

Non-governmental organizations' influence on tackling black carbon in the shipping industry

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Abstract This paper reviews the achievements of some typical non-governmental organizations (NGOs) in reducing black carbon emissions from shipping which enjoy the consultative status offered by the International Maritime Organization. It discusses the roles of the specific NGOs in dealing with black carbon in the Arctic region from the perspective of global governance to gain insights to guide our involvements in the Arctic affairs and shipping in the region by taking the advantages of NGOs' influence on the proceedings of international negotiations, our national policy development, the improvement of industrial practices and public perceptions.

Keywords non-government organization, black carbon, Arctic governance, involvement

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1 Introduction

Black carbon is an important component of atmospheric aerosol, which is formed through the incomplete combustion of the carbonaceous substances and contributes to global warming by absorbing sunlight and heating the atmosphere.

Black carbon in atmospheric aerosol has a climate-forcing effect since it reduces the reflectivity of snow and ice and accelerates the melting process when it deposits on snow and ice. Therefore, the effect is more severe in the Arctic region than in mid- and low-latitude regions. According to the World Wide Fund for Nature (WWF) global impact report on Arctic climate^[1], average temperatures in the Arctic region will rise two times faster than those in other parts of the world, resulting in mass ice loss and influencing the weather and general circulation in the Arctic and surrounding areas. Climate change continues to pose a challenge to the Arctic marine environment, having disastrous effects on marine biological resources on a global scale, and on the lives and health of local residents. The International Maritime Organization (IMO) therefore called for tackling black carbon emissions in the Arctic region. Interested parties, including

non-governmental organizations (NGOs), have also played a significant role in advancing Arctic governance, especially that pertaining to black carbon emissions in the shipping industry.

2 NGOs' involvement in tackling black carbon emissions in the shipping industry

In addition to member states, NGOs granted consultative status by the IMO, collaborate with the IMO to combat black carbon emissions in the shipping industry.

These NGOs provide expertise and advice to the IMO, lending special knowledge in particular sectors to the Organization's involvements in manifold activities. They also represent large groups whose activities have an important and direct bearing on the work of the IMO.

NGOs of consultative status receive the provisional agendas for sessions of the Assembly, the Maritime Safety Committee, the Legal Committee, the Maritime Environmental Protection Committee, the Technical Cooperation Committee, the Facility Committee and the other organs of the IMO. They also have the right to submit

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written statements, usually in the form of proposals, on IMO agenda items of concern. These NGOs have the right to be represented by any observer at plenary Assembly meetings, where they can discuss matters of special interest with IMO's member states.

The advantages of NGOs lie in their constructive proposals, influential opinions, and expertise. The following will elaborate on the role of NGOs in tackling black carbon emissions in the shipping industry.

2.1 Friends of the Earth International

Discussions on the issue of black carbon emissions were initiated by Friends of the Earth International (FOEI). FOEI is a famous environmental NGO, founded by environmental groups from the United States, France, Sweden and the UK in 1971. FOEI considers environmental issues in their social and developmental contexts, and thus have an expansive scope of action and influence. FOEI is an international network of environmental organizations, rather than being a single, traditional close-knit organization, and many of its member organizations had existed before their participation in FOEI. Through this unique and diverse international forum, the member organizations of FOEI propose environmental initiatives^[2].

At the 58th meeting of the Maritime Environmental Protection Committee (MEPC) in October 2008, FOEI submitted a document (MEPC 58/INF.21)^[3], which summarized and analyzed the approaches to reducing emissions of climate-forcing agents in international shipping, including black carbon emissions. The proposal introduced a project entitled "Opportunities for Reducing Greenhouse Gas Emissions from Ships", which was commissioned by the Clean Air Task Force. The proposal immediately attracted the attention of the Eight Arctic Countries, whose northern territories are part of the Arctic region. As a result, at the 60th meeting of the MEPC in 2010, Norway, Sweden and the U.S. jointly submitted a document on the reduction of black carbon emissions from shipping in the Arctic^[4]. The document discussed the production of black carbon and included data on black carbon emissions from shipping and their impact on the Arctic climate and environment. This document also included several initial proposals for reducing black carbon emissions and invited the IMO to take action to that end.

