding its access to decision-makers in the major European fishing nations (Spain, UK, France, Denmark, Netherlands). The executive branch thus reinforces the dominance of the fishing industry which seems to exist at the societal and legislative side.

Overall, the CFP operates under much more difficult conditions than the Oslo Commission regarding the domestic politics in the major states involved in the issue area. Its ineffectiveness may thus not mainly be the result of a failed institutional design at the EU level (Khalilian, Froese, Proelss, & Requate, 2010) but of the actor constellation at the domestic level.

## 4. Conclusions

The divergence in institutional effectiveness between RFMOs and institutions dealing with transboundary pollution abatement can be plausibly linked to the domestic politics created by the two different types of problems. While transboundary pollution problems seem to lead to the formation of international institutions only once there is significant pressure from "demanders" at the societal level, fisheries management institutions can be formed without such pressure from external actors. This means that once an institution has been formed in the field of transboundary pollution, its chances to achieve effectiveness are relatively high since there is a mimimum potential of domestic pressure for *unconditional* contribution to a CPR. The constellation that leads to the creation of fisheries institutions at the same time does not seem to augur well for subsequent institutional effectiveness since societal actors are caught in a classical collective action problem. At best, these actors advocate *conditional* contribution to a CPR. Fisheries management institutions are therefore required to address a difficult enforcement problem, which they have been unable to do.

At the theoretical level, the study highlights the importance of distinguishing between different types of CPR management problems. The implicit assumption of "beneficiary supply" made in classical collective action theory is often violated empirically in CPR management. The resulting "nonbeneficiary supply problems" often revolve around multi-stakeholder CPRs, which can lead to diverse strategic constellations. Understanding these strategic constellations is a major challenge, which must however be addressed in order to arrive at institutional solutions for diverse CPR management problems.

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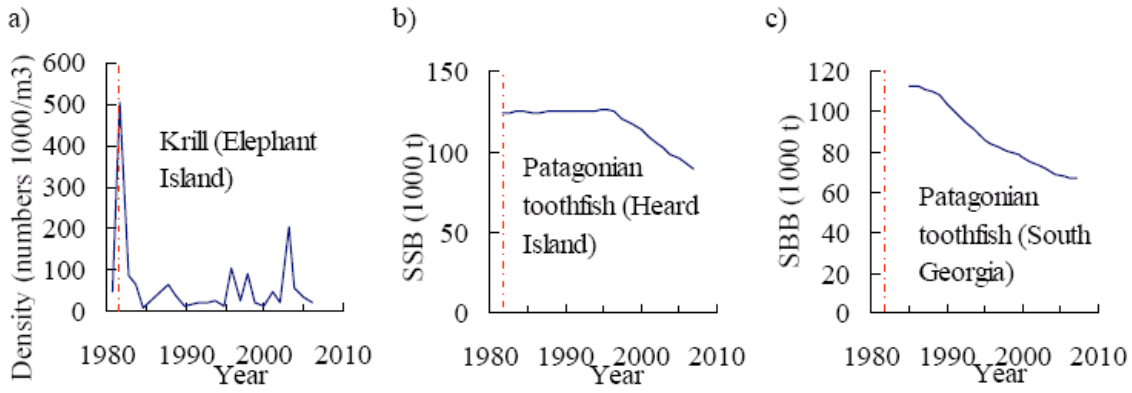
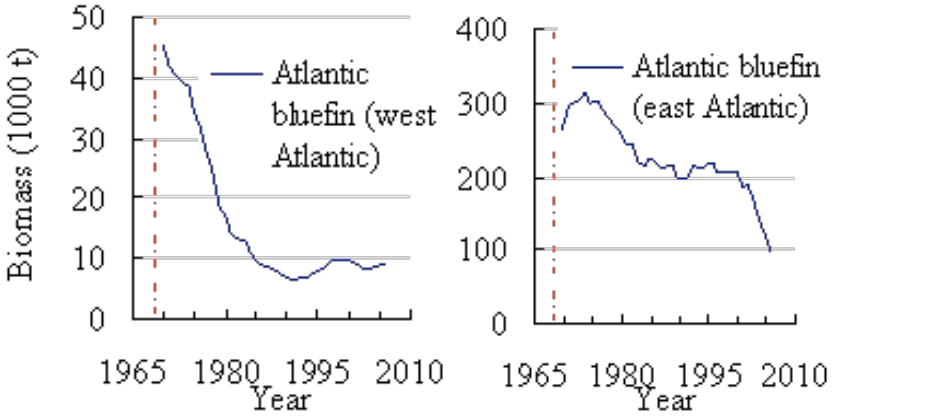
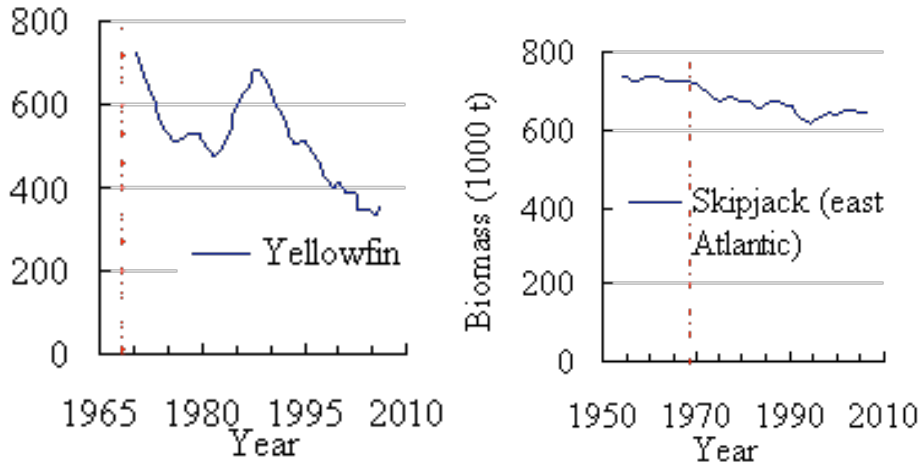
## Annex 1: Biomass of fish stocks managed by RFMOs [4]

