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PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT • PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE  
ПРОГРАММА ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ ПО ОКРУЖАЮЩЕЙ СРЕДЕ

## GEF COORDINATION OFFICE

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**TELEFAX TRANSMISSION**

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<b><u>Subject:</u></b> <i>Submission of Medium sized Project</i>			

Please find attached the medium-sized project proposal "Persistent Toxic Substances (PTS), Food Security and Indigenous Peoples of the Russian North" for consideration of GEF financing. The Implementing Agency fee is US \$146,000.

Your comments would be appreciated by 14 January 2000.

## MEDIUM-SIZED PROJECT BRIEF – CONTAMINANTS IN ARCTIC RUSSIA

### PROJECT SUMMARY

Project Identifiers	
1. <b>Project name:</b> <i>Persistent Toxic Substances (PTS), Food Security and Indigenous Peoples of the Russian North</i>	2. <b>GEF Implementing Agency:</b> <i>United Nations Environment Programme (UNEP)</i>
3. <b>Country in which the project is being implemented:</b> <i>Russian Federation</i>	4. <b>Country eligibility:</b> <i>The Russian Federation is eligible for funding under paragraph 9(b) of the Instrument.</i>
5. <b>GEF focal area:</b> <i>International Waters</i>	6. <b>Operational program:</b> <i>OP 10 – Contaminant-based</i>
7. <b>Project linkage to national priorities, action plans and programs:</b> <ul style="list-style-type: none"> <li><i>The Federal Law "On guaranties of the rights of indigenous minorities of the Russian Federation", 30.04.99 No 82-Φ3;</i></li> <li><i>The Federal Law "Fundamentals of the state regulation of social and economic development of the Russian Federation North" (article 12 "State regulations in the field of environmental protection and use of natural resources"), 19.06.96 No 64-Φ3;</i></li> <li><i>Federal Programme "Children of the North for 1998-2000", Government decree No 1207 of 19.09.97;</i></li> <li><i>The Decree of the President of the Russian Federation No 397 of 22.04.92 "Urgent actions on protection of habitats and subsistence activities of indigenous minorities of the North";</i></li> <li><i>Russian AMAP National Implementation Plan for 1999-2003.</i></li> </ul>	
8. <b>GEF national operational focal point and date of country endorsement:</b> <i>Alexander Solovyanov, Deputy Chairman, State Committee of the Russian Federation for Environmental Protection, 28 May 1999</i>	
Project Objectives and Activities	
9. <b>Project rationale and objectives:</b> <u>Overall goal:</u> <i>To reduce the contamination of the Arctic environment by Persistent Toxic Substances.</i>  <u>Objectives:</u> <ol style="list-style-type: none"> <li><i>To assist indigenous peoples in developing appropriate remedial actions to reduce the health risks resulting from the contamination of their environment and traditional food sources.</i></li> <li><i>To enhance the position of the Russian Federation in international negotiations to reduce the use of PTS, and to empower indigenous peoples to participate actively and fully in these negotiations.</i></li> <li><i>To enable the Russian Federation and RAIPON to increase their involvement in the work of the eight-nation Arctic Council to reduce emissions of PTS.</i></li> </ol>	<b>Indicators:</b> <i>Russian authorities, with the support of the other Arctic States, take steps to reduce emissions of contaminants to the Arctic.</i> <ol style="list-style-type: none"> <li><i>Indigenous peoples of the Russian North apply recommendations designed to reduce their exposure to environmental contamination by PTS, particularly exposure through consumption of traditional foods.</i></li> <li><i>Proactive participation of the Russian Federation in regional and global fora aimed at reducing the use and releases to the environment of PTS.</i> <i>Indigenous Peoples organizations participate in national, regional, and global fora aimed at reducing use and releases to the environment of PTS.</i></li> </ol>
10. <b>Project outcomes:</b> <ol style="list-style-type: none"> <li><i>Recommendations to federal and local authorities, indigenous peoples and the international community on measures to reduce exposure of indigenous peoples to PTS, including identification of priority areas where actions are needed.</i></li> <li><i>Assessment of the significance of aquatic food chains as a pathway of exposure of indigenous</i></li> </ol>	<b>Indicators:</b> <ol style="list-style-type: none"> <li><i>Agreement among experts, executive authorities of the Russian Federation, and Indigenous Peoples Organizations on recommendations on remedial actions, including dietary recommendations.</i></li> <li><i>Agreement among Russian and circumpolar experts on the significance of aquatic food chains as pathway of exposure to PTS.</i></li> </ol>

peoples to PTS. (3) <i>Assessment of the relative importance of local and distant sources, and the role of atmospheric and riverine transport of PTS.</i>		
<b>11. Project activities to achieve outcomes:</b> (1) <i>Assessment of role of pollution on health and development of recommendations (A7).</i> (2) <i>Study of biomagnification in Arctic food chains (A4).</i> (3) <i>Monitoring of PTS levels in humans (A6).</i> (4) <i>Dietary surveys of selected indigenous communities (A5).</i> (5) <i>Assessment of local pollution sources in the vicinities of selected indigenous communities (A2).</i> (6) <i>Assessment of distant sources and fluxes of PTS to Arctic Russia (A3).</i> (7) <i>Capacity building (A8).</i> (8) <i>Dissemination (A9).</i> (9) <i>Co-ordination, management, and support to the project (A1).</i>		<b>Indicators:</b> (1) <i>Agreement among Russian and circumpolar experts on the significance and impact of contamination of traditional foods on human health of indigenous peoples.</i> (2) <i>Laboratory reports and assessment of results.</i> (3) <i>Laboratory reports and assessment of results.</i> (4) <i>Activity report.</i> (5) <i>Publication of report on pollution sources.</i> (6) <i>Laboratory reports and modelling results and their assessment.</i> (7) <i>No of people trained / number of workshops organised.</i> (8) <i>Publication of final project report(s) and targeted information products (e.g. health advice).</i>
<b>12. Estimated budget (US\$):</b> GEF:                      Project:                      725,000 PDF-A:                      25,000 Total:                      750,000  Co-financing*:       PDF-A (all sources):                      32,000 Nordic Council of Ministers:                      128,500 (80,000 confirmed for 2000-2001) Norway:                      240,000 (80,000 confirmed for 2000) University of Tromsø:                      150,000 Barents Region Human Health Programme:                      423,000 To be identified:                      728,500 Russian Government agencies and Russian and intl. experts (in-kind):                      308,000 Subtotal Co-financing:                      2,010,000  Total Project Cost:                      2,760,000  * Executing Agency costs are entirely covered through in-kind contribution of those agencies or through co-financing		
<b>Information on Institution Submitting Project Brief</b>		
<b>13. Information on project proposer:</b> <i>Russian Association of Indigenous Peoples of the North (RAIPON) in co-operation with Inuit Circumpolar Conference (ICC), Saami Council (SC) and Aleut International Association (AIA).</i>		
<b>14. Information on proposed executing agencies:</b> <i>The project will be executed by RAIPON and the AMAP Secretariat, with the support of a number of Russian federal government agencies. Individual activities will be executed through joint agreements taking into account the functions and capabilities of the respective participants.</i>  <ul style="list-style-type: none"> <li>• <b>RAIPON</b> – The Russian Association of Indigenous Peoples of the North represents 30 indigenous peoples totalling 200,000 individuals in Northern Russia. RAIPON, which is a permanent participant to the Arctic Council, will assist the AMAP Secretariat in carrying out the functions of general execution, co-ordination and administration of the project. In addition, RAIPON will participate in project activities</li> </ul>		