One of the aims of FOEI is "to halt the climate degradation; to promote the utility of renewable energy; to bring about transformation towards sustainability within society; and to reduce the emissions of greenhouse gas". FOEI's black carbon campaign considers Arctic governance and sustainable development in the global context. According to FOEI, the Arctic region is the most ecologically vulnerable and seriously polluted region by black carbon, and the shipping industry is the main emitter of black carbon.

FOEI attaches great importance to the simultaneous development of grassroots activities as well as international initiatives and effective lobbying and coordination at the national and international levels in the process of environment

protection. During and after IMO discussions about the black carbon issue, FOEI proactively communicated with relevant member states of IMO through reports, intercessional communications and hazard analyses on black carbon emissions.

FOEI also attaches great importance to horizontal collaboration among grassroots and international organizations. FOEI's main aim is to mobilize people, calling on them to change their environmentally damaging habits and lifestyles. With the help of its supporters, FOEI puts pressure on decision-makers to take necessary measures to protect the environment; as such, the public advocacy role of NGOs, such as FOEI, cannot be ignored.

Due to the advocacy efforts of FOEI and relevant member states of the IMO, the 61st MEPC regarded the black carbon issue as an agenda item separate from other greenhouse gas issues. The MEPC called on stakeholders to submit concrete measures and suggestions to the committee on bulk liquids and other gases. FOEI would take further measures, including co-sponsoring some non-governmental organizations, such as the Clean Shipping Coalition (CSC) and the WWF, to submit proposals at the 62nd MEPC. Based on the proposed harm and control measures for black carbon emission, FOEI called on the IMO to provide a roadmap of compliance as well as guidelines on black carbon emission reduction, FOEI also suggested establishing an expert group on black carbon emissions (MEPC 62/4/16)^[5]. These examples indicate the strong item-building capacity of NGOs. Based on scientific proof, FOEI's continuous policy recommendations will be put forward to the participators of the governance, and interested parties from wider range will be mobilized to join in the governance of black carbon emission in the Arctic.

2.2 Clean shipping coalition

The CSC is the only NGO that focuses only on environmental problems caused by the shipping industry. It was granted observer status with consultative capacity by the IMO in June 2010. In the IMO, the CSC provides expertise and technical support to stakeholders, in compliance with international legislative procedures, which is conducive to enhancing environmental standards for international shipping. In recent years, the CSC played an important role in a number of IMO environmental issues; for example, the CSC developed rules for Particularly Sensitive Sea Areas, drafted amendments to Annex V of MARPOL, and contributed to the developments of IMO conventions, such as the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001, and the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004. In the most recent MEPC sessions, the CSC was actively involved in drafting the amendment to MARPOL Annex VI on emission control of SO_x and NO_x. In addition, the CSC participated in heated discussion on greenhouse gas emissions from the shipping industry and the energy efficiency of ships. The CSC

continues to be a vocal proponent of black carbon emission reduction.

At BLG 15 in February 2011, funded by the Clean Air Task Force (a member of the CSC), the CSC submitted an impact analysis report on shipping-related black carbon emissions in the Arctic, developed an Arctic Shipping Emission Inventory for organic carbon and sulfur oxide, and finalized the Steering Committee's assessment report on black carbon (BLG 15/INF.5)^[6]. This assessment report discussed the benefits of controlling black carbon emissions through technological means, thereby providing basic data for scientists and policy makers.

By effectively utilizing its specialists and scholars and its mobilizing capacity among environmental protection organizations, as well as funding key reports on black carbon emissions, the CSC makes meaningful contributions toward the goal of reducing black carbon emission from the shipping industry.

The CSC later referred its proposal to BLG 17, which mainly reviewed the Arctic Shipping Emission Inventory and updated the data on the melting sea ice in the Arctic (BLG 17/10/2)^[7]. The CSC also called attention to the vicious circle wherein the melting of the sea ice led to the opening of the Arctic sea route in 2012, which in turn led to more ships navigating in the Arctic passage, and more black carbon emissions, and finally to the deterioration of the climate and environment in the Arctic. Thus, the CSC urged the industry to take further measures to control and reduce black carbon emission. At MEPC 62, the CSC continued putting pressure on some NGOs to submit proposals to list the reduction of black carbon emissions from shipping industry as an agenda item in the MEPC work plan. A work plan including an agenda item on the reduction of black carbon emissions was eventually approved. This led to discussions on black carbon emissions from international shipping specifically, as well as the detection methods for black carbon in order to develop suitable control measures to mitigate the impact of black carbon emissions from the international shipping industry. These points were included in the CSC report to MEPC 65. Furthermore, these efforts set a concrete terms of reference for international negotiation and for discussing this issue in the future. NGOs such as the CSC have the necessary expertise, technical skill, and legal and diplomatic resources to play a decisive role in negotiations and furthering their interests through the development of relevant international instruments.

