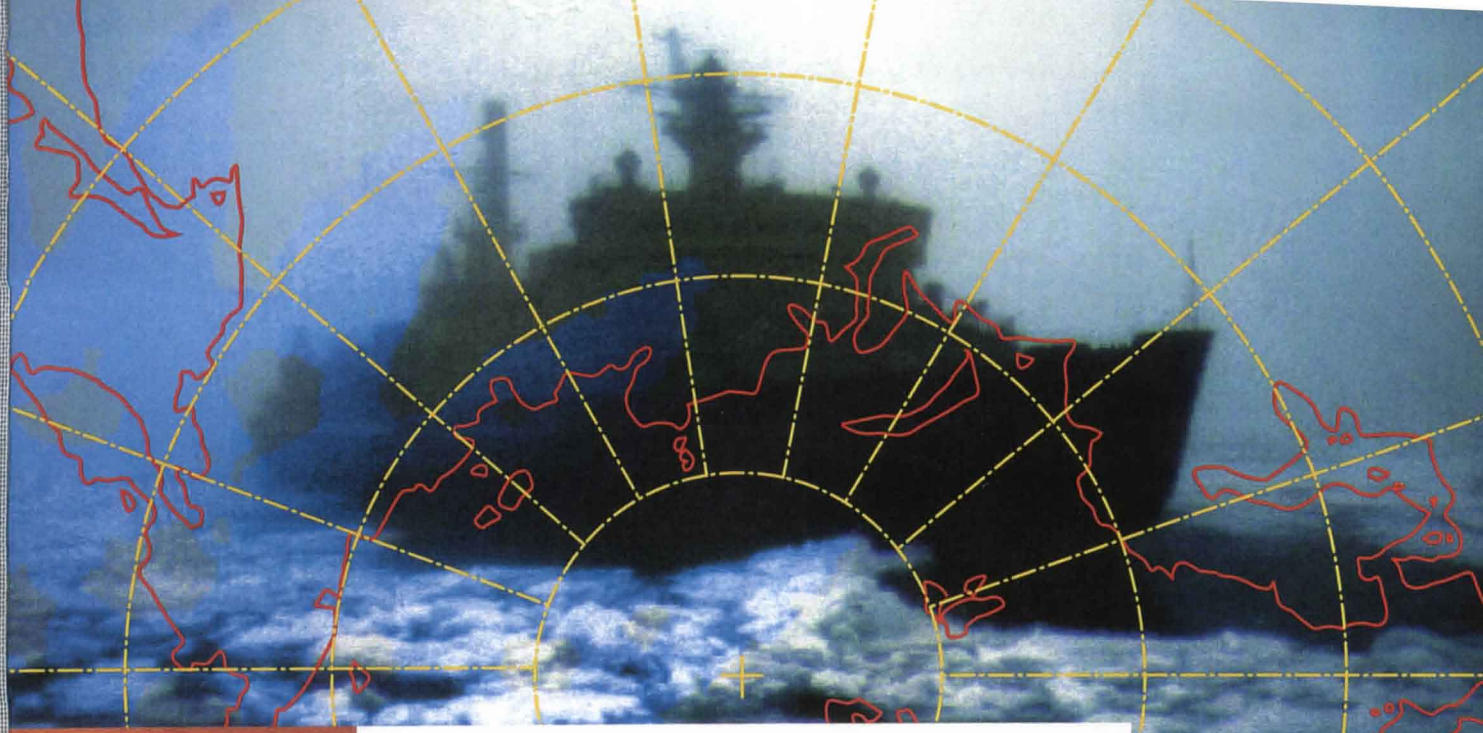

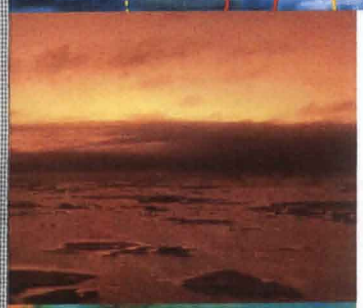

INSROP WORKING PAPER
NO. 13 - 1995, IV.2.1

The NSR in the Context of Arctic Military and Ecological (Environmental) Security

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Project 2.1: The NSR in the Context of Arctic Military and Ecological (Environmental) Security

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FOREWORD - INSROP WORKING PAPER

INSROP is a five-year multidisciplinary and multilateral research programme, the main phase of which commenced in June 1993. The three principal cooperating partners are **Central Marine Research & Design Institute (CNIIMF)**, St. Petersburg, Russia; **Ship and Ocean Foundation (SOF)**, Tokyo, Japan; and **Fridtjof Nansen Institute (FNI)**, Lysaker, Norway. The INSROP Secretariat is shared between CNIIMF and FNI and is located at FNI.

INSROP is split into four main projects: 1) Natural Conditions and Ice Navigation; 2) Environmental Factors; 3) Trade and Commercial Shipping Aspects of the NSR; and 4) Political, Legal and Strategic Factors. The aim of INSROP is to build up a knowledge base adequate to provide a foundation for long-term planning and decision-making by state agencies as well as private companies etc., for purposes of promoting rational decisionmaking concerning the use of the Northern Sea Route for transit and regional development.

INSROP is a direct result of the normalization of the international situation and the Murmansk initiatives of the former Soviet Union in 1987, when the readiness of the USSR to open the NSR for international shipping was officially declared. The Murmansk Initiatives enabled the continuation, expansion and intensification of traditional collaboration between the states in the Arctic, including safety and efficiency of shipping. Russia, being the successor state to the USSR, supports the Murmansk Initiatives. The initiatives stimulated contact and cooperation between CNIIMF and FNI in 1988 and resulted in a pilot study of the NSR in 1991. In 1992 SOF entered INSROP as a third partner on an equal basis with CNIIMF and FNI.

The complete series of publications may be obtained from the Fridtjof Nansen Institute.

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Project IV.2.1.

THE NSR IN THE CONTEXT OF ARCTIC MILITARY AND ECOLOGICAL (ENVIRONMENTAL) SECURITY

Alexei Roginko*

In recent years, the concept of *international environmental security* (IES) has emerged as a new reference point from which policy makers and scholars are able to frame issues related to global environmental degradation. Many of them have come to believe that the traditional concept of international security should be expanded to encompass economic, environmental, and cultural security as well as military security, suggesting that the various elements of security are so intimately interconnected that it is essential to make progress on several of these fronts at the same time (Young, 1989). Some such reasoning with respect to the Arctic has definitely appeared to inform the well-known President Gorbachev's Murmansk initiatives of 1987, reflecting an understanding that economic development and environmental protection are both, in considerable measure, contingent upon controlling the arms race.