- Arctic Monitoring and Assessment Programme (AMAP) Secretariat – will, at the request of RAIPON and by the recommendation of the Expert meeting on project development (Moscow, 8-9 April 1999) supported by the State Committee of the Russian Federation for Environmental Protection (GEF Focal Point), provide international co-ordination of the project, and, with assistance of RAIPON, functions of general execution, co-ordination and administration of the project.

The AMAP Secretariat has considerable co-ordination and management skills, and has taken the lead in harmonising methodologies for circumpolar studies of PTS pollution effects in the Arctic.

*The following Russian agencies will participate to the project:*

- Russian State Committee for Environmental Protection - will provide an inventory and assessment of local pollution sources.
- Russian Ministry of Health – will participate in project activities concerning assessment of food chains and food products, dietary habits, pollution levels and effects in humans, impacts of socio-economic and demographic conditions on lifestyle and health of indigenous population.
- Russian State Committee for Northern Affairs - will participate in project activities concerning assessment of food consumption and traditional diets, impacts of socio-economic and demographic conditions on lifestyle and health of indigenous population.
- Russian Federal Service for Hydrometeorology and Environmental Monitoring - will participate in project activities concerning assessment of long-range transport of pollutants to areas populated by indigenous peoples, biomagnification in food chains, pollution levels in humans.

**15. Date of initial submission of project concept:** 17 July 1998

#### **Information to be Completed by Implementing Agency**

**16. Project identification number:** *Not yet assigned*

**17. Implementing Agency contact person:** *Ahmed Djoghla, Executive Co-ordinator, UNEP GEF Coordination Office*

#### **18. Project linkage to implementing Agency programs:**

- *Decision 19/13C of the UNEP Governing Council to initiate international action "to protect human health and the environment through measures which will reduce and/or eliminate [...] the emissions and discharges" of an initial set of twelve persistent organic pollutants, and subsequent establishment of, an Intergovernmental Negotiating Committee (INC) to prepare a legally binding instrument.*
- *UNEP is the Implementing Agency for a number of PTS related GEF activities, which will ensure the linkages and synergies between them. This includes in particular the recently approved PDF-B "Support to the National Plan of Action for the Protection of the Arctic Marine Environment from Anthropogenic Pollution in the Russian Federation" and the project on "Regionally Based Assessment of Persistent Toxic Substances" which is being submitted to Council.*

## PROJECT DESCRIPTION

### Project rationale and objectives

1. The GEF Operational Programme # 10 "Contaminant-based" is designed to "support activities that help characterise the nature, extent, and significance of ... [global] contaminants ... such as mercury and persistent organic pollutants (POPs)". Due to their environmental persistence, **global contaminants**, also known as Persistent Toxic Substances (PTS), together with certain radionuclides, are subject to **long-range transport** via atmospheric, marine and riverine pathways. In addition to their environmental persistence, many of these contaminants are toxic to living organisms and/or have the tendency to bioaccumulate and biomagnify in food chains (particularly marine food chains) with the result that organisms, including humans, that feed at the top of these food chains may be highly exposed. Potential health effects of PTS include those on neurological development and behaviour, reproduction and on the immune system; some of these substances are carcinogens. Due to their ability to pass the placenta barrier and to be transferred from mother to newborns with breast milk, possible effects during critical stages of fetal development and development in the first years of life are of greatest significance.
2. A recent assessment of pollution status of the Arctic region carried out by the Arctic Monitoring and Assessment Programme (AMAP), an international programme based on co-ordinated national activities of the eight Arctic countries, has shown that PTS have a tendency to be transported to, and accumulate in, the Arctic region. At the same time, Arctic ecosystems are particularly vulnerable to exposure to PTS, and certain Arctic indigenous communities have some of the highest exposures to PTS of any populations on Earth. This is the result of a number of factors, among which the cold Arctic climate, lipid-rich food chains, and the lifestyle of the indigenous peoples concerned, in particular their reliance on **traditional (country) foods**, all play an important role. The AMAP assessment documented, for example, that in Arctic Canada and Greenland levels of polychlorinated biphenyls and mercury in humans can be several times higher than those measured in residents of industrialised areas of the North America; in some cases, intakes exceeded WHO guidelines and levels reached those associated with potential for negative health effects such as impaired neurological development in children.
3. Preliminary studies in the Russian Arctic have shown that environmental levels of PTS can be significantly elevated and, in some areas, compounded by pollution as a result of heavy industrialisation within Russia, including the Russian North. As the result of recent economic problems in Russia, consumption of country food by indigenous peoples seems to be increasing. Higher harvesting of walrus in Chukotka, as well as recent resumption of native hunting of bowhead whales for subsistence purposes are examples of this trend. However, the situation for Russian Arctic indigenous peoples has not been studied sufficiently to allow a clear understanding of the impact of contaminants on the overall health status of indigenous populations. Similarly, this lack of information precludes reliable assessment of the Russian situation within a circumpolar context, or the development of adequate measures to reduce risks posed by exposure to PTS.
4. A particular focus of concern of the international Indigenous Peoples Organizations (IPOs) (The Russian Association of Indigenous Peoples of the North, Inuit Circumpolar

Conference, Saami Council and Aleut International Association) is the possible impact of PTS on the health of their peoples, especially through contamination of traditional 'country' food. This deep-seated concern was fully articulated at a March 1998 workshop in Moscow, co-sponsored by RAIPON and UNEP/GRID-Arendal, in which representatives of all indigenous peoples in northern Russia participated (see: Environmental Problems Affecting the Traditional Lifestyles of Indigenous Peoples in the Russian North: A Seminar Report, Moscow, March 1998).