The strong influence of NGOs in dealing with black carbon emissions from the international shipping industry is rooted in human-oriented values, where the protection of people is the start and end point of dealing with problems. NGOs play the role as the spokesmen of human-oriented value in broadcasting concept, agglomerating the willpower of people and affecting the political aspiration of a sovereign state.

2.3 EUROMOT

Founded in 1991, the European Association of Internal

Combustion Engine Manufacturers (EUROMOT) aims to impart knowledge about internal combustion engines to managers, and to introduce reliable engine technology to be used in the development of environmentally friendly, highly efficient, and cost-effective products. EUROMOT jointly develops appropriate environmental policies at both the regional and global levels with industry associations to ensure sustainable development. Members of this association are the leading manufacturers of internal combustion engines, accounting for 85% of the European market share.

EUROMOT also plays an active role in the emission reduction of black carbon in the shipping industry. As this issue arises from the inadequate burning of carbon substances in engines, EUROMOT, as an equipment manufacturer, has taken it upon itself to reduce black carbon emissions through the technological improvement of internal combustion engine. After the work plan was established at MEPC 62, EUROMOT submitted a proposal to BLG 16 on the assessment of black carbon emissions from ships and potential emission reduction measures. At BLG 17, EUROMOT then suggested measuring black carbon emissions using a Filter Smoke Unit (FSN) (BLG17/10/1)^[8], which is a standardized optical measurement technique (ISO-10054). This method is simple and practical for application in ships. At the first session of the Sub-Committee on Pollution Prevention and Response (PPR1), the U.S. did not agree with EUROMOT's proposal, and proposed using a standard other than the FSN to measure the mass of black carbon emissions from shipping. However, EUROMOT insisted on using the simple, practical, and popular FSN method to identify equivalent black carbon. Norway agreed that the FSN was a possible control measure to reduce the impact of black carbon emissions in the Arctic. EUROMOT submitted documents (PPR 1/8/3)^[9] to propose a carbon elements detection method for samples of filtered particle matter. The PPR 1 listed FSN as one of the detection methods of black carbon. However, participants at the MEPC 67 failed to come to the final agreement on the definition of black carbon in the Arctic. At PPR 2, it was reported that the determination of black carbon would not be based on the FSN method, but it would be based on the work of Bond et al^[10], who defined black carbon as the carbon substances produced in the burning of carbon compound fuel, characterized by a carbon sphere with strong light absorption and resistance to solubility. This definition is widely recognized in the industry, and it is applicable not only to black carbon emission from shipping industry, but also to other sectors. EUROMOT plays a leading role in monitoring black carbon emission from the shipping industry, accomplishing its mission of giving impetus to sustainable development initiatives through the use of advanced technology.

3 NGOs' influence in tackling Arctic black carbon issue from the perspective of global governance

Arctic governance is rooted in the era of globalization,

focusing on global challenges and concerns. Globalization promotes the global interdependence and interaction, and the creation of demand for public products. The public products required for Arctic governance include the following categories: development, environmental protection, security, knowledge and technology. Given the advantages of NGOs listed above, NGOs can be leading providers of public products in the global arena.

Resolving conflicts between resource exploitation and ecological protection is one of the important aspects of Arctic governance. As mentioned above, black carbon emissions have an adverse impact on the Arctic climate, including the melting of sea ice, and deterioration of natural environment, all of which pose a serious threat to the ecological environment of human beings. These changes indicate to the international community that only under international cooperation and the participation of various actors can environment deterioration be mitigated and sustainable development be achieved.

As for Arctic governance and environmental protection, NGOs play a very important role. Although the rights and resources of these organizations are much more limited than those of sovereign states, these organizations have come to lead environmental and ecological governance initiatives in the Arctic, likely because they are able to capitalize on common value concepts and the participation of multiple parties^[1].

