



The Ozone Secretariat

Administering the Vienna Convention and the Montreal Protocol on Substances that Deplete the Ozone Layer

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The Global Governance Project is a joint research programme of eleven European research institutions. It seeks to advance understanding of the new actors, institutions and mechanisms of global governance, especially in the field of sustainable development.

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Abstract

Formally attached to the United Nations Environment Programme (UNEP), the Ozone Secretariat is a typical environmental treaty secretariat that serves both the Conference of Parties of the 1985 Vienna Convention on the Protection of the Ozone Layer and the Meeting of the Parties of the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. The latter is considered one of the most effective multilateral environmental treaties to date, which makes the question for the secretariat's contribution to this end particularly interesting. Indeed, the Ozone Secretariat enjoys a remarkable reputation among parties as a neutral and efficient facilitator of international ozone politics. Its overall influences are moderate, yet noteworthy given its miniscule size. In particular, it can be shown that cognitive and normative influences of the Ozone Secretariat can be attributed to the limited saliency of the ozone problem as perceived by governments on the one hand and the activities of a problem-committed, dedicated staff and leadership within the secretariat on the other hand. In a view of the increasingly complex procedural arrangements relating to the phase-out obligations under the Montreal Protocol and its various amendments, the technocratic expertise available in the Ozone Secretariat is second to none and has become a major source of authority for the organization. Thereby, the secretariat's influence vis-à-vis national delegates in COP or MOP negotiations is considerable, even as it is perceived as a largely technocratic servant to the parties.

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Foreword

This working paper was written as part of the Global Governance Project, a joint research programme of eleven European research institutions that seeks to advance understanding of the new actors, institutions and mechanisms of global governance. While we address the phenomenon of global governance in general, most of our research projects focus on global environmental change and governance for sustainable development. The Project is co-ordinated by the Department of Environmental Policy Analysis of the Institute for Environmental Studies at the Vrije Universiteit Amsterdam and includes associate faculty members and research fellows from eleven European institutions: Science Po Bordeaux, Bremen University, Freie Universität Berlin (Environmental Policy Research Centre), The Fridtjof Nansen Institute Oslo, London School of Economics and Political Science, Lund University, Oldenburg University, Potsdam Institute for Climate Impact Research, Vrije Universiteit Amsterdam, Vrije Universiteit Brussel (Institute for European Studies) and Wageningen University (Environmental Policy Group).

Analytically, we define global governance by three criteria, which also shape the research groups within the Project. First, we see global governance as characterised by the increasing participation of actors other than states, ranging from private actors such as multinational corporations and (networks of) scientists and environmentalists to public non-state actors such as intergovernmental organisations ('multiactor governance'). These new actors of global governance are the focus of our research group MANUS—Managers of Global Change.

Second, we see global governance as marked by new mechanisms of organisation such as public-private and private-private rule-making and implementation partnerships, alongside the traditional system of legal treaties negotiated by states. This is the focus of our research group MECGLO—New Mechanisms of Global Governance.

Third, we see global governance as characterised by different layers and clusters of rule-making and rule-implementation, both vertically between supranational, international, national and subnational layers of authority ('multilevel governance') and horizontally between different parallel rule-making systems. This stands at the centre of our research group MOSAIC—'Multiple Options, Solutions and Approaches: Institutional Interplay and Conflict'.

Comments on this working paper, as well as on the other activities of the Global Governance Project, are highly welcome. We believe that understanding global governance is only feasible through joint effort of colleagues from various backgrounds and from all regions of the world. We look forward to your response.

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Introduction

The international regime for the protection of the stratospheric ozone layer is considered one of the success story in international environmental politics. The literature on its emergence, evolution and effectiveness is abundant and has arguably been a catalyst for the study of international environmental regimes.¹ However, few scholars have systematically looked at the role of the international secretariat that administers the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer, that is the United Nations Environment Programme's ozone secretariat in Nairobi. While other explanatory factors may be more significant in explaining the regimes' overall success, it is intriguing still that hardly anyone looked at the role of the bureaucracy serving the parties to the Montreal Protocol for some two decades now. Even Edward Parson's (2003) *Protecting the Ozone Layer*—arguably the most thorough analysis of the ozone regime available to date—draws hardly on insights from the ozone secretariat.²

The general relevance of the ozone secretariat has addressed in a section in Jorgen Wettstad's (2002) case study on the effectiveness of the Montreal Protocol. Penelope Canan and Nancy Reichman (2002), who have approached the ozone regime from a sociological perspective, account for the treaty secretariat as one component in a complex network of "ozone connections". Moreover, the United Nations' inside account of ozone layer protection unsurprisingly stresses the conducive role of the United Nations Environment Programme and its ozone secretariat (Andersen and Sarma 2002). Not least, the ozone secretariat has been included as one of five cases in Rosemary Sandford's (1994) comparative study of environmental treaty secretariats (see also Sandford 1992, 1996). Finally, this author employed examples from the ozone secretariat and the secretariat of the UN Convention to Combat Desertification to discuss the "bureaucratic authority" of intergovernmental secretariats (Bauer 2006).

It is indeed plausible to assume that the secretariat, small as it may be, has contributed to the overall performance of the regime, "perhaps more so than envisioned in the regime-creation phase" (Wettstad 2002, 162). Hence, I will trace in this paper where, how and to what extent the work of the ozone secretariat has yielded a meaningful influence with regard to the outcomes of the overall regime. This endeavor is complicated by the complex composition of the ozone regime's numerous treaties, institutional arrangements and actors involved therein as well as the ozone secretariat's peculiar working relationship with its organizational base, the secretariat of the United Nations Environment Programme.

¹ For comprehensive assessments and further references see the United Nations' own account (Andersen and Sarma 2002) and the seminal volume of Edward A. Parson (2003); for early case studies of ozone politics with a lasting impact on the study of international regimes see, in particular, Young (1989) and Haas (1992).

² His impressive list of interviewees covers for 124 interviews over an eleven-year time-span (1990-2001), but encompasses merely two UNEP officers (see Parson 2003, 281-284).