The concept of environmental security and the related issues have already been extensively discussed in the research community. However, there are as yet no established definitions for this concept. There also remains a considerable controversy about its meaning and its relationship to older, more established notions of security. Vesa (1992) outlines at least three alternative views on the issue. The first one takes it that environmental security is concerned when some environment-related issues such as the struggle for scarce resources result in international tensions or even the actors' involvement in (armed) conflicts. The second alternative proceeds from the fact that some major new environmental problems (acid rain, global climate change, ozone depletion) pose qualitatively new threats to humankind, and as threats to survival are endangering environmental security. The third concept, initially introduced by the Brundtland Commission (WCED 1987) and Arthur Westing (see e.g. Westing 1989), defines environmental security in relationship to sustainable development; when the latter is endangered ("by excess", "beyond the carrying capacity"), an environmental issue becomes one

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of environmental security. The latter two approaches have many commonalties, and both require an acknowledgment that all humans exist on one planet and that all must help preserve its ability to sustain life[1].

However, regardless of the approach adopted, the obvious reason for placing environmental issues on the security agenda is the possible magnitude of the threats posed, and the need to mobilize urgent and unprecedented responses to them. The security label is a useful way both of signaling danger and of setting priority, and for this reason alone it is especially relevant to the environmental debates (Buzan, 1990).

The IES concept used in the current paper draws on the widely understood ideas of international strategic interdependence (in facing threats of nuclear war or economic collapse) to focus attention on the similarly shared exposure to threats from global environmental degradation. Implicit in the concept is a direct link to the conventional understanding of international security arising from the potential for conflict over resource use and environmental practices (Broadus and Vartanov, 1994: 5). More precisely, by IES we mean a state of international relations which provides for the preservation, rational use, renewal, and improvement of the environment, when interaction of all the members of the international community, and development of each of them, are not accompanied by an irreversible loss of natural resources and/or other changes in the biosphere harmful to various forms of life. IES requires elaboration and adoption of a global strategy as well as of a concept of legal, political and economic actions.

Although self-interested voluntary actions and agreements by sovereign states must provide the basis for environmental security, as they do for

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[1] A similar approach has been adopted by the CIS Inter-Parliamentary Assembly which, in a "recommended" legislative act subsequently supported by the Russian Federal Assembly, has defined environmental security as "the state of protectedness of a person, the society and the State from the effects of anthropogenic impact upon the natural environment, as well as from natural disasters and catastrophes... Environmental security in current conditions is regarded as an inalienable and important part of security of a person, the society and the State" (Recommended Legislative Act, 1992).

international security more generally, there is also an important place for constructive collective action and the progressive development of binding norms of general international environmental law (Broadus and Vartanov, 1994: 9). Though global and regional conventions now number over 120, they do not form an integrated system, being substantially different in their basis, membership, competence, etc. A new "environmental legal space" is evolving, with its basic principles being expressed in a set of norms, criteria and standards. These principles are being formulated through a synthesis of the fundamentals of international security with those of international environmental law. The United Nations has been instrumental in organizing broad agreement on a general set of principles that can help provide a normative foundation for enhanced environmental security. Among them is the well-known Principle 21 of the 1972 Stockholm Declaration on the Human Environment (reaffirmed as Principle 2 of the Rio Declaration), and a number of other principles of the Rio Declaration adopted by the 1992 UN Conference on Environment and Development (UNCED):

- States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate ... to develop further international law regarding liability and compensation for adverse effect of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction (Principle 13, an elaboration of Principle 22 of the 1972 Stockholm Declaration);

- States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith (Principle 19);

- Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary (Principle 24);

- States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations (Principle 26).

Codification of these principles in a comprehensive international legally binding convention would transform them into universally accepted norms of ecologically correct behavior of states and other actors (Timoshenko, 1989).

IES can be achieved and maintained through a patchwork of global and regional environmental management regimes, based initially upon the introduction of implementation strategies for the IES principles at the level of so-called international eco-geographical regions[2]. As the majority of transboundary problems are confined to their limits, such a level of international cooperation is especially effective. Of particularly high priority is the formation of IES regimes in those eco-geographical regions where environmental dynamics are either unique, or have global consequences. These conditions do appear to coincide in the Arctic.

The Arctic - the arena for IES

The notion of IES holds particular relevance in the Arctic regions for several reasons. The first involves the fragility of northern ecosystems and their extreme vulnerability to any human disturbance. Second, the significance of the area must be recognized in terms of its profound influence upon the global (or at least hemispheric) environmental processes (atmospheric and oceanic circulation, global warming, ozone layer depletion, etc.). Finally, a close relationship exists between environmental factors and strategic military objectives in the Arctic.

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[2] An international eco-geographical region is a geographical area characterized by a relatively homogenous natural environment, with the interaction of its constituent ecosystems spatially confined within its limits. The location of a region under the jurisdiction of two or more States necessitates the coordination of international efforts in resource management and environmental protection.

The role of the Arctic in global processes of oceanic and atmospheric circulation, in heat- and moisture exchange between these natural systems is extremely important. "The Arctic factor" is of utmost priority to the patterns of weather and climate dynamics of a global (or at least hemispheric) scale. Recent studies suggest that among the main factors accounting for the "greenhouse effect" are the changes in the albedo of the ice and water surface caused by continuous pollution of the Arctic and anthropogenic infringement of the integrity of soil microbic communities. Climatic changes caused by the "greenhouse effect" of Arctic origin would occur in the next few decades in Siberia, Alaska, Canada and Fennoscandia even if the rate of human activities is stabilized at a current level. According to various scenarios of global climatic change, the possible warming here may be substantially (2 to 2.4 times) greater than in other regions of the world. It can consequently lead to rapid ice melting and changes in ice cover, to ocean level rise and possibly other global consequences (Maxwell and Barry, 1989).

The warming trend might also have major implications for human activities in the Arctic. For example, offshore oil and gas development should become more viable in those areas where low temperature and sea ice have posed problems. On the other hand, onshore energy development could become more difficult and expensive in regions experiencing melting permafrost, affecting both existing developments and new construction activity. Marine transportation will benefit from an extended season of between six and eight weeks and from the reduced role of multi-year ice. Northern mines, forests and ports will become more exploitable as growth centers (Osherenko and Young, 1989). In other words, the effects of global warming on the Arctic might be multifaceted and are difficult to forecast at the current level of scientific knowledge.

Arctic nature is more sensitive to human pressure and less capable to self-restoration than other ecosystems. Life in the Arctic, in the conditions presented by a "tough" biotope, often exists close to the limits of that which is possible. Even slight pollution of the Arctic waters can be extremely serious due to a slowness of natural processes that determine the assimilative capacity of the marine environment. Particularly dangerous is the oil

pollution of the Arctic environment. Actually, a major oil tanker accident alone or a blow-out at an oil platform may drastically change the environmental situation in the entire Arctic Ocean.[3] The average yearly volume of oil spilled in the whole of the Arctic Ocean and its seas was recently roughly estimated at 400 tons a year, of which the former Soviet Union accounted for about a half (Futsaeter et al., 1991). However, this estimate clearly did not take into account the two largest oil spills which both occurred in Tyumen Province in western Siberia. In 1989 around 500,000 tons poured out in the south of the province. In May-June 1993 in the Khanty--Mansiysky National District an estimated 420,000 tons were spilt; much of this oil finished up in the Ob river, which flows into the Arctic Ocean. Neither accident was widely reported (Clarke, 1994).