### A 1.1.: Stocks managed by CCAMLR (red line indicates formation of CCAMLR)

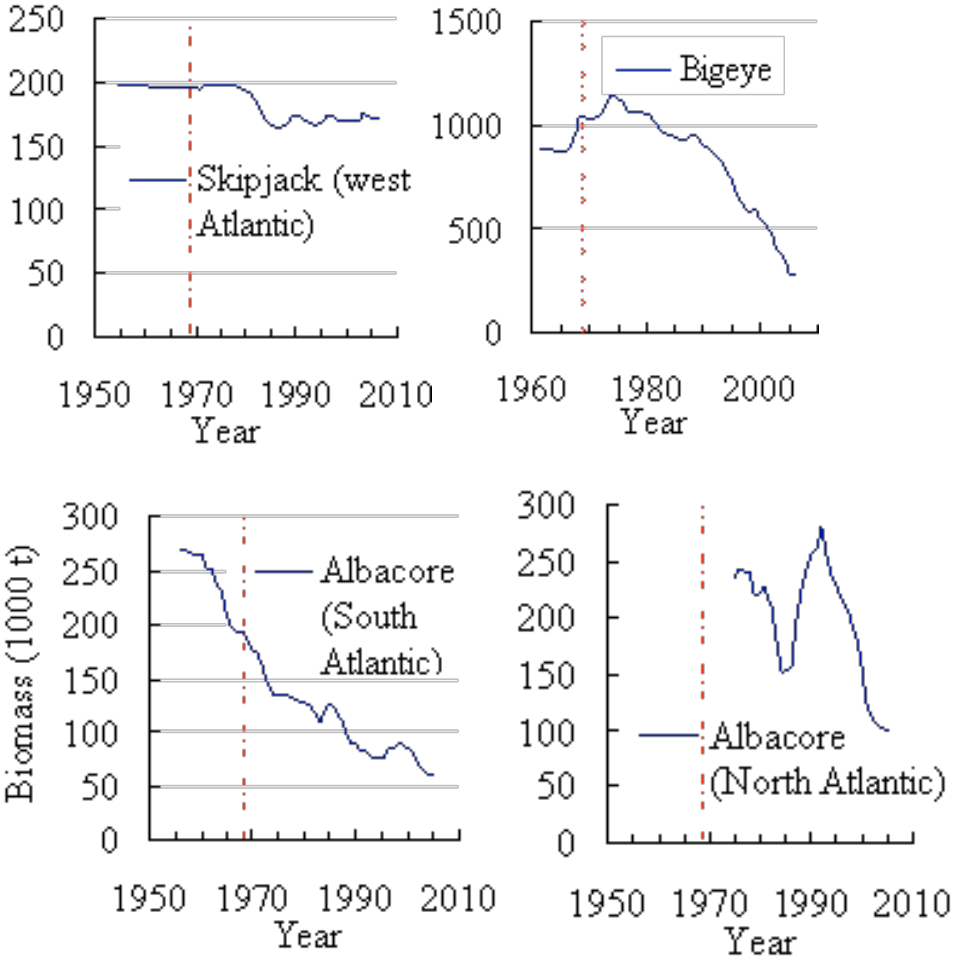



### A 1.2.: Stocks managed by ICCAT (red line indicates formation of ICCAT)

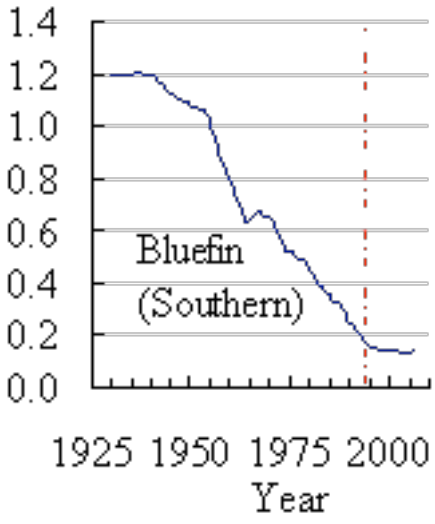



[4] Source of all graphs: http://www.seaaroundus.org/




**A 1.3.: Stock managed by CCSBT (red line indicates formation of CCSBT)**



# Annex 2: International Regimes Database

## A 2.1. IRD variables used for the analysis

| Variable Name | IRD Question | Response scale |
|---|---|---|
| Cntrl_Mon | "Are there procedures for reviewing implementation formally or not formally established in the regime's constitutive provisions?" | Recoded from the IRD data:<br>1 if "On-site inspections to verify compliance" otherwise 0 |
| Compliance | "Does the behavior of all members generally conform with the provisions of the regime?" | Inversion of the IRD scale:<br>"0 = Not applicable (e.g., actor does not need to conform with regime rules)"<br>5 = Behavior exceeds regime requirements: The actor conforms with the regime's rules almost all the time and even exceeds them to a degree that is considered significant or important by regime members (e.g., the behavior of a number of industrialized countries exceeds the rules established under the Montreal Protocol on Substances that Deplete the Ozone Layer 1987 and its revisions in 1990 and 1992).<br>4 = Behavior meets regime requirements: The actor conforms with the regime's rules almost all the time but does not significantly exceed the regime requirements (e.g., the U.S. and the former Soviet Union conformed with the provisions of several bilateral agreements to reduce nuclear weapons but did not significantly exceed the regime requirements).<br>3 = Behavior conforms with some requirements but not all: The actor only conforms with some of the regime rules.<br>2 = Behavior conforms some (but not all) of the time and/or to some degree but not com- pletely: The actor conforms with the regime's rules most of the time but deviates occasionally in such a way that is considered significant or important by regime members (e.g., North Korea's behavior occasionally deviated from the provisions of the Non-Proliferation Treaty) and/or conforms only to some degree in a way that is considered significant or important by regime members.<br>1 = Behavior does not conform at all: The actor does not conform with the regime's rules to any significant or important degree.<br>6 = Don't know" |