The ozone secretariat is by far the smallest bureaucracy in the sample of the MANUS project on intergovernmental environmental bureaucracies. It is attached to the United Nations Environment Programme and serves two major multilateral environmental agreements. Yet, the considerable funds that governments provide to implement these are administered by a separate organization, that is the Multilateral Fund for the Implementation of the Montreal Protocol (MPMLF), which has its own little secretariat. Hence, we would hardly expect the ozone secretariat to have a big impact on the ways of international ozone politics. If at all—given the technical specificity of the ozone problem and the advanced institutional arrangements that result from it—we should expect the ozone secretariat to make a difference in dealing with expert knowledge in a manner that may affect the international ozone discourse and international cooperation. Conversely, the miniscule bureaucracy can hardly be expected to directly change the behavior of governments or business actors or to provide them with capacities they would otherwise not develop.

Since 1987, the secretariat is responsible for the administration of both the international legal framework that is the Vienna Convention on the Protection of the Ozone Layer and the more specific provisions of the Montreal Protocol on Substances that Deplete the Ozone Layer. However, in an attempt to keep the analysis focused, the statements made in this case study refer to the administration of the Montreal Protocol unless the Vienna Convention is explicitly mentioned, too.

Considering the overall research framework of the MANUS project, there are two outstanding aspects in the case of the ozone secretariat. One is the ozone secretariat's formal status, namely its organizational connection to the United Nations Environment Programme (UNEP). On the one hand, that the ozone secretariat may be perceived as an extension of the UNEP rather than as a bureaucracy in its own right might be found to lower its standing vis-à-vis governments. On the other hand, it could be assumed that the authority of its international civil servants is enhanced precisely because they are part of a larger UN agency with considerable clout in the various forums of international environmental governance. Notably, it is the UNEP Executive Director who represents the ozone secretariat vis-à-vis the United Nations Secretary-General and the United Nations General Assembly. This institutional conundrum notwithstanding, the ozone secretariat emerged as distinct enough a bureaucratic entity with its own executive secretary and it will thus be analytically treated as an intergovernmental secretariat in its own right.

A second peculiarity, which is a methodological rather than an analytical challenge, is a problem of scale. With merely six to eight program officers, including the executive secretary and its deputy, the ozone secretariat is a very small bureaucracy. In spite of the principle feasibility of small-n analysis, the explanatory power of some analytical

categories that are entailed in the project's overall case study design are thus reduced to anecdotal information in this particular case.³

Analytical Framework

This research is part of the comparative research project MANUS—*Managers of Global Change*, which studies the influence of international bureaucracies in global environmental governance. This paper thus follows the overall analytical framework that has been developed by the MANUS project team (Biermann and Bauer 2005, Biermann and Siebenhüner 2007). The MANUS project distinguishes the influence of international bureaucracies in three dimensions: cognitive, normative, and executive. Bureaucracies may act as “knowledge-brokers” that gather, synthesize, process, and disseminate scientific or other forms of knowledge and change the knowledge or belief systems of other actors (cognitive dimension). They may perform as “negotiation-facilitators” that create, support, and shape norm-building processes for issue-specific international cooperation and can thus influence the outcomes of international cooperation (normative dimension). And they may operate as “capacity-builders” that assist countries in their efforts to implement international agreements and thereby help countries to comply with international rules or even shape domestic policies (executive dimension).

To explain any observed cognitive, normative, or executive influences, this paper explores the explanatory potential of three groups of variables that have been identified in the MANUS project as affecting the capability of international bureaucracies to change the behavior of other actors: *polity*, *problem structure*, and *people and procedures*. These factors have been derived from different bodies of literature, namely international relations theory, organizational theories and management studies (see in detail Biermann and Bauer 2005; Biermann and Siebenhüner 2007). *Polity* refers to the formal structures, the legal and institutional setting within which international bureaucracies operate, as well as the competencies and resources at the secretariat's command. *Problem structure* refers to the stakes and costs involved in addressing or not addressing a given problem, its saliency and urgency, and its complexity in terms of the availability and feasibility of solutions. *People and procedures* comprises variables such as *organizational culture*, that captures the processes of decision-making and the professional cultures and backgrounds of the staff members in the international bureaucracy, *organizational expertise*, that is the ability of international bureaucracies to generate and process knowledge and *organizational leadership*, that is the specific behavior of staff members, in particular of the executive level, vis-à-vis external actors.

³ This needs to be considered, for instance, when the secretariat is credited for low levels of hierarchy and swift internal decision-making.

Structure and Activities of the Ozone Secretariat

The international regime for the protection of the stratospheric ozone layer builds on a multilateral environmental agreement typical for international environmental politics of the 1980s (see Sandford 1994). Both the Vienna Convention and the Montreal Protocol explicitly provide for a secretariat to administer the regime's implementation, namely "to organize future meetings, prepare and transmit reports, and perform functions assigned to it by any future protocols" (Downie 1995: 179). The bureaucracy that results from these provisions is one component of the overall ozone regime that has developed since the mid-1970s and also comprises, among other components, the legal framework of the Vienna Convention and the Montreal Protocol plus its London, Copenhagen, Montreal and Beijing amendments, an Open Ended Working Group of the Parties, a variety of expert panels such as the Technological and Economic Assessment Panel (TEAP) and the Multilateral Fund (MPMLF).