5. For many indigenous peoples, the traditional diet is not only a vital source of nourishment, but also a part of their cultural and spiritual identity. Any threat to these foods, including chemical contamination, is not only a potential threat to the health of the individual concerned but also to the entire identity of the indigenous peoples and their social structures. Elimination of risks to human health from PTS is a key issue for Arctic IPOs. As such, they are active participants in relevant international negotiations that aim to reduce usage and releases to the environment of these chemicals, including development of the POPs and Heavy Metals Protocols to the UN/ECE Convention on Long-range Transboundary Air Pollution, and the UNEP negotiations on global agreement to control twelve specified POPs. Given the fact that, due to the prevailing economic conditions in the country, the Russian Federation has not yet become a signatory to the above mentioned UN/ECE LRTAP Protocols, the proactive position of IPOs, the Russian Association of Indigenous Peoples of the North (RAIPON) in particular, in such negotiations is vital if the major goals of these initiatives are to be realised.

6. Considering the points raised above, it is important to view the proposed GEF project within the wider context established by a range of activities that will provide complimentary information necessary to promote the ultimate goal of the GEF project activity, that is developing and implementing actions that can reduce environmental pollution at the global level, but specifically focussing on the Arctic region. The GEF project has been tailored to fit optimally into this framework, to avoid duplication of activities and to prioritise vital work that would not be otherwise undertaken. By this approach, it should be possible to realize a situation whereby the total outcome of the combined work far exceeds the sum of its parts, and specifically where the GEF project product exceeds any reasonable goals that might be expected on the basis of the project resources alone.

7. The preparatory phase of this project (GEF funded PDF-A), which was initiated by IPOs in co-operation with the AMAP Secretariat, allowed meetings to take place between representatives of Russian indigenous peoples, Russian Ministries and Federal agencies, and international partners, where the scope and objectives of the project were defined, and where responsibilities for the execution of the various activities were agreed upon.

8. *The objectives of the proposed project are to:*

- i) assist indigenous peoples in developing appropriate remedial actions to reduce the health risks resulting from the contamination of their environment and traditional food sources;
- ii) enhance the position of the Russian Federation in international negotiations to reduce the use of PTS, and empower indigenous peoples to participate actively and fully in these negotiations;

- iii) enable the Russian Federation and RAIPON to increase their involvement in the work of the eight-nation Arctic Council to reduce emissions of PTS.

**Current situation (baseline course of action)**

9. There are, today, some 30 indigenous minority peoples in the North, Siberia and Far East of the Russian Federation, in total numbering approximately 200 000 persons. Eleven of these minority peoples live in the Arctic region, the combined land area of which is approximately 3.1 million km<sup>2</sup>. Together with 5 other northern indigenous minority peoples that live close to or partly within the Arctic region, the indigenous minority population within Arctic Russia numbers some 67 000. Approximately 75% of the indigenous minority population of the Russian Arctic live in rural areas. In addition, two indigenous peoples (the Komi and Yakut), that are more numerous and therefore form the majority within their territories, have lifestyles similar to the indigenous minorities, and hence share similar environmental risks.

10. Conditions for indigenous peoples in the Russian Arctic have been steadily worsening over recent years. Effects of economic changes in Russia have been felt acutely in the Arctic, with indigenous minorities particularly affected. According to a recent RAIPON and UNEP/GRID-Arendal report, the indigenous peoples in northern Russia are on the brink of "physical extinction". Health issue, particularly those related to environmental contamination, are a matter of urgent concern with life expectancy of the indigenous peoples 20 years lower than that of the average Russian (41-42 years for men in some regions); infant mortality and incidence of disease are increasing.

11. During recent years, Russian Federal authorities have taken a number of steps to address critical economic, social and health problems among indigenous peoples. In 1992, the President of the Russian Federation issued a special Decree "Urgent actions on protection of habitats and subsistence activities of indigenous minorities of the North". As a follow-up to this, the Federal Law "Fundamentals of the state regulation of social and economic development of the Russian Federation North", with an article dedicated to environmental protection and use of natural resources, was adopted in 1996. The Federal Programme "Children of the North for 1998-2000", which was adopted by the Russian government in 1997, proposes practical steps for improving the situation in the region. Unfortunately, however, the critical economic situation prevailing in the country has meant that these measures have not received the necessary financial support; consequently they have failed to work. Although the recently adopted Federal Law "On guaranties of the rights of indigenous minorities of the Russian Federation" creates a legislative background for improving the existing situation, it cannot solve the problems associated with a lack of economic resources for remedial actions.

12. The Russian Federation actively participated in circumpolar monitoring and assessment activities conducted within the framework of the first phase of the Arctic Monitoring and Assessment Programme (AMAP, 1992-1997) under the auspices of the Arctic Environmental Protection Strategy (Arctic Council). In this, they provided significant contributions of data and information needed for the Russian component of AMAP's circumpolar assessment. Due to financial constraints, however (even with some financial and technical support from the other

Arctic States), studies concerning impacts of environmental contamination on human health covered only a limited part of the Russian North and were essentially lacking for the eastern part of the region. The second phase of AMAP (detailed in the AMAP Strategic Plan for 1998-2003) plans to eliminate this gap in information. However the Russian Federation is still facing financial constraints that create significant problems in fulfilling its commitments in this field. The Russian AMAP phase 2 National Implementation Plan (NIP), which is being currently developed, is based mainly on the existing monitoring activities and will provide a significant part of supporting information for the proposed GEF supported project. It is not anticipated, However, that the Russian executive bodies that are responsible for implementing the Russian commitments to AMAP will find additional resources to expand their relevant activities to adequately address issues of PTS effects on health of the Arctic indigenous peoples.