| Decntrl_Mon | "Are there procedures for reviewing implementation formally or not formally established in | Recoded from the IRD: 1 if any of the following, 0 if none<br>– "Information gathering for broad assessment without evaluating performance/compliance of individual parties" |

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| | the regime's constitutive provisions?" | – "Information from third parties on implementation by other parties"<br>– "Information gathering for assessment of performance and compliance of individual parties<br>– Review and broad assessment of the regime by the supreme decisionmaking body"<br>– "Review and broad assessment of the regime by bodies delegated by parties to make decisions or recommendations"<br>– "Review of member performance/compliance by the supreme decisionmaking body"<br>– "Review of member performance/compliance by bodies delegated by parties to make decisions or recommendations"<br>– "Recommendation/implementation of responses to inadequate performance by the supreme decisionmaking body"<br>– "Recommendation/implementation of responses to inadequate performance by bodies delegated by parties" |
| Enforcement | "What formal compliance mechanisms are provided for in the regime's constitutive provisions to achieve compliance?" | Recoded from the IRD: 1 if any of the following, 0 if none<br>– "Suspension of membership rights"<br>– "Exclusion from membership"<br>– "Imposition of military punishments"<br>– "Imposition of financial/economic punishments"<br>– "Dissolution of linkages" |
| Management | "What formal compliance mechanisms are provided for in the regime's constitutive provisions to achieve compliance?" | Recoded from the IRD: 1 if any of the following, 0 if none<br>– "Issuance of notices of violations"<br>– "Support for capacity building to enhance compliance"<br>– "Granting of a transition period to achieve compliance"<br>– "Additional compliance mechanisms, if applicable"*<br>(*all mechanisms mentioned here fell into the management<br>category) |
| Nmbr_States | "How many nations were regarded as being important because of their role in causing the problem?" | "0 = Not applicable<br>1 = 1-5<br>2 = 6-15<br>3 = 16-30<br>4 = 31-60<br>5 = 60-120<br>6 = More than 120<br>7 = Don't know" |
| NonMember | "Are there state or non-state actors that are important in terms of the problem to be solved but that are not members of the regime?" | "0 = Not applicable<br>1 = No<br>2 = Yes<br>3 = Don't know" |