It was established in the Vienna Convention that the secretariat be hosted by the United Nations Environment Programme as a distinct entity that is answerable to the convention's conference of parties. However, the ozone secretariat is often perceived as a subordinate unit of the UNEP, and the formal legal relationship between the two is hard to grasp. In practice, the ozone secretariat formally reports to the UN General Assembly through the UNEP Executive Director and official communication with parties or publications of the ozone secretariat formally come under the UNEP label. Secretariats of other multilateral environmental agreements, such as the one serving the Convention on Biological Diversity or the Convention on International Trade in Endangered Species (CITES), operate under similar formal arrangements, but are more easily recognized as entities of their own, if only for the marked difference that they are hosted outside the UNEP headquarters. Moreover, the biodiversity secretariat features a logo of its own, whereas the ozone secretariat makes do with the UNEP emblem. The latter is consequently not only supervised by the UNEP but also relies on the UNEP secretariat and the United Nations Offices at Nairobi (UNON) for conference services and administrative assistance. UNEP officials are eager to emphasize that the UNEP is indeed catering for the ozone secretariat and that its own Coordinating Committee on the Ozone Layer, established in 1977 in accordance with the World Plan of Action on the Ozone Layer, effectively constituted the secretariat's institutional predecessor.⁴

The set-up of the ozone secretariat is simple. Each program officer basically represents what would be one functional unit or division at bigger international bureaucracies; the executive secretary and its deputy constitute the secretariat management. They supervise one senior legal officer, one senior scientific affairs officer, one administrative officer and one information and communications officer. In 2004 two more program offi-

⁴ Wettestad (2002: 161) suggests that the establishment of the ozone secretariat was a negotiated compromise between those who would have favored to bestow the administration of the Vienna Convention upon the World Meteorological Organization, which is predominantly staffed with scientists, and those who wanted the UNEP to perform the job, an organization that is shaped by comparatively "political" UN career officers.

cers have been seconded to strengthen the secretariat, one covering for monitoring and compliance, the other serving as a database manager. The parties' decision to approve these additional posts has been greeted by the secretariat management with satisfaction. It is perceived as an overdue step that acknowledges the ever increasing workload resulting from the different reporting schemes for the consecutive amendments to the Montreal Protocol.⁵ In sum with its general support staff the ozone secretariat now occupies eighteen people, all of which are formally employees of the United Nations Environment Programme. At the helm of the secretariat, Marco Gonzalez succeeded Madhava Sarma in 2002 to become its third executive secretary.⁶

The budget of the secretariat amounts to USD 1.3 million (1999) with respect to administering the Vienna Convention and an additional annual average of some USD 3 million to cover for its activities related to the Montreal Protocol. With these resources—which are different from the multi-million dollar Multilateral Fund⁷—the ozone secretariat administers formal conferences and meetings of the parties and its subsidiary bodies, the Open-ended Working Group as well as informal consultative meetings and public outreach measures. The major share of the secretariat's budget is spent on conference services, which include the organization and financing of the travels of developing country delegates. Hence, only 10-15% of the budget remain for non-conference activities.⁸

Other than conference management, the secretariat provides technical advice for the parties and drafts decisions as well as treaties and amendments on their behalf. Moreover, it convenes review panels and coordinates the reporting and compliance issues that the parties have committed themselves to.

The Influence of the Ozone Secretariat

Cognitive Influence

The framing of “ozone discourses” (Litfin 1994) that was pivotal in bringing about the contractual environment of the ozone regime was dominated by situational factors—notably the discovery of a substantial thinning of the stratospheric ozone layer (“ozone hole”)—and the epistemic community involved in that very discourse (Haas 1992; see also Parson 2003: 84). Scientists and civil servants of the United Nations Environment Programme, the World Meteorological Organization (WMO), the British Antarctic Survey and not least the United States' NASA all were part of this years before the eventual

⁵ Own interview with the Deputy Executive Secretary, Nairobi, 30 September 2003.

⁶ Sarma served the Vienna Convention and the Montreal Protocol from 1987 to 2000. He had followed Mostafa Tolba who, as the then incumbent UNEP Executive Director, was acting as the Vienna Conventions first executive officer. Deputy Executive Secretary Michael Graber served as Acting Executive Secretary prior to Marco Gonzalez' arrival in 2002.

⁷ Up to 2002 the MPMLF disbursed roughly USD 1.5 billion to over 100 developing countries. At its fourteenth Meeting of the Parties, which convened in Rome in 2002, governments agreed to replenish the MPMLF with USD 573 million for the 2003-2005 triennium (IISD 2003: 4). For details on the set-up and role of the Multilateral Fund see Biermann (1997).

⁸ Own interview at the ozone secretariat, Nairobi, 30 September 2003.

establishment of the ozone secretariat. Yet, the ozone secretariat continues to play an important role in keeping the issue of ozone depletion on the agenda, notably vis-à-vis a “consider-it-done”-mentality that has taken hold amongst parties in a view of the protocol’s successes and the lobbying efforts of industrial interest groups. For instance, business organizations such as the California Strawberry Association and professional greenkeepers of golf courses successfully incited the US government to seek ever more “critical use exemptions” for profitable ozone destroying products such as methyl bromides. In this respect, the Montreal Protocol’s success is its weakness. Media attention to the problem has dropped dramatically since the late 1980s and early 1990s, and environmental NGOs, most of which typically depend on media attention, have also turned to more visible issues to raise the funds on which they depend. Against this background, the potential relevance of the ozone secretariat in exposing a worrisome shift in the ozone discourse must not be underestimated. As the regulation of ozone depleting substances advances to ever more complex levels, it is a formidable challenge to maintain the attention of political decision-makers and to raise, again, the awareness for the vulnerability of the stratospheric protective shield amongst a wider public.⁹ Thus, the secretariat’s role in shaping the discourse by brokering complex knowledge to all kinds of stakeholders is hardly less important today than it was in the regime creation phase, when – according to U.S. chief negotiator Richard Benedick (1998) – the Vienna Convention would have been stillborn were it not for the intervention of the UNEP’s Ozone Unit.

Indeed, the secretariat is very active in terms of state-of-the-art knowledge dissemination and information brokering. Its output is impressive and reaches from the provision of ready-to-go information kits over a freely available and regularly updated slide-presentation on the evolution of the regime to children’s comics and teaching kits. International Ozone Day, which is annually organized by the secretariat since 1988, has become one of the more noteworthy ones amongst the myriad “world days” under the banner of the United Nations.¹⁰ Not least, it seeks the limelight by presenting the Outstanding National Ozone Units Award for which parties can compete by presenting their work in implementing the Montreal Protocol and protecting the ozone layer.