The potential for a higher level of air pollution in the Arctic is also greater than at lower latitudes due to the fact that pollutants have a longer lifetime in the cold atmosphere. On land, regeneration is a protracted process because of the short growing season, and regrowth can take centuries.

The progressive degradation of the environmental situation in the region is to a large extent due to the impact of exogenous factors.[4] But no matter how significant are the effects of exogenous pollution on northern ecosystems, they are hardly comparable to those of the existing and potential economic

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[3] Between 1975 and 1985 there were already 175 accidental spills of hydrocarbons across the Arctic involving a total volume of 1.5 to 1.8 million liters, comprised of diesel oil, jet fuel, gasoline and crude oil (Packman and Shearer, 1988).

[4] For example, about 0.1 per cent of the total amount of sulfur oxides emitted annually by the industries of North America, Europe, and Asia, is deposited in the Arctic. The "imported" air pollution contributes to the formation of a so-called "arctic haze". Although a major part of this pollution is absorbed by the ocean, there is evidence of its negative impact on Arctic vegetation and other components of terrestrial ecosystems. The long- range transport of pollutants into the Arctic has led to the concentration of contaminants through the food chain up to fish and marine mammals. Eight groups of organochlorine substances, including PCBs, DDT, chlordane, hexachlorocyclohexane, dieldrin and toxaphene, have been found in ringed seals and polar bears. Between 1969 and 1984, levels of chlordane in polar bear fat increased four-fold and levels of other organochlorines increased two-fold (Packman and Shearer, 1988).

activities within the Arctic region itself. According to most experts, the main sources of pollution of the Arctic environment are shipping and transport of hazardous materials, exploration and exploitation of non-renewable fossil resources of the continental shelf, as well as industrial, agricultural, and municipal wastes entering the ocean through river runoff.[5] Because of the specific regional features of oceanic circulation and ice cover dynamics, the stability of ecosystems in the Arctic more than elsewhere depends on the environmental components of the regional states' economic policy, on their effectiveness and coordination.

With regard to *environmental risks posed by the continuing presence of military and naval forces in the Arctic*, three major issues should be outlined. First, it is the problem of environmental consequences of "usual", "normal" military presence and military preparations in the Arctic. Even during peacetime, these activities present a threat to the fragile Arctic nature and the human environment, and thereby to the everyday life of people, particularly the northern natives. Examples of such activities are military maneuvers disturbing fishing grounds and reindeer pastures and herds, noise from tree-top aircraft flights affecting people and animals etc.

The second issue is a high probability of the most dangerous category of military accidents - accidents (collisions, groundings, etc.) involving nuclear-powered and/or nuclear-armed vessels. This probability is particularly high in the Arctic since certain areas of the Arctic ocean and its adjacent seas (the GIUK gap, the Barents Sea etc.) are literally "packed" with nuclear submarines (Heininen, 1990). This was demonstrated in a dramatic fashion in April 1989 with the loss of a Soviet prototype *Mike*-class submarine *Komsomolets* in the Norwegian Sea and early in 1992, when US and Russian

[5] For example, the input of oil hydrocarbons to the Arctic ocean from river runoff is roughly estimated at about 200,000 tons a year (Futsaeter et al., 1991), which results in the increasing oil pollution of coastal waters. In the Kara Sea, for instance, during the winter of 1989 concentrations of oil hydrocarbons in surface waters averaged 30 mg per liter (reaching 90 mg/l in the Yenisei's and 100 mg/l in the Ob's estuaries), which is four times that in the most polluted rivers flowing into the North Sea (Melnikov et al., 1990).

nuclear submarines collided while on patrol in the Barents. Similar accidents will almost inevitably continue to occur in the future because, despite the end of the cold war, the Northern seas will long remain the area of US-Russian naval confrontation and deployment of SSBNs: as long as Russia remains a nuclear power, there will be a need for such deployments in the Arctic (Kroll, 1994). In fact, the Northern seas will probably be the last area in the world where deployed nuclear weapons will be found (Auffermann and Käkonen, 1991).

Acute public concern in the Nordic countries has been generated by the *Komsomolets* accident, since, as predicted by many experts and widely publicized in the media, twelve kilograms of plutonium-239 contained in two torpedo warheads of the sunken submarine could in the near future be eventually released into the marine environment if conservation (sealing) of the submarine is not accomplished, which in turn could result in radioactive contamination of several thousand square kilometers of the seabed in the area which accounts for 80 per cent of fish catches in the Norwegian Sea[6] (Baiduzhi 1994). At the same time, an authoritative international scientific conference on radioactive contamination of the oceans has concluded that submerged nuclear submarine reactors and weapons did not pose any "significant present or future threat to human health or the environment" (WHOI Conference Statement 1993). Still, taking into account a high degree of scientific uncertainty associated with long-term effects of low-dose radioactive pollution and the ongoing appearance of widely divergent statements as to the prospects of radioactive leakages from the submarine and especially their aftermaths[7], it seems justified to continue technologically complex and

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[6] It has been posited that plutonium in the warheads of *Komsomolets* torpedoes presents a much more potent environmental threat compared to cesium and strontium released as a result of nuclear tests or radioactive wastes dumping in the northern seas; the latter have a much shorter lifetime and are relatively harmless with respect to overall background radiation levels. All the nuclear weapons tests conducted at Novaya Zemlia produced just 100 Cu of plutonium compared to 430 Cu contained in the submarine's torpedoes (Baiduzhi 1994).

[7] For example, a publication in the official Russian daily *Rossiyskaia Gazeta*, quoting the Research Institute of the Russian Defense Ministry and the Arctic Center of Groningen University in Holland, stated that the richest fishing grounds in Europe would become closed for 6-7 centuries, and possible damage

extremely costly underwater operations aimed at containing possible leakages.

The third military-related environmental issue is radioactive contamination from atmospheric nuclear testings conducted in the Arctic in the fifties and in the beginning of the sixties[8], as well as from deliberate dumping of radioactive wastes in the northern seas by the Soviet/Russian military since the early 1960s in direct violation of the 1972 London Dumping Convention. The White Paper published by the governmental commission in 1993 admits that the biggest threat to the marine environment stems from the seven nuclear reactors containing processed nuclear fuel sunk in the Kara Sea during the 1960s. The authors of the report claim that metal containers encasing the reactors are subject to corrosion by sea water, and corroded containers can spring leaks after 10 years. Reinforced concrete containers last 30 years before being subject to leaking radionuclides into the sea. The paper also admits that currently "there is practically no system of supervising and controlling the state of radioactive objects dumped at sea" (Administration of the President..., 1993).[9]

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for Russian fisheries for the five-year period has been tentatively estimated by the Russian State Committee on Fisheries at about 3,500 billion rubles in 1993 prices (Kurchatov 1994). On the other hand, a recent report prepared by the Research Institute of the Norwegian Armed Forces asserts that radioactive leakages from the sunken submarine do not present any environmental threat (Zubko 1995).