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|---|---|---|
| Pollution | Not part of the IRD: Is the problem a resource extraction or pollution problem? | Not part of the IRD, for coding see A 2.2.<br>1 = Pollution,<br>0 = Resource Extraction |
| PrbImprove | "How did the state of the world change during this period with respect to the problems addressed by the regime?" | "0 = Not applicable<br>1 = The problem worsened considerably: During this period, a considerable change occurred towards (further) deterioration of the problem (e.g., problem of regional arms control: strong one-sided armament puts an aggressive state into the role of a regional power (Nazi Germany in the 1930s) or produces strong arms race with neighboring states).<br>2 = The problem worsened slightly: During this period, a slight change occurred towards (further) deterioration of the problem (e.g, problem of preventing diffusion of nuclear weapons: The diffusion of nuclear weapons could not be controlled and the number of nuclear powers increased).<br>3 = The problem stayed the same<br>4 = The problem improved slightly: During this period, a slight change occurred towards (further) improvement of the problem (e.g., problem of an independent Palestinian state:<br>In the first half of the 1990s, peace talks among Israel, the Arab states, and the PLO produced some progress with regard to the relationships among the parties).<br>5 = The problem improved considerably: During this stage, a considerable change occurred with regard to (further) improvement of the problem (e.g., human rights problems between East and West: As a consequence of the dissolution of the former Soviet Empire in Eastern Europe, basic human rights like freedom of speech or association are no longer conflictual issues between East and West).<br>6 = Don't know" |
| PrbUndrstd | Was the nature of the problem well understood? | Inversion of the IRD scale:<br>"0 = Not applicable<br>5 = Very strongly established understanding: There was general consensus regarding nature, causes, and consequences of the problem, as well as regarding solutions and what should be maximized in the issue area.<br>4 = Strongly established understanding: Between 1 and 3 on the scale.<br>3 = Partially established understanding: Consensus was partially achieved, either by consensus on some but not all of the different variables (nature, causes, and consequences of the problem as well as solutions and what should be maximized in the issue area) or by generally growing, but still not fully developed, consensus on all of the different variables.<br>2 = Low established understanding: Between 3 and 5 on the scale.<br>1 = Not at all established: Understanding was not established with regard to nature, causes, and |

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| | | consequences of the problem, or to solutions or what should be maximized in the issue area.<br>6 = Don't know." |
| Rule_Depth | Is the regime shallow or deep as measured by the density and specificity of its rules? | "1 = Very shallow: Compared to the density of rules considered necessary for managing the problems in the issue area, the regime comprises only a very limited number of rules, and/or established rules are rather weak compared to the specificity of the rules considered necessary for managing the problems in the issue area (e.g. the 1979 Bonn Convention on the Conservation of Migratory Species of Wild Animals is a very shallow regime with a very limited number of weak rules).<br>2 = Shallow: Between 1 and 3 on the scale.<br>3 = Medium: Compared to the density of rules considered necessary for managing the problems in the issue area, the regime comprises a sizable number of rules to manage the problem and/or established rules have developed some strength compared to the specificity of the rules considered necessary for managing the problems in the issue area.<br>4 = Deep: Between 3 and 5 on the scale.<br>5 = Very deep: Compared to the density of rules considered necessary for managing the problems in the issue area, the regime comprises a very comprehensive set of rules and/or established rules are rather strong compared to the specificity of the rules considered necessary for managing the problems in the issue area [e.g., the adjustments and amendments to the Montreal Protocol (1987) adopted in London (1990) and Copenhagen (1992) led to a rather deep regime with comprehensive and strong rules].<br>6 = Don't know" |

A 2.2. Coding of the variable "Pollution"

| **Observation** | **Resource Extraction Problem/Pollution Problem** |
|---|---|
| 1. Whaling Regime 1946-1982 | Resource Extraction Problem |
| 2. Whaling Regime 1982-1998 | Resource Extraction Problem |
| 3. LRTAP Convention 1979-1982 | Pollution Problem |
| 4. First Sulphur Protocol 1985-1998 (to the LRTAP Convention) | Pollution Problem |
| 5. NOx Protocol 1988-1998 (to the LRTAP Convention) | Pollution Problem |
| 6. VOCs Protocol 1991-1998 (to the LRTAP Convention) | Pollution Problem |
| 7. Conservation of Seals 1972-1980 (sub-case of the Antarctic Regime) | Resource Extraction Problem |