Not least, beyond keeping governments’ general attention, today as much as in the early days of the regime, many of the informal meetings that convene in order to facilitate decision-making are based on the specific knowledge that is provided for by the secretariat’s officers.¹¹

Normative Influence

There is no doubt that the ozone secretariat has furthered international cooperation under the Montreal Protocol on Substances that Deplete the Ozone Layer. For one, the secretariat provides advice and support for national ozone officers to help them raising awareness within their countries and to advance the implementation of international commitments on the ground.¹² As the status of implementation positively feeds back

⁹ Own interview at the ozone secretariat, Nairobi, 5 October 2006.

¹⁰ Own interview at the ozone secretariat, Nairobi, 6 October 2003.

¹¹ Own interview with the Executive Secretary, Nairobi, 26 September 2003; own interview at the ozone secretariat, Nairobi, 5 October 2006.

¹² Own interview with the Executive Secretary, Nairobi, 26 September 2003.

with the advancement of the overall regime, this facilitates international cooperation quite significantly. Not least, it promotes the ratification of progressive amendments to the Montreal Protocol in as much as it helps parties to live up to current commitments.¹³

It is an institutional peculiarity of the ozone regime that there are various numbers of parties to the protocol and each of its amendments. While there is almost universal membership to the Vienna Convention, and all but eleven countries have ratified the Montreal Protocol, membership is less with each succeeding amendment. In detail, 179 out of 189 parties to the Montreal Protocol have so far ratified the 1990 London Amendment, 168 the 1993 Copenhagen Amendment, 136 the 1998 Montreal Amendment and 100 the 2000 Beijing Amendment (UNEP 2005: 3). This renders the administration of reporting requirements and the necessary provisions for meetings of the parties much more complex and labor-intensive than compared to other multilateral environmental agreements. Indeed, this remains a severe impediment for the efficiency of meetings and compounds the workload for the secretariat until all amendments are ratified by all parties. For the time being, however, each amendment of the Montreal Protocol essentially has to be dealt with like a convention in its own right.¹⁴ Thus, the secretariat has a stake in convincing parties to ratify all amendments and can even refer to its formal mandate to invite non-parties to meetings and to provide them with the appropriate information (UNEP 2003: 344).

Another issue is the negotiation of Critical Use Nominations (CUNs) and Critical Use Exemptions (CUEs), which regulate the domestic production and consumption of ozone depleting substances that are subject to phase out. Decisions on critical uses are typically based on recommendations by the Technical and Economic Assessment Panel (TEAP), a subsidiary body of the conference of parties, and its subsidiary committees, such as the Methyl Bromide Technical Options Committee. Offering its own technical and procedural expertise the ozone secretariat was able to facilitate progress in deliberations within the TEAP on a number of occasions.¹⁵

Notably, the scientific and legal staff of the secretariat assist parties in identifying industrial branches or ozone depleting substances that may be critical but have not been regulated yet. These may then be tabled for consideration by the TEAP. However, this is even more vigorously pursued by nongovernmental organizations such as Greenpeace International or the Environmental Intelligence Agency.¹⁶ Once the parties have decided on critical use exemptions, the ozone secretariat is again involved through the administration of the respective reporting requirements. However, it is the parties that report to the secretariat, which ultimately leaves control of information at the hands of national governments. For instance, the U.S. administration has repeatedly caused out-

¹³ Because, if they are in arrears with the implementation of one amendment they will be hesitant to commit to successive obligations; own interview with the Deputy Executive Secretary, ozone secretariat, 30 September 2003.

¹⁴ Own interview at the ozone secretariat, Nairobi, 7 October 2003.

¹⁵ Own interview at the ozone secretariat, Nairobi, 6 October 2003 and 5 October 2006.

¹⁶ Personal communication at exMOP-1, Montréal, 24-26 March 2004; see also *Earth Negotiations Bulletin*, 29 March 2004 (IISD 2004).

rage among party delegations by bluntly obscuring and withholding data of its methyl bromide producing companies (IISD 2004).¹⁷

Executive Influence

The successful development of technical and financial capacities in developing countries, based on an unprecedented willingness of major developed country parties to mobilize resources at a scale of billions of dollars, is a major reason for the achievements of the Vienna Convention and the Montreal Protocol. However, the administration of these substantive resources is the domain of the Multilateral Fund and, to some extent, of the Global Environment Facility, both of which are institutionally detached from the ozone secretariat.

The implementation of capacity building activities under the Montreal Protocol are basically the domain of four implementing agencies: the World Bank, the United Nations Industrial Development Organization (UNIDO), the UN Development Programme and, to a lesser extent, the UNEP's Ozone Action Programme, which is located at its Paris-based Division of Technology, Industry and Economics (DTIE). It is these international bureaucracies that brought about the installation of so-called Ozone Units in the capitals in the developing world. These are small administrative units—usually linked to the national environment ministry—with staff trained and financed by the aforementioned implementing agencies to draft and implement national programs on the phase-out of ozone depleting substances and eventually setting the stage for emission-control programs in more than one hundred countries (see Biermann 1997 on details). The Ozone Units have thus acquired a quasi-diplomatic status regarding the communication flows between the ozone secretariat and the parties. Officers in Nairobi emphasized that the overall achievements of the Montreal Protocol would not be conceivable without the provision of these effective interlinkages between national levels and the international regime through the Ozone Units and the ozone secretariat.¹⁸

As for the contribution by the ozone secretariat itself, there is no mandate for the ozone secretariat to build technical or financial capacities, and its capacity to build institutional capacities is also limited, not least by lack of personnel. Indeed, the ozone secretariat could hardly deploy full-fledged missions or allow for program officers to conduct training sessions even if it wanted to.

However, the executive secretary notes that the secretariat does occasionally provide workshops as well as support to many networks that are crucial in disseminating knowledge and building capacity.¹⁹ In this respect, one senior officer provided concrete examples of contributing in person to regional network workshops in developing countries. Such meetings convene regularly in developing country regions in order to prepare the technical experts from national ozone units for upcoming conferences such as the annual Meeting of the Parties or the Open-Ended Working Group. These officers provide the background information for their national delegates and thus function as intermediaries between the international processes and policy-makers at the domestic

¹⁷ In the meantime, however, a U.S. court-ruling requires the U.S. government to disclose the respective information; own interview at the ozone secretariat, Nairobi, 5 October 2006.