[8] It has been made public in Russia that 77 nuclear explosions in Novaya Zemlya caused extensive contamination at the Chukotka Peninsula. The native Chukchi, whose diet is almost exclusively consists of reindeer meat, have about one hundred times higher concentration of Cs_{137} compared to other population groups. The result is a higher (two to ten times) cancer mortality rate among them compared to the national average (MacKenzie, 1989).

[9] While governmental officials proposed future monitoring at the dump sites that could pose a threat of nuclear radiation leaks, Russian military circles, and in particular the Atomic energy ministry, have recently tried to block further investigations, and succeeded in preventing international research expeditions from making further research on the dumping sites (InterPress Service, September 16, 1993).

Arctic economic development and domestic environmental protection strategies

Natural resource extraction and harvesting activities in the Arctic Basin - of hydrocarbons, minerals and marine species - represent the basis upon which the region's economic development will be built as well as the greatest threat to its environmental security. Management of the environmental risks associated with Arctic development has been difficult historically, for several reasons. Many of these are related to what O.R. Young and G. Osherenko have described as "internal colonialism", the inability of "Arctic peripheries" to influence key decisions regarding their economic and political destinies (Osherenko and Young, 1989). Hard evidence suggests that for both the USA and the Soviet Union/Russia, environmental protection efforts in the region have been inadequate to address the special requirements of the severe environment. Many commentators have begun to acknowledge publicly, for example, that after years of indifference under Soviet rule, reckless, aggressive exploitation of the northern environment by the industrial ministries has resulted in a deep conflict between the economic interests of the industrial civilization and the Arctic ecosystems functioning at critical levels (Roginko, 1993). In Alaska, disclosures in the wake of the *Exxon Valdez* disaster about management of the Alyeska consortium's pollution response program have revealed a wide range of deficiencies in planning, equipment deployment and program administration (State of Alaska, 1989).

Although *commercial shipping* today represents a relatively minor environmental threat to the Arctic ecosystems compared e.g. to fossil fuel extraction, the situation with oil pollution from vessels in the Arctic seas continues to aggravate. This is happening despite the entry into force of the Annex I to MARPOL 73/78 Convention, which in theory should have contributed to the reduction of operational discharges from ships. However, the volume of clandestine illegal discharges remains unknown and is probably not decreasing. Furthermore, even if the operational pollution has diminished, this decrease can in the nearest future be offset by a predicted growth of shipping along the NSR (Futsaeter et al., 1991). And even small increases in ship traffic along the NSR will heighten the risk of environmental degradation for large

areas of the Arctic[10]. The situation is aggravated by an almost total lack of waste oil reception facilities in place at Russian Arctic ports; nor have adequate oil spill contingency plans been established in the event of accidental discharges along the NSR (Latukhov 1990).

As to the integrated Russian development and environmental protection strategies for the Arctic, it is clear that they still have to be formulated. Historically, the dominant factors determining Soviet Arctic policies have been the military-strategic and the economic ones. The latter has been tied almost exclusively to the development of abundant mineral and fossil fuel resources in the area. The priority of the military factor in using the Arctic areas can be explained in terms of international relations in the region, which long before the World War 2 (and since the beginning of the Cold War in particular) have become involved in the sphere of military confrontation between the two opposing "socio-economic systems". As a result, the Arctic has been viewed in the USSR primarily in the light of strategic interests, and cooperation in economic, scientific and environmental fields has been accorded secondary, if any, priority (Vartanov & Roginko, 1990).

The Murmansk initiatives marked a turning point in Soviet Arctic policies. Their most striking feature, as already mentioned, was that they represented an authoritative exposition of a unified approach to Arctic policy by the Soviet Union, bringing together security, resources, scientific and environmental issues. Since the time of Murmansk speech the Arctic region has been accorded one of the highest priorities in the Soviet/Russian foreign policy in general, and the participation of the Soviet Union in international Arctic cooperation has markedly intensified.

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[10] The Arctic ocean's ice/snow cover has a high absorptive capacity for many pollutants, which can be a factor promoting their long-distance transfer. The general pattern of water and ice circulation in the basin is such that the path of pollutants from most of the possible pollution sources will run across almost the entire Arctic ocean. At low temperatures, destruction of pollutants is slow: they can therefore continue to move from the ice or snow into water throughout the entire period of time during which the ice drifts across the ocean.

Probably equally important, the Murmansk initiatives had an impact on the domestic dimension of the Soviet/Russian Arctic policy, changing the order of priorities in the use of Arctic resources and space. The need was realized for the Arctic policy to serve a variety of interests. If previously it had been designed primarily to address strategic, resource and, to a certain extent, scientific concerns, the new approach was marked by a clear-cut trend of a shift of priorities towards the social domain. A drastic increase in the importance of a socio-environmental sphere, accompanied by a relative reduction in the importance of strategic problems, have resulted in a certain leveling of the significance of various policy issues. One of the differences after the Murmansk initiatives was that the public forces representing social and environmental interests (including environmental NGOs, the aboriginal population, etc.) became a part of the decision-making process, or at least were allowed to supply modest inputs to the process (Vartanov, 1992).

However, with the advent of radical economic reforms in Russia, the commercial use of the Arctic resources (primarily fossil fuel) is clearly beginning to acquire a higher priority compared to eco-social aspects, because of the severe economic crisis in the country and the destructive character of economic "reforms" geared towards maximizing income from oil and gas exports to finance the budget deficit and luxury imports for the well-off at the expense of environmental devastation. So, while the end of the Cold War has brought unprecedented opportunities for addressing environmental problems in the Arctic, it has also given birth to new challenges to the Arctic environment connected with the increasing resource development as a consequence of the Russian push towards a market economy and the new joint East-West ventures (Caron, 1993). The magnitude of environmental threats associated with these developments has been vividly demonstrated by a disastrous series of oil spills in the Komi Republic, occurring because an oil pipeline was kept in service long after it was plainly in a dangerous condition. Even when the pipeline entered a phase of rapid disintegration (by September 6, 1994, 62 holes had been discovered!), Russian and Western oil firms kept pumping oil through it at high pressure (Clarke, 1994). As a result, an estimated 90,000-120,000 tons of oil leaked from defective pipelines, polluting the Pechora River basin which flows into the Arctic Ocean

and contaminating 45 to 65 hectares of pastures and swamps. The cost of the clean-up operation could run into hundreds of millions of dollars, provided that adequate funds are allocated from the budget.[11]

In addition to using worn-out pipelines, oil industry managers needing to maximize export sales have a strong inducement to keep pumping at full pressure. With the federal government, local authorities and company executives all sharing an interest in taking enormous risks, new disasters are inevitable. And as more and more pipelines reach a state of near-disintegration, the number of such catastrophes can only increase (Clarke, 1994). According to various estimates, 25 to 70 per cent of pipelines in Russia are overdue for replacement or in a positively dangerous condition (*Nezavisimaya Gazeta*, Dec. 28, 1994). The overall "technological" oil losses in Western Siberia alone are officially estimated at 1.8 to 15 million tons annually; of these, no less than 30 per cent end up in the aquatic environment (Poryadin, 1995). Greenpeace cites figures indicating that as much as 8-10 per cent of the oil pumped into Russian pipelines pours out en route, with annual flows into the environment ranging from 25 to 50 million tons (Clarke, 1994). If this information is anywhere near correct, many hundreds of square kilometers of Russian territory are rendered lifeless each year.