13. To assist Russia in fulfilling its AMAP phase 2 National Implementation Plan, the Arctic Countries have established/are establishing a number of joint projects under the framework of bi- and multilateral co-operations with Russia which are co-ordinated with the overall AMAP strategy and are aimed to provide a significant contribution of baseline information for the proposed GEF project.

#### **Expected project outcomes**

14. The proposed GEF project has been designed as an integral component in a range of activities that are addressing identified information needs concerning environmental contamination in Arctic Russia, its effects on indigenous peoples, and development of proposals for actions to improve the situation in the region. At the same time, a number of the international projects and programmes, including those of AMAP, will provide data and information that are complementary and will support the proposed GEF Project. In many respects, the proposed GEF project is envisaged as **the key component** in this overall strategy, providing information that will not otherwise become available.

15. Implementation of the project will therefore lead to the following outcomes that would not be otherwise achieved:

- i) Recommendations to federal and local authorities, indigenous peoples and the international community on measures to reduce exposure of indigenous peoples to PTS, including identification of priority areas where actions are needed.
- ii) Assessment of the significance of aquatic food chains as a pathway of exposure of indigenous peoples to PTS.
- iii) Assessment of the relative importance of local and distant sources, and the role of atmospheric and riverine transport of PTS.

16. It should be noted that, as it has been emphasized during the consultation meeting between ACOPS and the AMAP Secretariat (London, 24 June 1999), the results of this project on assessment of atmospheric and riverine fluxes of contaminants will also provide a valuable contribution to the GEF PDF-B "Identification of priority hot-spots and conduct of pre-investment studies for remedial actions in support of the National Plan of Actions for the Protection of the Marine Environment from Anthropogenic Pollution in the Arctic Region of the



Russian Federation.

## Activities

### *Overall scope and geographical setting:*

17. The Russian North is populated by a variety of indigenous peoples with different cultures and traditional lifestyles. Careful consideration has been made in selecting a sampling strategy that will ensure that the results have optimal regional and demographic significance. In order to optimize use of resources and allow compatible information from other activities to be combined with the GEF project results, and thus provide a more comprehensive information base than would otherwise be the case, it is proposed that GEF project implementation activities be conducted in the AMAP key monitoring areas:

- i) Kola Peninsula: populated by Saami people; relying heavily on reindeer and freshwater fish as components of the traditional diet; the area is affected by local mining and metallurgical industries (non-ferrous metal smelting) and long-range transport of European emissions, the area includes major population centres, such as Murmansk, with associated harbour activities and radioactive waste storage associated with Russian northern fleet operations, etc.
- ii) Lower basin of the Pechora River: Nenets people; traditional diet includes reindeer and freshwater fish; affected by long-range transported pollution and multiple local pollution stresses, including oil activities in the region.
- iii) Taimyr Peninsula, including lower reaches of the Yenisey River: Dolgan and Nenets peoples; traditional diet includes reindeer, freshwater fish and game; this area is affected by multiple pollution stresses, including the mining and metallurgical industries at Norilsk, and river transported pollution from the catchment of the Yenisey River, including radioactive contamination.
- iv) Chukotka Peninsula: Chukchi and Yupik peoples; traditional diet includes marine mammals and fish, and reindeer; affected by long-range transported pollutants, particularly from those sources in South-East Asia.

18. This arrangement will allow exposed and non-exposed groups from different indigenous populations with distinct dietary characteristics and living in geographically different areas (affected by different primary sources of contaminants) to be included in the project.

19. In addition to regionally specific project activities, the project implementation plan includes a number of core activities, which are concerned with support of the overall project as opposed to being linked to activities within a particular geographical area. Core activities include project co-ordination, administration and management activities, including organization of steering and co-ordination group meetings, translation, part of work involved in dissemination of information on the project, progress reporting, dissemination of key results and publication of project reports, etc. Additionally, they include provision of supporting information and data that are required for assessment of long-range transport that are not linked to any one specific region, e.g. emission inventories and meteorological input data for modelling work, and data handling

activities etc.

20. Additional details regarding the choice of contaminants to be analysed, and considerations of quality control can be found in Annex A "General principles of project implementation". Additional description of the work to be conducted in the four selected regions can be found in Annex B "Regional breakdown of activities and their costs".

21. *A1: Co-ordination, management, and support to the project* (this activity is entirely co-financed)

- Project manager (0.5 man-year for 3 years).
- Indigenous peoples co-ordinator (0.5 man-year for 3 years) based at RAIPON, Moscow.
- Indigenous peoples co-ordinators for the regional activities of the project (4 persons working 0.5 years for 3 years) in regional branches of RAIPON.
- 4 Steering Group Meetings (1 at the beginning of each year, and 1 at the end of the third year).
- 6 Coordination Meetings (2 per year for 3 years).
- Operational expenses.

Funding requirements associated with activity A1 of the project are presented in Table 2.

*A2: Assessment of local pollution sources in the vicinities of selected indigenous communities*

22. The objective of this activity is to produce an inventory of PTS sources in the areas where indigenous peoples live. This work will be implemented with active participation of local environmental protection authorities responsible for pollution control in the regions/areas concerned, and will rely on the baseline activities carried out by the State Committee of the Russian Federation for Environmental Protection. However, additional funding from the project budget is needed to cover the involvement and participation of local indigenous peoples in this process, and part of the operational expenses of environmental protection authorities.

23. Baseline activities such as the "Multilateral Cooperative Project on phase-out of PCB use, and management of PCB-contaminated wastes in the Russian Federation", phase 1 of which is being coordinated by the AMAP Secretariat, will provide an important contribution to this activity. In addition, the work will be coordinated with the GEF-supported activity "Support to the National Plan of Actions for the Protection of the Arctic Marine Environment from Anthropogenic Pollution in the Russian Federation". Funding requirements associated with activity A2 of the project are presented in Table 2.

*A3: Assessment of distant sources*

24. The objective of this activity is to assess transport of PTS from distant sources to areas of Northern Russia inhabited by indigenous peoples.

### Assessment of long-range atmospheric transport of PTS to the Russian North

25. Measurement of concentrations of PTS at background air monitoring stations will be provided as baseline contribution from the AMAP, bilateral and national monitoring activities. A limited number of special monitoring stations will provide data on long-range transport, including data required for model validation/verification work.