¹⁸ Own interviews at the ozone secretariat, Nairobi, 30 September, 1 and 6 October 2003.

¹⁹ Own interview with the Executive Secretary, Nairobi, 26 September 2003.

level. Participation in such regional network conferences offers an opportunity for the secretariat to clarify to the domestic ozone officers the wider political implications of their technical briefs.²⁰ Ultimately, such workshops enable the secretariat to narrow the gaps at the domestic levels between the rather apolitical experts that care for the subject matter of ozone policy implementation, on the one hand, and political negotiators who represent national interests in the intergovernmental forums of ozone politics on the other hand. Other than many national representatives, the secretariat's officers are in the position to flag crucial issues and to extract the right pieces out of the massive information that is brought to it by the parties. This however, needs to be done in a cautious, strictly non-instructive manner. Again, it is emphasized that the secretariat always remains neutral and does not take sides but "play the role that governments want us to play". The trick, as one officer put it, is to actively clarify important issues without being perceived as giving advice, because the parties would not like to be advised by the secretariat, at least not in public forums such as regional conferences.²¹

In sum, however, while participation in regional workshops and the practical assistance that the ozone secretariat provides for parties in order to meet the complex reporting requirements of the protocol and its various amendments must not go unnoticed, it does hardly qualify as a capacity builder in a strict sense.

Explaining the Influence

Problem Structure

Of course, the ozone secretariat's potential to influence regime outcomes is constrained or enabled by external factors, notably the complexity of the problem at stake and political or other contextual contingencies in which all of the regime's stakeholders are embedded. In the literature scrutinizing the success of the ozone regime, the specific characteristics of stratospheric ozone layer depletion have been attributed with particular explanatory power. In opposition to many other environmental problems, and despite evident variation in terms of vulnerability around the world, ozone depletion is a genuine global commons problem that directly affects the functioning of the atmosphere and thereby indirectly all flora and fauna on the planet. In short, a depleted ozone layer leaves everyone worse off. As no country or region could gain from an increase in harmful ultraviolet radiation, concepts of "winners" and "losers" are irrelevant (Wettstad 2002: 156).

This insight, of course, does not equal consensus and swift cooperation in international politics. Leaving initial uncertainty with regard to the scope and complexity of the environmental threat aside, two major factors were responsible for the contentiousness of the issue in international politics: the economic importance of CFCs and other ozone depleting substances for powerful chemical industries and national economies in Europe and Northern America, and a gross imbalance of cause-and-effect matters along the North-South divide. While the former has been largely ameliorated during the process of regime formation as it boiled down to manageable questions of economic

²⁰ Own interviews at the ozone secretariat, Nairobi, 30 September and 6 October 2003.

²¹ Own interview at the ozone secretariat, Nairobi, 6 October 2003.

competitiveness, the latter remains to be a bone of contention and infringes upon the overall success of the regime to protect the ozone layer. Indeed, it appears as the main obstacle to ensuring “smooth sailing with regard to complete problem solving” (Wettestad 2002: 167) of an otherwise exceptionally effective regime. This problem is further intensified by the fact that the countries in transition of Middle and Eastern Europe bear a closer resemblance to developing countries than to industrialized countries as far as their capacities to comply with the Montreal Protocol are concerned.²²

Effective international regulation was further helped by the genuine concern that was raised amongst governments in the industrialized world. Adverse health effects—notably the increased risk of skin cancer and eye cataracts caused by higher levels of ultraviolet radiation in consequence of ozone layer depletion—received a great deal of public attention in the developed world and required politicians to respond to the fears of their electorate. Many analysts have emphasized the importance of the discovery of the ozone hole which served as a “smoking gun” for the advocates of a ban on CFCs vis-à-vis skeptical decision-makers, notably amongst the conservative governments of Germany and the United Kingdom (see, for instance, Litfin 1994; Benedick 1998).

Polity

Unsurprisingly, autonomy is small in the case of the ozone secretariat. Being at the service of two distinct governing bodies, the conference and the meeting of the parties respectively, and being subordinate to the United Nations Environment Programme, which in itself bears limited formal autonomy as a mere programme, the room for independent maneuvering is limited indeed. Likewise, no lever—financial or otherwise—is found at the hands of the executive secretary who heads a bureaucracy that was designed in a purely technocratic manner and that at first sight seems to fully meet the realist ideal of an epiphenomenal instrument of inter-state cooperation.

Moreover, the resources of the ozone secretariat are modest. Staff is stretched thin as a few program officers struggle to handle all the requirements coming out of the various party meetings and in relation to the several amendments of the Montreal Protocol. Financially, little resources are available for strategic expenditures with preparation and servicing of the numerous party and committee meetings accounting for roughly ninety per cent of the annual budget (see above).

Yet, there is some room for influence which stems from the secretariat’s thick embeddedness within the regime. In spite of parties’ unwillingness to expand the secretariat’s competencies, e.g. by creating a distinct organization to administer the Multilateral Fund, its executives took great care to install the ozone secretariat as an efficient hub of the overall ozone regime. As such, the secretariat is credited for smooth cooperation with parties around the globe. To this end it aptly employs its interlinkages with altogether 110 National Ozone Units that have been created following the ratification of the Montreal Protocol. The resulting network provides for efficient communication flows between the national authorities that are responsible for the on-the-ground implementation of the Montreal Protocol and the regime’s switchboard that is the ozone

²² This particular problem has been Solomonically addressed by making these countries’ efforts to phase out ozone depleting substances eligible for funding through the Global Environment Facility. The Multilateral Fund thus remains a preserve of developing countries.

secretariat, which ultimately feeds back into the intergovernmental processes. This is appreciated in particular by civil servants in developing country parties, who, in a number of cases, depend on the institutional and technical assistance provided by the ozone secretariat for lack of own administrative capacities, notably when it comes to the processing of national reports.

People and Procedures

To actually exploit the limited room for influence that opens itself to the ozone secretariat, people and procedures offer the key explanations. Notably, this relates to the expertise that is vested in the bureaucracy, small as it may be, and its leadership, which has been exemplary on many accounts. For both the organizational expertise and the organizational leadership to flourish, the organizational culture of the ozone secretariat has been conducive.