[11] Currently, the privatized "Komineft" oil company which operates the ruptured pipeline is close to bankruptcy: its outstanding payments to employees exceed 25 billion rubles ($5.5 m), and the expected coverage of environmental damage, currently estimated at 311 billion rubles (close to $70 m), will hardly improve its financial standing (*Nezavisimaya Gazeta*, Dec. 28, 1994)..

The emerging IES regime for the Arctic

The current level of the Arctic rim nations' cooperation aimed at combating common environmental threats is still inadequate to the degree of progressive degradation of the Arctic environment and the growing role of the region in natural and social processes of a global scale. The existing regional environmental cooperation regime is based on a number of universal conventions (which cover the Arctic along with other regions), as well as on bilateral agreements between the coastal states with a limited sphere of competence. However, a regional IES strategy aimed at counteracting major environmental threats is already beginning to evolve.

In January 1989, the government of Finland initiated a multilateral process aimed at reaching international agreement on cooperative action to protect the Arctic environment. Popularly known as the Finnish Initiative, it has produced in June 1991 the Declaration on the Protection of the Arctic Environment and the Arctic Environmental Protection Strategy (AEPS), a non-binding political declaration that commits the eight Arctic rim signatory nations to implement a four-point action program:

- an Arctic Monitoring and Assessment Program (AMAP) to monitor the effects of anthropogenic pollutants in the region through the establishment of an organizational task force;

- protection of the Arctic marine environment, using preventative and other measures, applied directly or through international organizations with regard to origin;

- establishment of a regional emergency prevention, preparedness and response capability, and;

- coordination of research and facilitation of data exchange on conservation of Arctic flora and fauna.

According to the Strategy document, the main pollution issues and

priorities to be addressed in protecting the Arctic environment are: persistent organic contaminants (which are mainly imported from outside the region), oil (mainly connected to shipping, oil production and, to a lesser extent, exploration activities), heavy metals (largely brought by long-range atmospheric transport, with the notable exceptions of the Kola Peninsula and Norilsk), noise, radioactivity, and acidification (again mostly transported through long-range atmospheric fluxes).

At this stage, reflecting the typically 'soft law' approach, the Declaration entails no legally-binding obligations on the signatories, although the document does include language that commits each party to 'full implementation and consideration of further measures to control pollutants and reduce their adverse effect on the Arctic environment' (Arctic Environmental Protection Strategy 1991). The progress of the Finnish initiative, then, should be viewed as preparatory, in effect laying the groundwork for an as-yet unidentified environment protection and management regime that might take a variety of forms.

A plausible model for the Rovaniemi process would be to follow a path already used by more than a hundred nations which, during the past 15 years, have established successful cooperation networks within ten marine regions of the globe under the auspices of the UNEP Oceans and Coastal Areas Program. That would imply elaboration of the intergovernmental *framework agreement* supplemented by additional protocols defining concrete obligations of states-parties. This method would enable the Arctic states to conclude initially an umbrella convention to be filled with detailed regulative substance later on. Such a form of cooperation would also be able to take full account of changing environmental conditions in the Arctic as well the emergence of new, previously unknown, environmental issues, combining a comprehensive approach with necessary flexibility and simplifying considerably the process of legal regulation. However, the direct UNEP involvement would hardly be necessary, taking into account a high level of the coastal states' economic and technological development.

Recent international conventions in force for the prevention of

pollution from ships do not ensure adequate protection of the vulnerable Arctic seas against operational discharges from ships, which is why an integral part of the Arctic environmental cooperation mechanism might be a regional *protocol on the safety of navigation and the protection of the Arctic marine environment*. In this protocol, states bordering the Arctic region would accept special responsibility for the safety of oil, chemicals, and gas transportation, and minimize the risks for accidents as well as prepare for combating pollution in all parts of the Arctic ocean.

The proposed protocol should in particular include establishment of uniform requirements for design, equipment, cargo limits and crewing standards for vessels navigating the ice-covered waters within 200-mile economic zones, with due regard to the interests of non-littoral countries; these requirements, however, may vary from region to region and from season to season depending on local situation, climatic and ice conditions, etc.

An Arctic-wide (or Arctic-wide plus major shipping states) level for the management of shipping in the Arctic is required for a number of reasons. The Arctic Ocean is the only marine region in the world where the coastal states have a legitimate right, in accordance with Article 234 of the 1982 UN. Law of the Sea Convention, to adopt and enforce more stringent domestic (compared to international) construction, equipment and crewing standards with respect to pollution control for the vessels operating within 200-mile exclusive economic zones. Under many scenarios for commercial arctic shipping, and particularly with the opening up of the Northern Sea Route (NSR) for international navigation, vessels would transit the territorial seas or EEZs of several arctic rim states, notably those of Norway, Russia, and perhaps Canada and the US. Moreover, non-arctic rim countries such as Germany or Japan, might be the controlling flag states for ships traversing the Arctic.

Vessels sailing the NSR will be subject to Russian environmental regulations, notably those enacted since the adoption of the "Regulations on navigation in the Northern Sea Route". Although it is unclear whether a commercial NSR service would ever include a transport link to a US destination port (in Alaska or the Pacific Northwest), all ships sailing that link would

be subject to double hull standards and other ship safety and design regulations imposed by the Oil Pollution Act of 1990, Port and Vessel Safety Act of 1978 and other applicable US statutes. When navigating in the Northwest Passage, the vessels would have to comply with the provisions of the Canadian Arctic Waters Pollution Prevention Act of 1970 and the ensuing domestic legislation to that effect. In other words, there is an obvious need for coordination of domestic vessels' manning, design, equipment and construction standards, as well as of their enforcement, among several Arctic nations. One of the possible solutions to this problem might be the establishment of a multilateral body with both advisory and regulatory authority (e.g. issuing "Arctic safety and pollution prevention certificates"), composed of personnel from the relevant government agencies (for a similar proposal concerning a bilateral US-Canadian commission, see Westermeyer & Goyal 1986).