26. Modelling work required to assess the atmospheric transport of PTS from long-range sources will build on preparatory activities including the AMAP workshop on long-range transport modelling and source related activities (Bergen, June 1999) where a number of relevant activities were considered, in particular the need for global inventories of PTS and the development of global transport models. Project implementation will involve the Meteorological Synthesising Centre-East (MSC-E) in Moscow, the EMEP modelling centre for heavy metals and persistent organic pollutants, ensuring that, in addition to work directly associated with the GEF project, activities under EMEP at the European part of the Russian North will be provided as baseline UN/ECE contribution to the project. Meteorological data needed for modelling of long-range atmospheric transport will include data provided by the Russian Federal Service for Hydrometeorology and Environmental Monitoring as part of its in-kind baseline contribution.

### Preliminary assessment of riverine fluxes as a source of PTS to Arctic Russia

27. Riverine fluxes of PTS will be monitored in the Pechora and Yenisey Rivers. It is planned to use the last downstream sampling sites of the Russian Federations national freshwater monitoring network, sampling on four occasions during a year. Reliable estimation of pollutant fluxes by river transport requires long-term monitoring data to be integrated with relevant hydrological data (consistent in both time and space). Hydrological data for the rivers concerned will be provided by the Russian Federal Service for Hydrometeorology and Environmental Monitoring as part of the in-kind contribution. Funding requirements associated with activity A3 of the project are presented in Table 2.

### *A4: Study of biomagnification in Arctic food chains*

28. This activity will consider marine, freshwater and terrestrial food webs, the upper trophic levels of which are used as food in the local population. Samples of key species (and where relevant, abiotic media) in the food chains that leads to the main food items will be collected.. The selection of primary food items will be relevant to the geographical settings and consumption patterns of the indigenous peoples concerned, and will therefore depend to a large extent on the results of the dietary survey (see A5).

29. To the greatest extent possible, sampling will be performed based on standardized sampling, pre-treatment, storage and transportation procedures. Where possible, sample collection will be carried out by qualified laboratory personnel assisted by indigenous peoples to ensure that, e.g., sampled plants/organisms represent those actually consumed, contamination is avoided, necessary measurements at the time of sampling are correctly carried out (location, age and sex of organism, etc.), and samples are appropriately packaged and transported to the laboratory. In some cases, it may be appropriate to obtain samples from local markets, or from

local hunters (e.g. in the case of sampling walrus and whale). In the latter case, the project will utilise the experience gained during similar activities in, for example Greenland, where native hunters are trained and provided with pre-fabricated sampling packs, etc. to ensure that samples are taken in an appropriate manner, including associated labelling and documentation, etc.

30. Food items and other samples will be analyzed for PTS, including a standard suite of POPs, Hg and Cd. Other toxic metals will be analysed where specific reasons for this exist based on potential contamination from e.g. local sources. Funding requirements associated with activity A4 of the project are presented in Table 2.

*A5: Dietary surveys of selected indigenous communities*

31. A detailed questionnaire study will target the individuals that participate in the monitoring of PTS levels in humans study (see A6). The purpose of the questionnaire study is to establish the nutritional adequacy of their diet, to evaluate the dietary importance of the various food items, and also to bring to light eventual dietary differences among the ethnic groups. Life style factors (e.g., alcohol consumption, smoking habits, socio-economic conditions etc.) will also be included.

32. In a pre-study, involving two nutritionists assisted by local indigenous peoples representatives at each location, the questions will be tested in relation to their applicability to the food habits, traditions, and practises of food procurement employed by the various indigenous peoples communities concerned. Based on the outcome of this pre-study, a comprehensive questionnaire will be developed which will then will be re-tested on about 20 women in the Kola Peninsula. The questionnaire will then be further improved. In the main study, probably of 3-4 months duration, all women participating in the study to monitor PTS levels in humans in each area will be invited to participate in an interview. Based on the population size in each location, a mean response of ca. 30 persons per area will be realistic. In addition, the main study will be extended to include indigenous peoples in each area representing other groups within the population (males, different age groups, etc.).

33. Following the main study, and based on its results, an evaluation process will be initiated where the need for advice and intervention will be considered (see A7). The surveys results will be interpreted on two levels: evaluating general patterns for a given population, and evaluating specific consumption for the individuals that have been screened for PTS in relation to their contaminant exposure and pregnancy outcome, etc. (see A7). Funding requirements associated with activity A5 of the project are presented in Table 2.

*A6: Monitoring of PTS levels in humans*

34. *The fetal period is regarded as the most vulnerable period to toxic substances, and pregnant women and their newborn children will be the basic study group of this project.*

35. The project activity concerning levels of PTS in humans involves sampling and analyses of contaminants in maternal and cord blood of delivering women. In relation to the sample size, it is necessary to consider the fact that the study will be looking at small population groups living

in small communities. Sample size is therefore a compromise between achieving a desirable level of statistical power for the study, and what is realistically possible. A minimum sample size of 30 mother/child pairs at each location has been established.

36. The planned activities are based on sampling of indigenous people attending local hospitals located in regional centres, with possible visits to more isolated communities where necessary. The project plan includes provision for installing necessary equipment for sample storage (freezers, liquid nitrogen supplies, etc.) and registration at these centres. Sampling of maternal and cord blood for special storage (at -70°) for later analysis of additional selected parameters is planned.

37. Analytical work will be carried out at selected laboratories based on the experience gained by Russian, Norwegian, and Canadian partners in the AMAP phase 1 QA/QC network, using appropriate internationally recognized analytical methods. For example, POPs in human samples will be analysed by high-resolution gas chromatography followed by NCI/EI-mass spectrometry of purified plasma/serum extracts. Funding requirements associated with activity A6 of the project are presented in Table 2.

#### *A7: Assessment of role of pollution on health and development of recommendations*

##### Pregnancy outcome and long-term effects

38. Participants in the human health study will be followed-up in each key area by registration of selected pregnancy outcome factors, such as birth weight and newborn children's body mass index (BMIC). Biological sampling and registration work for the study of long-term health effects, such as child mortality and morbidity, as well as neuro-behavioural development will also be initiated, and setting up a detailed birth registry and cancer registry in these areas is also under consideration.