ORGANIZATIONAL CULTURE

The latter is best describes as a technocratic organizational culture that builds on a strong in-house expertise of both scientific and political aspects of the protection of the stratospheric ozone layer. It is further characterized by the intimately small size of the ozone secretariat, which grants close working relationships between officers, “short ways” and a flat hierarchy. Although there is a formal bureaucratic structure, several officers stated that top-down hierarchy would hardly be felt in their everyday work and thereby positively distinguish their workplace from other agencies they knew within the UN system. Hence, a good “team spirit” generally prevails in the secretariat as occasional internal difficulties would mostly be handled informally and constructively, and information flows would be quick. This was also felt to warrant efficiency in the performance of the secretariat’s tasks, though it was also noted that the stretching thin of its small staff would at times inhibit efficiency.

To complement the assessment of the ozone secretariat’s organizational culture, I noted a remarkable level of identification with the objectives of the Montreal Protocol amongst professional staff and, in particular, a strong sense of pride regarding the secretariat’s good reputation among parties. The latter seemed to be fuelled, not least, by an awareness for the difficulties supposedly experienced by colleagues in other UN secretariats.

ORGANIZATIONAL EXPERTISE

If it comes to technical, legal and even political knowledge relating to any of the ozone treaties, the expertise available within the ozone secretariat is probably second to none. National bureaucrats responsible for the implementation of the Montreal Protocol often find themselves overwhelmed with the ever more complex requirements of the protocol and its various amendments.²³ Many thus rely on advice from the secretariat and appreciate the practical help provided by the “ozone officers” in Nairobi. This service function of the secretariat is particularly important for developing country administra-

²³ On the specific requirements of the Montreal Protocol including its amendments see the handbook that is published and regularly updated by the ozone secretariat (UNEP 2003).

tors, whose domestic capacities to meet reporting requirements and other treaty obligations are severely limited. As the ultimate institutional memory of the regime and the main provider of general information and technical advice, the ozone secretariat can thus directly influence how compliance issues are handled at the domestic level. Secretariat officers themselves invariably emphasize that they are mere service providers whose advice would always and exclusively serve the letters of the treaty as agreed by the parties. Yet, their advice is essential to the actions of those who depend on it. Indeed, it epitomizes rational-legal authority in Max Weber's original understanding of bureaucratic rule.

Beyond direct advice to national administrators, the delicate issue of drafting reports and decisions on behalf of the meeting of the parties is worth noting. The executive secretary emphasized that *drafts* are by definition only that, and that they would not bear any relevance for the parties unless they themselves adopt them. He vigorously downplayed the role of the secretariat and stressed that only the very letters of the formal decisions that may eventually come out of a meeting of the parties would matter in terms of international law.²⁴

However, several program officers indicated that by acting as the institutional memory of the ozone regime and by acquiring levels of technical knowledge that would be superior to those of most party delegates, the significance of documents drafted by the secretariat were not to be underestimated.²⁵ Quite explicitly, it has been argued that in acknowledgement of the profound expertise embodied by the ozone secretariat, the drafts provided through it are widely perceived as authoritative. Accordingly, the wording of draft decisions or other documents that are put before the parties would be a significant source of influence. Notably, it was argued, secretariat officers are in a position to anticipate which bits in a draft decision or report will be controversial. Hence, it would be possible to phrase them in a manner that is palatable to governments or that may at times even slip the attention of delegates. Vice versa, the secretariat would be able to make sure that certain issues *will* receive the attention of delegates and thereby incite discussion even if interested governments would rather have the meeting of the parties ignore it. For instance, a provision may be included in a draft decision that requires the secretariat to monitor progress on the implementation of a certain obligation. If the report goes without amendments, the secretariat will eventually be mandated to make according inquiries at pursuant party meetings. If, however, some governments wish to exclude the monitoring provision, they will have to make an explicit effort to this end, which will raise the attention to the issue.²⁶

Moreover, it should prove particularly insightful to investigate the specific contributions of the ozone secretariat in the various expert panels and committees that serve as the consultative basis of most substantive negotiations in the ozone regime. As Karen Litfin (1994) has shown in her analysis of "ozone discourses", the interface of scientific expertise and intergovernmental cooperation has been crucial in shaping the ozone

²⁴ Own interview at the ozone secretariat, Nairobi, 6 October 2003.

²⁵ Own interviews at the ozone secretariat, Nairobi, 6 and 7 October 2003; for further anecdotal evidence see Churchill and Ulfstein (2000).

²⁶ Own interview at the ozone secretariat, Nairobi, 7 October 2003.

regime. The role of the ozone secretariat in providing for the Technical and Economic Assessment Panel would promise to be of particular interest in that respect.²⁷

ORGANIZATIONAL LEADERSHIP

Finally, a central means for the ozone secretariat to involve in ozone politics are its international civil servants and the diplomatic activities in which they engage. Throughout the history of the ozone regime, its executives have actively interfered with intergovernmental negotiations either to facilitate consensus among parties or to seek ways for them to comply with the commitments made under the Montreal Protocol. Naturally, the executive secretary of the ozone secretariat is at the forefront of such activities, but they may also involve the UNEP Executive Director or, on occasion, professional officers of the secretariat (for instance, if several break-out groups consult in parallel at a Meeting of the Parties).

Although it may by no means pressure parties, the ozone secretariat is ready to emphasize the adverse effects that one party dragging its feet can have on other parties, which are always wary to see free-riders benefit from their own commitment. Inclined to move things forward, the executive secretary has described the precautionary principle as an important “working tool” in this respect: “We are here to serve the parties’ will, but we are also *reminding them of their responsibilities*”.²⁸

Arguably, the diplomatic skills of the ozone secretariat’s top executives have brought about the most visible manifestations of its practical influence within the ozone regime. Both Mostafa Tolba and Madhava Sarma are commonly described as very proactive executive secretaries that have been influential in furthering both the institutionalization and implementation of international ozone politics. Numerous insiders to the Montreal Protocol have expressed the general importance for the secretariat to have a strong and proactive leadership in order to be effective; almost always they refer to either one or both of them in order to illustrate their point. According to one senior officer, both of them typically sought informal ways to incite the parties to eventually concede what they intended them to concede. In particular, they would often have succeeded in brokering consensus on controversial issues *before* formal negotiations between parties would begin. Conversely, the same officer argued, a laid-back or anxious executive secretary would have little grip on the ways in which intergovernmental negotiations evolve and would thus risk to diminish the regime’s progress.²⁹

Elsewhere, Joanna Depledge (2007) addressed the climate change negotiations to scrutinize the pivotal role of executive secretaries at conferences of parties by means of their direct interactions with the ever changing chairpersons. Although the specific relationship between secretariat executives and conference chairpersons was not systematically studied in this case study, it is reasonable to assume that similar mechanisms are at work every time the parties convene to attend to the progress of the Montreal Protocol.