Of course, cooperation under the proposed framework Convention would not be limited to prevention of pollution from ships. Other, no less important issues to be addressed in the relevant protocols might also include: coordinated measures to prevent pollution of northern seas as a result of exploration and exploitation of mineral resources of the continental shelf; cooperation on the establishment of reserves and protected land and sea areas as well as on the protection of rare and endangered species, on developing of ecologically sound land-use methods in the Arctic, on restoration of damaged landscapes etc.

It is also essential that the legitimate rights and concerns of Arctic native peoples are fully taken into account, including protection of marine and other resources upon which they depend for subsistence, and their active involvement (e.g. through the Inuit Circumpolar Conference) in preparation and implementation of any environmental regulation schemes in the Arctic is assured. The region's aboriginal people who have lived in harmony with their natural setting for ages, have much to contribute to achieving a sustained and equitable way of life in the Arctic (Osherenko and Young, 1989). Still, it remains unclear how this visible governmental initiative will mesh with the objectives and initiatives of the Arctic indigenous peoples, in particular the Inuit Circumpolar Conference and its Inuit Regional Conservation Strategy (see

Caron, 1993).

The adoption of the Strategy, despite its obvious shortcomings, is a very significant step in developing Arctic environmental cooperation. It is the first instrument covering all Arctic environmental protection issues, and, moreover, it contains a political commitment to reach the ongoing environmental protection regime in the Arctic. But perhaps the most important effect of the Rovaniemi process to date has been the initiation of substantial scientific knowledge-building activities (and the diffusion of ensuing knowledge) concerning the various causes of environmental damage and the various consequences of suspected pollutants, thus providing feedback for more accurate identification of problems for a collective response over time.[12] It is highly possible that this effect of the process, perhaps even more than the declaration as such, will prove to be the most important outcome of the Finnish initiative in the long run.

However, taking further steps may prove to be considerably more difficult compared to the initiation of the Rovaniemi process. Undertaking concrete legal commitments would mean reaching an agreement on binding rules, like establishing reductions on emissions of pollutants and the time limits to accomplish them (Elferink 1992). And if such an agreement is reached, the "Arctic Eight" will yet have to confront the issue of ensuing compliance with the strategy.

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[12] Of particular importance in this regard was the adoption of AMAP which was aimed at measuring the levels of pollutants and assess their effects on the various dimensions of the Arctic environment in order to provide the data needed for the relevant fora to develop a plan of action for reducing the pollution. The 1991 Rovaniemi conference considered a general plan to promote coordinated systematic monitoring of the Arctic environment. It was thought that such a system should build on Arctic monitoring systems already in place, yet also be compatible with monitoring efforts in Europe and North America and with those of the Global Environmental Monitoring System of UNEP. Indicative of the urgent need for more information and coordination of present data-gathering efforts was a new agreement reached at the second Ministerial meeting in Nuuk, Greenland in September 1993. The agreement concerned increased monitoring of certain areas in the Arctic where high concentrations of heavy metals, pesticides and other organic matters from industry in Europe, Russia, Asia and North America have been detected (Arctic Region... 1994).

At the same time other efforts, some paralleling the Finnish Initiative in time and scope, have added momentum to the program laid out in Rovaniemi. These include the proposed creation (still unrealized) of an International Arctic Council, an umbrella organization originally proposed by the Canadian government in November 1990. Its agenda might entail the implementation and coordinated management of collective action on a comprehensive set of existing regional initiatives, including environmental protection. It has been posited that the existence of a well-established forum of the type proposed would serve to energize the Rovaniemi process and provide the institutional structure necessary for effective implementation. Some observers have predicted that one of the likely outcomes of the Rovaniemi dialogue will be an expansion of the discussions to regional issues beyond environmental protection, a development that would mesh nicely with the broader organizational agenda of the council (Broadus and Vartanov 1994).

Another institutional development that can affect the pace of environmental progress in the region was the creation in October 1990 of the Northern Forum, a group of Arctic territorial governments[13] whose aims initially centered on regional economic development and the establishment of stronger commercial and trade ties among parties within the region, but recently have been expanded to encompass broader issues of ensuring sustainable development in the North. The major document of the Forum, the "Rovaniemi Code of Conduct" adopted in 1994, views protection of the Northern environment as a necessary prerequisite for economic, social, spiritual and environmental well-being of the Arctic population, declares joint collective property on the natural environment, while acknowledging priority rights of the native population (see Nikolayev 1994).

An important process complementary to the Finnish initiative and supporting the wider AEPS both at a declaratory and financial level, is the so-called Barents Region process, which culminated in the establishment (at

[13] Representing the state and provincial governments of Alaska, British Columbia, Alberta, Yukon, Northwest Territories, Quebec, Home Rule Government of Greenland, Lapland, Trondelag, Vasterbotten, Yakutia, Magadan Region, Jewish Autonomous Region, Sakhalin, Chukotka, Heilongjiang, and Hokkaido.

the Norwegian initiative) of the Council for the Barents/Euroarctic Region on January 11, 1993. The Council convenes at the level of foreign ministers, including representatives from Norway, Russia, Finland, Denmark, Iceland, and the European Union; its major tasks include development of cooperation and coordination of domestic efforts in the areas of economic and natural resources development, environmental protection, expansion of infrastructure and the protection of the rights of the indigenous population. The Council also includes a Working Group on the NSR, established at the initiative of Finland.

In the environmental field, the Council is especially concerned with the issue of radioactive contamination of the Barents and the Kara Seas resulting from military activities in the USSR/Russia. It has been acknowledged that Russia alone is currently unable to cope with the elimination of the effects of nuclear dumping in these seas, and the possibility of rendering assistance by other Nordic countries has been actively discussed. The Council therefore represents the first authoritative international forum that operates in the most politically and environmentally sensitive region of the Arctic. Since the mandate of the Council includes comprehensive coverage of the issues of both environmental security and navigation along the NSR, its activities may become most instrumental, particularly in providing institutional and financial bases for effecting changes in the economic and other activities which threaten the environmental security of the Arctic.

A range of legal, technical and management options is thus available to the Arctic Eight. The Arctic Environmental Protection Strategy states explicitly that implementation "will be carried out through national legislation and in accordance with international law, including customary international law as reflected in the 1982 United Nations Convention on the Law of the Sea" (Arctic Environmental Protection Strategy 1991). However, AEPS also acknowledges that many existing regulatory instruments pertaining to marine environmental protection are either limited in their application to the region or may be inadequate given the specific vulnerabilities associated with the Arctic environment. This is particularly true with respect to one of the five stated objectives of the Strategy: "to identify, reduce, and, as a final

goal, eliminate pollution" (Arctic Environmental Protection Strategy 1991).

In this connection, the following question may be posed: what are the merits and weaknesses of an *Arctic-specific* mechanism, like the one which receives most attention in the current paper, as compared to reliance on broader (e.g. global) or more narrow, sub-regional regime solutions? And what are the merits of a *new* regime, as compared to adaptation and strengthening of the existing international arrangements? In some areas, it may appear very rational to make use of the already established mechanisms applying to the Arctic, whereas in others, new arrangements may appear as the most effective.