##### Evaluation mission

39. An evaluation mission by a group comprising indigenous peoples representatives and Russian and international experts including epidemiologists, public health specialists, etc. is the final activity planned to address the findings of the human health studies in relation to the need for possible health and dietary advice, etc. Funding requirements associated with activity A7 of the project are presented in Table 2.

#### *A8: Capacity building*

40. A major component of the capacity building will be training of personnel (indigenous peoples representatives) to conduct dietary surveys and health study related interviews. Additionally, local staff of monitoring stations and in hospitals will be trained to sampling procedures according to the internationally recognized guidelines.

41. During the last decade, many laboratories of the regional health authorities have been provided with modern equipment that gives them potential to contribute in the future to an

improved understanding of the environmental and human health status of the Russian North. However, according to information from the Ministry of Health of the Russian Federation, local staff do not possess the training and knowledge necessary for correct use of the equipment available. To improve the situation, a number of workshops will be organized for local personnel of environmental and medical laboratories. Funding requirements associated with activity A8 of the project are presented in Table 2.

*A9: Dissemination*

42. RAIPON, the AMAP Secretariat, and the agencies of the Government of Russia are fully committed to making all research results public, and in a timely fashion. All participants in the human health project will receive information on their individual contaminant levels before information is published. This commitment will be carried out in cooperation with local health authorities in northern Russia and regional chapters of RAIPON. We expect dissemination of results to research participants to take place during the final 12 months of the project. However, if contaminant levels are particularly high in certain individuals, causing public health concerns and potentially warranting dietary change, these individuals will be contacted immediately. The project steering committee will direct and monitor dissemination of results during the life of the project. The AMAP Secretariat and RAIPON will monitor dissemination of results after completion of the project.

43. The full results of the project will formally be published in English and Russian by the AMAP Secretariat in a user-friendly format comparable to the 1997 State of the Arctic Environment Report. Pending the advice of RAIPON, regional summaries of results will be provided in local languages. We expect the final report to be published within one year of the project's completion. Papers for inclusion in the peer reviewed scientific literature will also be prepared. Yearly progress reports will be presented to all sponsoring organizations and to Senior Arctic Officials (SAOs) of the Arctic Council, and a final report will be presented to Arctic Council ministers. We expect all Arctic states, particularly the Federation of Russia, to use the results of this project in ongoing negotiations with the executive body to be set-up through the forthcoming UNEP-sponsored global convention on POPs, and the executive body to the UN/ECE Convention on Long-Range Transboundary Air Pollution.

44. RAIPON, ICC, and Saami Council are each committed to disseminating the results of the project in regional and national media. These indigenous peoples will use the Copenhagen-based Indigenous Peoples Secretariat (IPS) to assist in results dissemination. For example, RAIPON, ICC and the AMAP Secretariat will jointly prepare opinion editorials for use in major European and American newspapers. Web sites maintained by the AMAP Secretariat and ICC will also be used to post project material. Upon completion of the project, the indigenous peoples will host a seminar in Moscow to explain the nature of the project, its results and importance, and the need for follow-up efforts. RAIPON will approach GRID-Arendal to co-sponsor this seminar. Funding requirements associated with activity A9 of the project are presented in Table 2.

### **Sustainability analysis and risk assessment**

45. This three-year project is not intended to be formally continued or sustained after its completion. The project will, however, significantly raise the profile, within Russia and internationally, of transboundary contaminant issues in the Arctic. This, as believed, will lead to additional follow-up work by indigenous peoples, agencies of the Russian government and, most importantly, programmes and projects in northern Russia implemented through bilateral and multilateral agreements. The project is viewed as a proving ground, in a difficult political and cultural environment, for additional work. Once this project is completed through co-operative arrangements binding together governmental agencies, indigenous peoples, research institutes, foundations, and international organizations, we believe strongly that others will follow this path.

46. To the extent that this project is connected to the eight-nation Arctic Council, it is expected that the countries (and in particular, Norway, Canada and the United States) will work together with IPOs and the Russian federal government to define post-project activities. Private foundations in North America and Europe are likely to work more readily with RAIPON and regional indigenous peoples organizations to address contaminant-related issues following the completion of this project. There is a hope that the project will encourage the Russian government to devote greater intellectual and financial resources to environmental issues nationally, to indigenous peoples in the Arctic, and to international conventions dealing with environmental contamination and public health. The commitment to widely disseminate the results of this project is designed, in part, to promote additional follow-up work.

47. Substantive co-financing of this project by agencies of the government of Russia is in the form of in-kind contributions. These contributions are unlikely to be directly affected by the continuing uncertainty arising from Russia's 'economic transition'. The team approach to this project requires governmental agencies and non-governmental organizations to work together. Nevertheless, the inclusive manner in which the proposal has been developed and the manifest self-interest of indigenous peoples and government agencies in Russia in obtaining data from the project should ensure their full co-operation.

### **Stakeholder involvement and social assessment**

48. This project was conceived and developed by RAIPON, the AMAP Secretariat, and the Inuit Circumpolar Conference in consultation with agencies of the Government of Russia. A Block A PDF proposal by the Inuit Circumpolar Conference was approved late in 1998. Funding was used to hold meetings in Moscow and Oslo to develop the ambit of the project, to identify participants, to define roles and responsibilities, and to draft the current proposal.

49. While all organizations – governmental and non-governmental – identified in this proposal are stakeholders, the long-term goal of the project is to help indigenous peoples in northern Russia. As such, these peoples have the greatest stake in the project. Through RAIPON, ICC, the Saami Council and Aleut International Association, these peoples have participated in designing the project and will be essential partners in implementing it. In co-operation with the AMAP Secretariat, RAIPON and ICC are seeking additional funds from Arctic states and private

foundations in North America and Europe to carry out this project. Acceptance of this fundraising role is evidence of the firm commitment to the project by indigenous peoples in Russia, and their willingness to co-operate with all members of the project team.

50. The AMAP Secretariat is responsible for supporting the operational activities of AMAP under the Arctic Council. As a particularly important participant, the AMAP Secretariat will play a key role in co-ordinating the implementation of this project. This organization has already taken a lead role in translating the goals, priorities, and concerns of Russian indigenous peoples into this formal proposal, and raising funds from Arctic states and multilateral governmental sources. Based on the recommendation of the project development expert meeting held in Moscow on 8-9 April, firmly supported by the State Committee of the Russian Federation for Environmental Protection (GEF Focal Point for the Russian Federation), the AMAP Secretariat, with assistance of RAIPON, will co-ordinate the project.