²⁷ Own interview at the ozone secretariat, Nairobi, 6 October 2003 and 5 October 2006; an in-depth examination of the TEAP, however, was beyond the grasp of this study.

²⁸ Own interview with the Executive Secretary, Nairobi, 26 September 2003.

²⁹ Own interview at the ozone secretariat, Nairobi, 7 October 2003; similar, if typically more cautious statements were made by other officers that were interviewed at the ozone secretariat, Nairobi, 30 September, 1 and 6 October 2003, and 5 October 2006.

In fact, when I presented Depledge's findings during a follow-up interview and asked about parallels to the ozone negotiations, this was enthusiastically affirmed.³⁰

The crucial role of organizational leadership in ozone politics can be traced back until before the emergence of the permanent ozone secretariat when intergovernmental ozone negotiations were provided for by the Ozone Unit of the United Nations Environment Programme. Although scholars generally are reluctant to attribute great prominence to individual leadership in relation to other explanatory variables, the appraisal of Mostafa Tolba's contribution in furthering the formation of a substantive ozone regime is unanimous. Talking to participants of early ozone negotiations or screening the literature on the origins of the Vienna Convention, it is hard to avoid what leadership researcher Alan Bryman mocks as "hagiographic pen pictures of successful leaders" (1996: 288). In the world of ozone negotiators Tolba appears to enjoy a larger-than-life status in terms of charismatic leadership, diplomatic skill and personal authority. Peter M. Haas (1992: 194), for instance, praised him as "instrumental in hammering out the final compromises" pertaining to the Montreal Protocol, and to Oran Young (1991), Tolba exemplifies an ideal typical "entrepreneurial leader" who capitalized on individual skills and *ex officio* stature to substantially advance the cause of the ozone regime.³¹ Own communications with officers of the ozone secretariat and officials who have been involved with ozone negotiations acknowledge Young's caption, albeit with varying degrees of enthusiasm.³² Strikingly, Edward Parson (2003: 205) deemed it worth noting that a personal proposal of Tolba, which catered to the 1990 London session of the meeting of the parties was "unusually timid", thereby underscoring that usually he was quite the opposite.

Madhava Sarma, Tolba's successor and the first executive secretary of the new ozone secretariat in 1987, is also credited with strong leadership and effectively filling Tolba's footsteps. Like his predecessor, he has been described as a charismatic and skillful diplomat who was respected by industrialized and developing countries alike. In particular, he has been credited for breaking negotiation deadlocks through personal interventions that were crucial in bringing about ambitious amendments to the Montreal Protocol at various meetings of the parties. It does not diminish the genuine contributions of Sarma to note that his first years as executive secretary were facilitated by the fact that Tolba was still present in ozone politics as the UNEP's executive director.

As far as the new executive secretary is concerned, officers have been reluctant to compare him to his predecessors. For one, it was too early to pass a fair judgment at the time most interviews were undertaken (2003); secondly, the Montreal Protocol has entered a phase that is unlikely to see similarly groundbreaking developments as the 1980s and 1990s. It was noted, however, that Marco Gonzalez appears to prefer a comparatively cautious approach vis-à-vis the parties.³³

³⁰ Own interview at the ozone secretariat, Nairobi, 5 October 2006.

³¹ For further praise see the account of Richard Benedick (1998), who was the U.S. chief negotiator throughout Tolba's heyday, or Canan and Reichman's (2002: 48-52) caption of Tolba "at the intersection of history, biography and personality".

³² A few more critical narrators suggested that there have been difficulties, too, referring to a larger-than-life ego of the UNEP's longest serving Executive Director and a rather peculiar leadership style which is said to have resulted from it.

³³ Own interviews at the ozone secretariat, Nairobi, 6 October 2003 and 5 October 2006. In the more recent interview, it was suggested that Gonzalez' rather cautious stance might be linked to increased

Conclusion

This paper sought to investigate the ozone secretariat's contribution to the overall success of the international ozone regime. Major explanations for this success story thus far emphasize the influence of a strong epistemic community, the availability of, and business interests in, economically attractive technical solutions, genuine concern amongst decision-makers in powerful industrial countries, and the provision of authoritative leadership by committed individuals during the heyday of ozone negotiations. Given this set of profound explanatory factors, did the work of the ozone secretariat make any difference?

Following from this analysis, it did. In an unspectacular way, the ozone secretariat contributed to ozone politics by facilitating highly constructive intergovernmental negotiations – on stage and, crucially, behind the scenes. This was helped by the good reputation that the ozone secretariat enjoys amongst parties, which in turn reflects the successful realization of its core functions and in particular a record of smooth servicing of the parties. In the complex institutional web of international ozone politics, the ozone secretariat really is the hub.

From this vantage point, the institutional maze of the ozone regime and the complexity of the policy issues it is dealing with create opportunities for the ozone secretariat to influence ozone politics in spite of its miniscule size and modest resources. The potential stemming from the secretariat's thick embeddedness is aptly exploited, namely through the strong expertise vested in the bureaucracy and an organizational leadership that maintains a clever balance between keeping a low profile while consistently instigating parties to move ahead.

This organizational behavior was enabled, in particular, by the authoritative expertise represented by the organization as a whole as well as by its individual officers. Arguably, there are but few policymakers or implementers at domestic levels that could possibly match the secretariats' comprehensive grasp of the myriad legal and technical provisions surrounding the Montreal Protocol. Many national delegates will frankly admit that without the secretariat's able guidance they will be lost in translation.