As was shown above, many of the Arctic environmental problems are caused by pollution or demands for development originating outside the region.[14] The membership in a comprehensive Arctic environmental regime can, therefore, go beyond the Arctic Eight in those cases where extraregional nations have a legitimate interest in using the Arctic Ocean (for navigation, scientific research, resource development, etc.) or when they contribute substantially (through transboundary fluxes) to the pollution of the Arctic marine or atmospheric environment. Moreover, solutions to environmental management problems in the Arctic cannot be sought in isolation from broader global and regional efforts aimed at protecting and improving the natural environment. A strictly limited regional approach is not in itself likely to be adequate for problems that are transboundary and transregional in nature.

Clearly, the regime for the protection of the Arctic marine environment

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[14] The consequences of this fact are at least twofold. On the one hand, there is a recognition of the necessity for encouragement of cooperation among Arctic nations, along with representation of the Arctic's interests in broader forums outside the region. On the other hand, there is also the question of how greatly the international community, including some of the circumpolar states, value the environmental integrity of this remote region. In this last regard, there are signs that a fundamental shift is occurring in attitude regarding the importance of the Arctic environment. Not only have Arctic states realized how activities elsewhere may disrupt the Arctic, but states generally are beginning to appreciate that disruption of the Arctic environment may in turn generally disrupt the global climate (see Caron, 1993).

would benefit from the involvement of the International Maritime Organization (IMO), which can serve as an appropriate forum for the coordination of the design, equipment and manning standards among the users of the Arctic Ocean within the framework of the MARPOL-73/78 Convention. In addition, the IMO could be instrumental in adding the Arctic Ocean with the adjacent seas to the six already designated "special areas", where more stringent vessel discharge standards for most pollutants (up to a complete prohibition of discharge) have been established.[15]

Similarly, the most appropriate forum for undertaking international efforts for the prevention of long-range transfrontier pollution of the Arctic atmosphere and the resulting problem of "Arctic haze"[16] would be the already existing (under the auspices of the UN Economic Commission for Europe) regime on long-range transboundary air pollution (LRTAP).[17] The LRTAP regime is a

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[15] Although discharge standards for "special areas" designated in MARPOL-73/78 are less stringent than, say, in Canadian legislation governing shipping in Arctic waters, there are a number of potential advantages of MARPOL coverage. First, the MARPOL requirements are clearly defined and are less ambiguous than those in Article 234 of the 1982 Law of the Sea Convention. Second, several nations that were refraining from ratifying the UN Convention (e.g. Japan and the USA) have long ago already ratified MARPOL and comply with its standards.

[16] More than 70 thousand tons of sulfur dioxide - believed, for the most part, to be carried from the middle latitudes of Eurasia by winds - are deposited annually in the Arctic. The deposition occurs as air, bearing contaminants, moves into areas with considerably lower temperatures. Concentration of pollutants (sulfates, toxic metals) in the Arctic air is particularly high in the winter, 20 to 40 times higher than in summer. Massive transfer to the Arctic of solid suspended carbon particles enriched with heavy metals results in the formation of a so called "arctic haze", up to 6 km in depth and comparable to smog in large cities. The winter haze covers an area roughly the size of North America; pollution levels in the Arctic are ten to twenty times higher than in the Antarctic, which is much more remote from industrial sites. According to some data, the deposition of toxic substances from the atmosphere even today adversely affects vegetation and Arctic animals such as reindeer. Another potential consequence of the haze is climate change through its impact on radiation balances.

[17] Its major part is a framework convention on LRTAP, which was signed in 1979 and has been ratified by 31 states from Europe and North America. While the initial treaty did not mandate any restrictions in emissions, it has been augmented by a series of protocols designed to limit the transboundary flow of sulfur (1985), emissions of nitrogen oxides (1988) and volatile organic compounds (1991). An integral part of the LRTAP regime is the EMEP

promising framework for addressing the Arctic haze problem for several reasons. Indeed, it may already be contributing to limiting or even lessening the flow of pollutants to the Arctic. Furthermore, Arctic haze is the result of transboundary air pollution, and the countries in which virtually all of the haze-forming pollutants originate are members of the ECE and parties to the 1979 LRTAP Convention, although some major polluting states (e.g. Poland, the UK and the USA in the case of the sulfur protocol) have not accepted the supplemental protocols. The protocols restrict emissions of several of the key ingredients of Arctic haze, in particular sulfur and volatile organic compounds, although others, such as sooty carbon and heavy metals, have not been specifically addressed by the LRTAP regime[18] (see Soroos 1993).

The IMO and the LRTAP regimes, on the one hand, and the Rovaniemi Strategy on the other should not be looked upon as mutually exclusive, however. Rather, they could be regarded as complementary regimes, which together may be the most effective arrangement for international cooperation on the corresponding environmental issues. For example, the monitoring and research programs of the Rovaniemi regime, in particular the newly established AMAP, can be coordinated with the LRTAP's EMEP program, which can greatly enhance scientific knowledge on the magnitude and effects of transboundary air pollution over the Arctic (Soroos 1993). Similarly, discharge and construction standards for the prevention of pollution from vessels negotiated among the Arctic littoral countries could achieve a much wider international recognition (and become applicable to non-coastal states as well), if supported by the authority of the International Maritime Organization.

(Cooperative Program for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe) network that monitors the emission and deposition of air pollutants at nearly 100 stations throughout the European region, which report to synthesizing stations in Oslo and Moscow.

[18] Besides, the value of the 1985 sulfur protocol as a haze reducing instrument is significantly lessened by the clause which permits states to reduce transboundary fluxes as an alternative to limiting emissions. It allows Russia to escape any obligations to reduce emissions within its territory that drift across its northern coast out over the Arctic Ocean, which is one of the principal paths of the haze causing pollutants (Soroos 1993).

At the same time, many Arctic environmental issues of sub-regional scope can be quite successfully dealt with through lower-level, bilateral arrangements, which support the Finnish Initiative both at declaratory and material levels - e.g. by involving considerable technology and resource transfer mechanisms. One example of such a cooperation is the US-Soviet (now Russian) bilateral oil-spill contingency agreement covering the Bering and Chukchi Seas, which took effect in October 1989. Progress to date has included a readiness plan for emergency oil spill clean-up, developed jointly by the US Coast Guard and the Soviet Ministry of Marine Transportation. The necessity for and practical signlificance of such a plan was demonstrated during *Exxon Valdez* clean-up activities with the deployment of the Soviet-operated oil skimmer *Vaidagubski* in Alaskan coastal waters. By American request, a Soviet coordinator of on-site operations was dispatched to Anchorage to assist and direct cooperative efforts (Broadus and Vartanov 1994). Another example is the Russo-Norwegian bilateral cooperation in the Barents Sea and Kola Peninsula area, which includes both monitoring, contingency planning and coordination of research components: at a recent ministerial-level meeting in Moscow in January 1995, three major issues were given the highest priority - reconstruction of nickel smelters in the Murmansk Province, cooperation in oil spill clean-up in the Komi Republic, and creation of the regional radiological monitoring system (*Segodnia*, No. 15, 26.01.1995).