51. A number of Russian government agencies participated actively in the preparation of this proposal, and are also full stakeholders. These agencies are making generous in-kind contributions and have agreed to carry out specific parts of the project. They include:

- State Committee for Environmental Protection;
- State Committee for Northern Affairs;
- Ministry of Health; and
- Federal Service for Hydrometeorology and Environmental Monitoring.

52. The research to be carried out is important to the everyday life of indigenous peoples. Of real importance, the project connects global environmental processes currently subject to international negotiations with immediate and very local public health concerns. The potential impact of this project lies, of course, in its results and the manner in which they are disseminated and used. Very high levels of PTS in country food may necessitate dietary advice to indigenous peoples that could alter their lifestyle, and land and resource use. This situation would set the scene for comparative risk assessments of consuming country food in the circumpolar Arctic – an area of research now underway in northern Canada and Greenland. Where, on the other hand, the results show sufficiently low levels of contamination, authorities will be able to further develop local renewable resources and will be able to advise indigenous peoples to maintain and even expand their country food diet.

#### INCREMENTAL COST ASSESSMENT

53. The Arctic is an area of global significance as exemplified by the number of species that are endemic to this ocean. As previously noted, Indigenous Peoples are intimately linked to the environment, and are at risk from PTS contamination of this environment. Most sources of contamination are the result of riverine transport that end up in the world oceans, and of atmospheric deposition from sources in Northern and Eastern Europe and the Far East, and in Russia itself.

54. This project aims at identifying the significance and sources of this contamination, thus paving the way for actions resulting in source reduction. Since the project deals with issues that



are all potentially transboundary, all the activities described in this proposal can be considered to be incremental (Table 1). However, in recognition that there will also be national benefits for the Russian Federation, and regional benefits for the circumpolar countries, the project relies on substantive co-financing cash contributions from these countries, and in-kind contributions from Russian Federation government agencies and scientists.

55. The baseline activities included in Table 1 are those baseline activities directly associated with the project activities, and upon which the present project will rely:

- inventory of local pollution sources by local environmental protection authorities (A2);
- meteorological, hydrological and environmental data generated by the Russian Federal Service for Hydrometeorology and Environmental Monitoring;
- modelling results of PTS long-range atmospheric transport in the European part of Russia performed by MSC-E (contribution to UN/ECE).

56. Other relevant baseline information (environmental and human health data obtained by the other Arctic countries within the framework of the AMAP activities, including data from circumpolar monitoring network of long-range atmospheric PTS transport, is not presented in the project budget, although will be available for the project's needs.

**Table 1: Incremental Cost Table (US\$)**

Activity	Baseline	Alternative	Increment	Cost to GEF (Global benefit)
<i>A1: Co-ordination, management, and support to the project</i>	0	598,000	598,000	0
<i>A2: Assessment of local pollution sources in the vicinities of selected indigenous communities</i>	340,000	395,000	55,000	0
<i>A3: Assessment of distant sources</i>	1,200,000	1,575,000	375,000	200,000
<i>A4: Study of biomagnification in Arctic food chains</i>	0	520,000	520,000	200,000
<i>A5: Dietary surveys of selected indigenous communities</i>	0	55,000	55,000	0
<i>A6: Monitoring of PTS levels in humans</i>	0	435,000	435,000	200,000
<i>A7: Assessment of role of pollution on health, and development of recommendations</i>	200,000	266,000	66,000	0
<i>A8: Capacity building</i>	0	269,000	269,000	75,000
<i>A9: Dissemination</i>	0	180,000	180,000	50,000
<i>Miscellaneous</i>	0	150,000	150,000	0
PDF-A	0	57,000	57,000	25,000
<b>Total</b>	<b>1,740,000</b>	<b>4,500,000</b>	<b>2,760,000</b>	<b>750,000</b>

## BUDGET

57. Tables 2 and 3, below, present the estimated costs of the project, broken down by activity and by region, respectively. In addition to the requested support from GEF, other financial sources are being approached to provide the necessary co-financing. These include the eight Arctic countries, the UN foundation and a number of private foundations. The application for GEF funding is being presented in applications to these other bodies. Confirmation of the GEF support for the project is expected to facilitate the ongoing negotiations with other bodies.

### *Co-financing:*

58. The following financial co-financing contributions to the project are available:
- Nordic Council of Ministers: 128.500 USD for three year (formal confirmation of 80.000 USD for first 2 years);
  - Norway: 240.000 USD (formal confirmation of 80.000 USD for 2000);
  - University Tromsø, Norway: 150.000 USD.

59. Additionally, the project application for co-financing contribution of 423.000 USD for three years is being considered by the Barents Region Human Health Programme. Decision is expected in December 1999.

60. Total identified co-financing is 941.500 USD. Project deficit of 728.500 USD is expected to be covered by contributions of the other Arctic countries and private foundations as the result of on-going negotiations.

**Table 2: Estimated breakdown of costs by activity (US\$)**

ACTIVITY	GEF	CO-FINANCING		TOTAL
		Cash	In-kind	
<i>A1: Co-ordination, management, and support to the project</i>	-	538,000	60,000	598,000
<i>A2: Assessment of local pollution sources in the vicinities of selected indigenous communities</i>	-	55,000	-	55,000
<i>A3: Assessment of distant sources</i>	200,000	137,000	38,000	375,000
<i>A4: Study of biomagnification in Arctic food chains</i>	200,000	204,000	116,000	520,000
<i>A5: Dietary surveys of selected indigenous communities</i>	-	55,000	-	55,000
<i>A6: Monitoring of PTS levels in humans</i>	200,000	141,000	94,000	435,000
<i>A7: Assessment of role of pollution on health, and development of recommendations</i>	-	66,000	-	66,000
<i>A8: Capacity building</i>	75,000	194,000	-	269,000
<i>A9: Dissemination</i>	50,000	130,000	-	180,000
<i>Miscellaneous</i>	0	150,000	-	150,000
<i>PDF-A</i>	25,000	-	32,000	57,000
<b>Total project funding requirement</b>	<b>750,000</b>	<b>1,670,000</b>	<b>340,000</b>	<b>2,760,000</b>