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| 8. Conservation of Seals 1980s (sub-case of the Antarctic Regime) | Resource Extraction Problem |
| 9. Conservation of Seals 1989/91-1998 (sub-case of the Antarctic Regime) | Resource Extraction Problem |
| 10. Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), 1980s | Resource Extraction Problem |
| 11. CCAMLR 1989/91-1998 | Resource Extraction Problem |
| 12. Protocol on Environmental Protection (1991-1998) | Pollution Problem |
| 13. Montreal Protocol 1987-1990 (to the Vienna Convention) | Pollution Problem |
| 14. London Amendment 1990-1998 (to the Vienna Convention) | Pollution Problem |
| 15. Chloride Pollution Convention 1976-1998 (regarding the Rhine river) | Pollution Problem |
| 16. Chemical Pollution Convention 1976-1998 (regarding the Rhine river) | Pollution Problem |
| 17. Ecosystem/Salmon (RAP) 1987-1998 (regarding the Rhine river) | Pollution Problem |
| 18. General Management of Fisheries in the South Pacific Region 1979-1982 | Resource Extraction Problem |
| 19. General Management of Fisheries in the South Pacific Region 1982-1995/1997 | Resource Extraction Problem |
| 20. General Management of Fisheries in the South Pacific Region 1995/1997-1998 | Resource Extraction Problem |
| 21. Regulations for all Sources of Marine Pollution 1974-1992 (sub-case of the Baltic Sea Regime) | Pollution Problem |
| 22. Regulations for all Sources of Marine Pollution 1992-1998 (sub-case of the Baltic Sea Regime) | Pollution Problem |
| 23. Nature Conservation (1992-1998) (sub-case of the Baltic Sea Regime) | Pollution Problem |
| 24. Norwegian-Russian Cooperation on Fisheries in the Barents Sea Region 1975-1998 | Resource Extraction Problem |
| 25. Oslo Convention/Paris Convention 1972/74-1984 (sub-case of the North Sea Regime) | Pollution Problem |
| 26. OSCOM/PARCOM/OSPAR 1984/92-1998 (sub-case of the North Sea Regime) | Pollution Problem |
| 27. UNFCCC 1992-1997 | Pollution Problem |
| 28. Kyoto Protocol to UNFCCC 1997-1998 | Pollution Problem |
| 29. Danube River Protection 1985-1991 | Pollution Problem |
| 30. Danube River Protection 1991-1994 | Pollution Problem |
| 31. Danube River Protection 1994-1998 | Pollution Problem |

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| 32. Great Lakes Water Quality 1972-1978 | Pollution Problem |
| 33. Great Lakes Water Quality 1978-1998 | Pollution Problem |
| 34. Great Lakes Water Quantity 1972-1978 | Resource Extraction Problem |
| 35. Great Lakes Water Quantity 1978-1998 | Resource Extraction Problem |
| 36. Oil Pollution Convention 1954-1978 | Pollution Problem |
| 37. MARPOL Convention 1973/78-1998 | Pollution Problem |
| 38. Inter-American-Tropical Tuna Commission (1949-1976) | Resource Extraction Problem |
| 39. Inter-American-Tropical Tuna Commission (1976-1998) | Resource Extraction Problem |
| 40. Conservation and Management of Dolphins (1976-1998) (part of the Inter-American-Tropical Tuna Commission) | Resource Extraction Problem |
| 41. Wastes and Substances the Dumping of which is Prohibited 1972-1991 (London Convention Regime) | Pollution Problem |
| 42. Wastes and Substances the Dumping of which is Prohibited 1991-1998 (London Convention Regime) | Pollution Problem |
| 43. Wastes and Substances which, in Principle, may be Dumped 1972-1991 (London Convention Regime) | Pollution Problem |
| 44. Wastes and Substances which, in Principle, may be Dumped 1991-1998 (London Convention Regime) | Pollution Problem |
| 45. Regulation of Incineration at Sea 1978-1991 (London Convention Regime) | Pollution Problem |
| 46. Regulation of Incineration at Sea 1991-1998 (London Convention Regime) | Pollution Problem |
| 47. International Commission for the Conservation of Atlantic Tunas Convention (1966-1998) | Resource Extraction Problem |
| 48. Bucharest Convention and Protocols for the Protection of the Black Sea against Pollution (1992-1998) | Pollution Problem |