Unlike the Antarctic, the Arctic is almost entirely under the sovereignty of one or the other of the eight Arctic rim states. Importantly, therefore, the international environmental protection regime should be concerned predominantly with the *internal* environmental and development policies of the Arctic Eight.[19] No matter what kind of international institutional framework eventually evolves in the Arctic, it is already clear that effective protection of the northern environment would require

[19] This was the approach adopted at formulating the Rovaniemi Strategy. There are a few areas, such as migratory animals, where the task of governance is concerned with managing the border interface, but generally the Strategy aims more at direct governance. It does so by providing consensus as to the overall objectives of the circumpolar states for the region and by then providing plans, such as that adopted for environmental monitoring, which are to be implemented by each state (Caron, 1993).

controlling development activities in the region (including e.g. efforts to establish cooperative environmental impact assessment procedures), and it may be questioned whether all regional states would be willing to accept curtailments on their development efforts in the Arctic. It is particularly true with respect to the Russian Arctic, which is in desperate need of additional funds to meet vital basic needs of its population. Under the current economic crisis, funds to meet new international commitments to Arctic environmental protection will certainly be hard to find in Russia. At the same time, the beginning of a new wave of industrial expansion into the Russian North, involving Western capital and Western companies - e.g. oil and gas development in the Yamal and Timano-Pechora basin - is already evident. New plans are afoot to develop oil fields on the Russian Bering Sea coast, across from Alaska.

US and Western European oil corporations are currently securing large contracts in the Russian Arctic. One reason for their enthusiasm for developing this area appears to be that this enables them to sidestep new strengthened US environmental regulations. In a recent call to Western oil and gas developers, the World Wide Fund for Nature has urged companies to confine activities in the Russian Arctic to areas that have already been industrialized, rather than develop new oil and gas reserves in other pristine areas. No matter how "safe" these developments are, they might eventually destroy valuable natural habitat (WWF 1994). This underlines the urgency of the need to improve safety standards for both environmental and human health at the international level in order to enhance environmental security in the Arctic.

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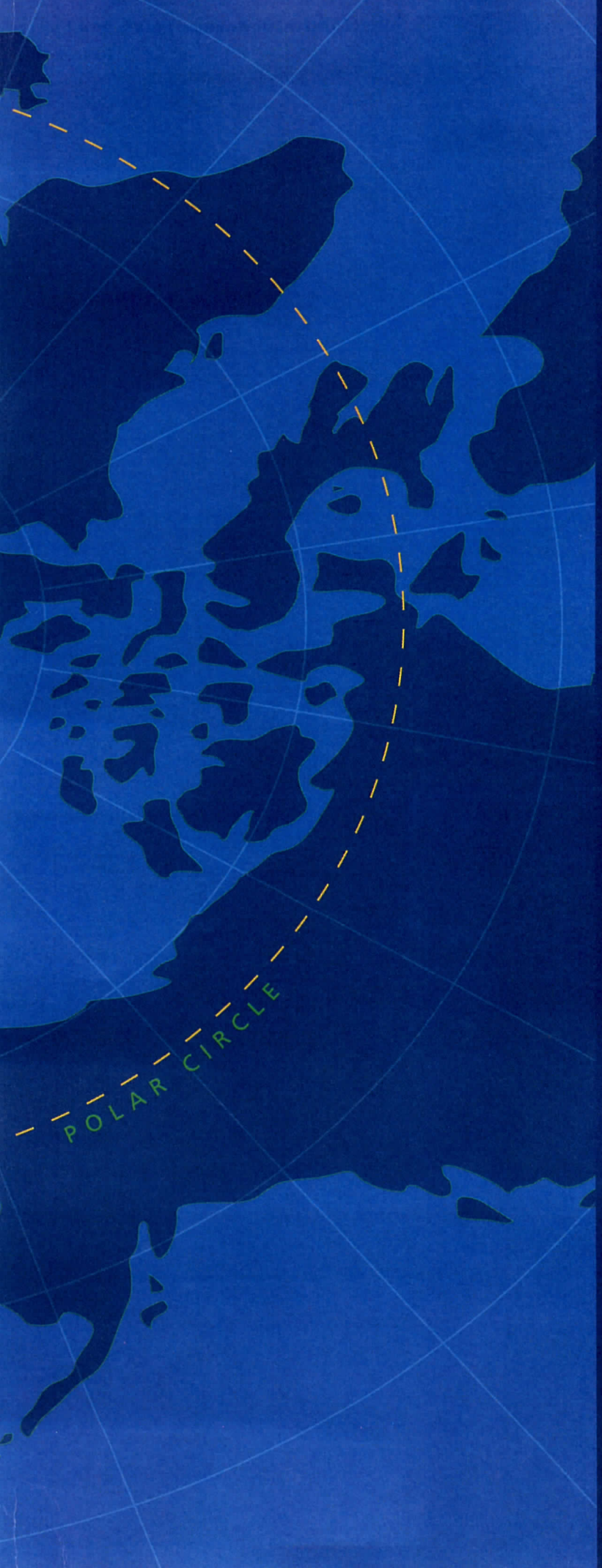

The three main cooperating institutions of INSROP

Ship & Ocean Foundation (SOF), Tokyo, Japan.
SOF was established in 1975 as a non-profit organization to advance modernization and rationalization of Japan's shipbuilding and related industries, and to give assistance to non-profit organizations associated with these industries. SOF is provided with operation funds by the Sasakawa Foundation, the world's largest foundation operated with revenue from motorboat racing. An integral part of SOF, the Tsukuba Institute, carries out experimental research into ocean environment protection and ocean development.

Central Marine Research & Design Institute (CNIIMF), St. Petersburg, Russia.
CNIIMF was founded in 1929. The institute's research focus is applied and technological with four main goals: the improvment of merchant fleet efficiency; shipping safety; technical development of the merchant fleet; and design support for future fleet development. CNIIMF was a Russian state institution up to 1993, when it was converted into a stock-holding company.

The Fridtjof Nansen Institute (FNI), Lysaker, Norway.
FNI was founded in 1958 and is based at Polhøgda, the home of Fridtjof Nansen, famous Norwegian polar explorer, scientist, humanist and statesman. The institute spesializes in applied social science research, with special focus on international resource and environmental management. In addition to INSROP, the research is organized in six integrated programmes. Typical of FNI research is a multi-disciplinary approach, entailing extensive cooperation with other research institutions both at home and abroad. The INSROP Secretariat is located at FNI.