Moreover, the secretariat is widely credited for its neutrality and professionalism as well as transparency in its activities. This is perceived as its most precious asset inside the secretariat in view of its standing vis-à-vis the parties. Accordingly, officers at all level emphasized the need to sustain this level of satisfaction among their "clients". Indeed, there was a sense of pride within the ozone secretariat pertaining to its smooth relations to parties in both industrial countries and developing countries. Thus, it has been argued inside the secretariat, it is to be seen as a reward for the secretariat's good performance that the parties approved of an additional two program officers, even at a time when there is a tendency to cut back on international civil servants.

While the challenge to halt ozone layer depletion is no longer in the limelight of international environmental politics, it seems, however, that the ozone secretariat is still required to oversee that governments keep dealing with it.

anxiety in a view of the U.S. administration, an issue that had even led, at one point, to tangible differences of opinion inside the secretariat.

References

- Andersen, Stephen O., and K. Madhava Sarma. 2002. *Protecting the Ozone Layer. The United Nations History*. London: Earthscan.
- Bauer, Steffen. 2006. Does bureaucracy really matter? The authority of intergovernmental treaty secretariats in global environmental politics. *Global Environmental Politics* 6 (1):23-49.
- Benedick, Richard E. 1998. *Ozone Diplomacy. New Directions in Safeguarding the Planet (enlarged edition)*. Cambridge, MA: Harvard University Press.
- Biermann, Frank. 1997. Financing Environmental Policies in the South: Experiences from the Multilateral Ozone Fund. *International Environmental Affairs* 9 (3):179-219.
- Biermann, Frank, and Steffen Bauer. 2005. *Managers of Global Governance. Assessing and Explaining the Influence of International Bureaucracies*. Edited by H. D. Sohn, *Global Governance Working Paper No. 15*. Amsterdam, Berlin, Oldenburg, Potsdam: The Global Governance Project.
- Biermann, Frank, and Bernd Siebenhüner. 2007. *The Influence of International Bureaucracies in Environmental Policy*. Edited by A. Mert, *Global Governance Working Paper Nr. 25*. Amsterdam, Berlin, Oldenburg, Potsdam: The Global Governance Project.
- Bryman, Alan. 1996. Leadership in Organizations. In *Handbook of Organization Studies*, edited by S. R. Clegg, C. Hardy and W. R. Nord. London: Sage.
- Canan, Penelope, and Nancy Reichman. 2002. *Ozone Connections. Expert Networks in Global Environmental Governance*. Sheffield, UK: Greenleaf.
- Churchill, Robin R., and Geir Ulfstein. 2000. Autonomous Institutional Arrangements: A Little-noticed Phenomenon in International Law. *American Journal of International Law* 94:623-659.
- Depledge, Joanna. 2007. A special relationship: chairpersons and the Secretariat in the climate change negotiations. *Global Environmental Politics* 7 (1):45-68.
- Downie, David Leonard. 1995. UNEP and the Montreal Protocol. In *International Organizations and Environmental Policy*, edited by R. V. Bartlett, P. A. Kurian and M. Malik. Westport, Conn.: Greenwood Press.
- Haas, Peter M. 1992. Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone. *International Organization* 46:187-224.
- IISD, International Institute for Sustainable Development. 2003. Summary of the Fifteenth Meeting of the Parties to the Montreal Protocol: 10 - 14 November 2003. *Earth Negotiations Bulletin*, 17 November.
- . 2004. Summary of Extraordinary Meeting of the Parties to the Montreal Protocol: 24-26 March 2004. *Earth Negotiations Bulletin*, 29 March 2004.
- Litfin, Karen T. 1994. *Ozone Discourses. Science and Politics in Global Environmental Cooperation*. Edited by H. Milner and J. G. Ruggie, *New Directions in World Politics*. New York: Columbia University Press.
- Parson, Edward A. 2003. *Protecting the Ozone Layer: Science and Strategy*. New York: Oxford University Press.
- Sandford, Rosemary. 1992. Secretariats and International Environmental Negotiations. Two New Models. In *International Environmental Treaty Making*, edited by L. E. Susskind, E. J. Dolin and J. W. Breslin. Cambridge, MA: Harvard Law School.
- . 1994. International Environmental Treaty Secretariats: Stage-Hands or Actors? In *Green Globe Yearbook of International Co-operation on Environment and Development 1994*, edited by H. O. Bergesen and G. Parmann. Oxford: Oxford University Press.
- . 1996. International Environmental Treaty Secretariats: A Case of Neglected Potential? *Environmental Impact Assessment Review* 16:3-12.
- UNEP, Ozone Secretariat. 2003. *Handbook for the International Treaties for the Protection of the Ozone Layer. The Vienna Convention (1985). The Montreal Protocol (1987). Sixth Edition*. Nairobi: UNEP.
- . 2005. Basic Facts and Data on the Science and Politics of Ozone Protection (Backgrounder). Nairobi: UNEP.
- Wettestad, Jorgen. 2002. The Vienna Convention and Montreal Protocol on Ozone-Layer Depletion. In *Explaining Regime Effectiveness: Confronting Theory with Evidence*, edited by E. L. Miles, A. Underdal and et al. Cambridge, MA: MIT Press.
- Young, Oran R. 1989. The Politics of International Regime Formation: Managing Natural Resources and the Environment. *International Organization* 43 (3):349-375.

———. 1991. Political leadership and regime formation: on the development of institutions in international society. *International Organization* 45 (3):281-308.

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- 4 *Global Environmental Change and the Nation State: Proceedings of the 2001 Berlin Conference on the Human Dimensions of Global Environmental Change*. Edited by Frank Biermann, Rainer Brohm and Klaus Dingwerth. PIK Report No 80. 2002.

Selected articles appeared as special issue of *Global Environmental Politics* 4: 1 (2004), 1–114 (edited by Frank Biermann and Klaus Dingwerth).

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Appeared revised in *Journal of World Trade* 35: 3 (2001), 421–48.