Climate change is a primary motivation for strengthening Arctic governance. NGOs have the important mission in raising awareness about the realities and effects of black carbon emissions on the entire planet through media promotion and social initiatives.

4 Role of NGOs in China's involvement in international maritime affairs

For China, NGOs of consultative status in the IMO can be trusted in international maritime negotiations. There are currently 18 NGOs in the global shipping field. Until 2014, 51% of the gross tonnage of the world's merchant ships belonged to Asian ship owners. Moreover, 16% of members of Baltic and International Maritime Council come from Asia, and 20% members of INTERTANKO are Asian ship owners. Therefore, China, through participation, can exert its influence on these NGOs to further seek common interests in the IMO. By benefiting from their media promotion and technology resources, China can better express its interests and expand its contributions to the whole shipping industry.

In a broad sense, international environmental NGOs play important roles in global governance in the Arctic region in terms of international negotiations, policy development, the improvement of industrial practices, and influencing public perceptions.

First, international environmental NGOs have a great impact on the proceedings of international negotiations beyond the shipping industry. Under the framework of the

United Nations, NGOs can share their professional opinions during the development of conventions and instruments. Climate change is driving international actors to get involved in Arctic governance. NGOs' professional opinions and advanced technical expertise offer them a voice in the international arena. China can join these organizations to present its industrial practices and interests in negotiations.

Second, international environmental NGOs have a great impact on the development and approval of national laws and regulations on environmental protection. Several international environmental NGOs have established agencies in China and may contribute to the development of national policy by donating funds and technology. As a developing country, China can make good use of these resources to build its capacity in terms of climate governance in the Arctic from both conceptual and technological perspectives.

Third, international environmental NGOs have a great impact on policies and practices for major industries such as the oil and gas, energy and transportation industries. Only through awareness and by changing their behaviors can targeted groups effectively get involved in climate governance in an environmentally friendly and sustainable way.

Fourth, international environmental NGOs have a great impact on public opinions can often put pressure on specific target groups. Therefore, China can exert its influence in the international community by taking advantage of NGOs' professional knowledge, their extensive memberships, political resources, and abundant funds.

China should regulate NGOs based in China through national laws and policies, as well as information collection and supervision in order to maximize their positive effects on the social progress in China. In this way, China can play a greater role in solving the global issues.

5 Summary

Black carbon is a target of climate governance in the Arctic. Among the interested parties to tackle this issue, international environmental NGOs exert great influence. As a major emitter of black carbon, the shipping industry needs to address the black carbon issues, with NGOs playing a major role. China should take advantage of NGOs' influence in the international arena to become more involved in global governance.

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References

- 1 World Wide Fund for Nature. Arctic climate feedbacks: global

- implications. WWF International Arctic Programme, 2009
- 2 Sun R. Introduction to friends of the earth international. *Int Inf Data*, 2003, (1): 36–38
 - 3 Friends of the Earth International. Opportunities for reducing greenhouse gas emissions from ships. MEPC 58/INF. 21, 2008.
 - 4 Norway, Sweden and United States. Reduction of emissions of black carbon from shipping in the Arctic. MEPC 60/4/24, 2010
 - 5 Clean Shipping Coalition (CSC), Friends of the Earth International (FOEI), Pacific Environment, et al. Reduction of emissions of black carbon from shipping in the high northern latitudes. MEPC 62/4/16, 2011
 - 6 Clean Shipping Coalition (CSC). Emissions inventory and analysis of impacts of short-lived climate forcing aerosols from international shipping activity in the Arctic. BLG 15/INF.5, 2010
 - 7 Clean Shipping Coalition (CSC). Comments on the progress in the Correspondence Group and the investigation of appropriate control measures (abatement technologies) to reduce Black Carbon emissions from international shipping. BLG 17/10/2, 2012
 - 8 EUROMOT. Proposal for a measurement method to determine Black Carbon emissions on test beds on board ships. BLG 17/10/1, 2012
 - 9 EUROMOT. Proposed measurement method for black carbon. PPR 1/8/3, 2013
 - 10 Canada. Definition and measurement of Black Carbon emissions from ships. PPR2/8, 2014
 - 11 Yang J. Discussion on Arctic Governance from a New Perspective. Beijing: Current Affairs Press, 2014 (in Chinese)