*Note: Executing Agency costs are entirely covered through in-kind contribution of those agencies or through co-financing*

**Table 3: Estimated breakdown of costs by region (US\$)**

Region	Cost (USD)			
	Total	GEF	Co-finance	In-kind
<i>Core activities</i>	707,000	50,000	598,000	60,000
<i>Kola peninsula</i>	289,000	34,000	220,000	35,000
<i>Pechora basin</i>	386,000	36,000	296,000	54,000
<i>Taimyr peninsula</i>	635,000	320,000	226,000	89,000
<i>Chukotka peninsula</i>	535,000	285,000	180,000	70,000
<i>Miscellaneous</i>	150,000	-	150,000	-
<i>PDF-A</i>	57,000	25,000	-	32,000
<b>Total</b>	<b>2.760.000</b>	<b>750,000</b>	<b>1,670,000</b>	<b>340,000</b>

**IMPLEMENTATION PLAN****Duration and schedule of activities**

61. The project comprises nine basic activities, to be carried out over a period of three years according to the following schedule:

Project Activities	Project-Months						
	0	6	12	18	24	30	36
<i>A1: Co-ordination, management and support to the project</i>							
<i>A2: Assessment of local pollution sources in the vicinities of indigenous communities:</i>							
<i>A3: Assessment of distant sources</i>							
<i>A4: Study of biomagnification in Arctic food chains</i>							
<i>A5: Dietary surveys of selected indigenous communities</i>							
<i>A6: Monitoring of PTS levels in humans</i>							
<i>A7: Assessment of role of pollution on health, and recommendations</i>							
<i>A8: Capacity building</i>							
<i>A9: Dissemination</i>							

## 62. Executing and Participating Agencies

### *A1: Co-ordination, management, and support to the project:*

It is proposed that the Arctic Monitoring and Assessment Programme Secretariat (AMAP Secretariat) will be the main Executing Agency for the project, including functions of international co-ordination of the project, and in cooperation with RAIPON, administration of the project.

### *A2: Assessment of local pollution sources:*

Regional Committees of the State Committee of the Russian Federation for Environmental protection.  
RAIPON.

### *A3: Assessment of distant sources:*

Meteorological Synthesizing Centre-East (MSC-E)  
Russian Federal Service for Hydrometeorology and Environmental Monitoring

### *A4: Study of biomagnification in Arctic food chains:*

Federal Service for Hydrometeorology and Environmental Monitoring  
Ministry of Health.

### *A5: Dietary surveys of selected indigenous communities:*

RAIPON  
State Committee for Northern Affairs  
Ministry of Health.

### *A6: Monitoring of PTS levels in humans:*

Ministry of Health  
Russian Federal Service for Hydrometeorology and Environmental Monitoring  
RAIPON

### *A7: Assessment of role of pollution in impact on health and recommendations:*

All executing agencies.

### *A8: Capacity building:*

Ministry of Health  
State Committee for Northern Affairs

### *A9: Dissemination:*

AMAP Secretariat  
RAIPON

Members of AMAP expert groups will assist in implementation of activities A2 to A8.

## MONITORING AND EVALUATION

63. Monitoring of progress in execution of the project will be undertaken through UNEP and GEF requirements of quarterly and half-yearly reports on substantive and financial matters. A mid-term evaluation will be undertaken under the supervision of the UNEP/GEF Co-ordination Office to diagnose problems and suggest necessary corrections. It will evaluate the efficiency of project management, including delivery of outputs and activities in terms of quality, quantity and timeliness. The Steering Group will receive the outcome of the evaluation and discuss any required remedial action, if necessary. Final desk evaluation of the project will be undertaken by the UNEP/GEF Co-ordination Office, according to UNEP approved Monitoring and Evaluation procedures. Evaluation of the overall performance of the project will be undertaken within the framework of the Monitoring and Evaluation Programme of the GEF Secretariat.

**LIST OF ANNEXES**

- Annex A      General Principles of project implementation**
- Annex B      Regional Breakdown of Activities and their Costs**

## ANNEX A - GENERAL PRINCIPLES OF PROJECT IMPLEMENTATION

### Selection of contaminants and sampled media

The proposed project includes analysis of human and environmental media for the following contaminants:

*POPs: Selected congeners from both parent compounds and metabolites of the following classes of industrial products:*

PCBs (major congeners found in blood: PCB 28, 52, 99, 101, 105(132), 118, 128, 138(163), 153, 156, 170, 180, 183 and 187)

Hexachlorobenzene

Brominated flame-retardant (PBBs and PBBEs)

*POPs: Selected chlorinated pesticides and their metabolites:*

Hexachlorocyclohexanes ( $\alpha$ -HCH,  $\beta$ -HCH,  $\gamma$ -HCH)

DDT-group (e.g. o,p'-DDT, p,p'-DDT, o,p'-DDE and p,p'-DDE)

Toxaphenes

Cyclodienes (e.g. cis/trans-chlordane, dieldrin)

Mirex (this pesticide has not been used in Russia/USSR but can be a good indicator of long-range transport)

*Combustion by-products: Selected PAHs, dioxins/furans*

*heavy metals: Mercury and others (Cd, Pb, etc.)*

*Selected radionuclides (will be assessed mainly within the framework of parallel activities, but will contribute to the GEF project in assessment of combined effects)*

Different types of sample will be analysed for different groups of contaminants, as appropriate to the geographical settings and the goals of the project. Selection of sampled media and analysed contaminant combinations is based on AMAP guidelines in combination with available baseline information concerning, e.g., relevant sources in different areas.

### Analytical considerations and QA/QC issues

Application of appropriate QA/QC routines and procedures at all stages of the work - through sampling, sample pre-treatment, analysis, data handling and assessment, is fundamental to the project implementation. All proposed sampling and analytical work will be required to conform to stringent QA/QC protocols and procedures (including reporting requirements) applicable to AMAP programme activities.

Through its activities to date, AMAP has acquired considerable knowledge and experience concerning both the conceptual and practical aspects of QA/QC work within the Arctic in general, and the Russian North in particular. On the basis of this knowledge and experience, detailed specifications for project implementation will be developed, consistent with the requirements of the AMAP circumpolar monitoring programme, that will ensure verifiable data with appropriate documentation of QA/QC aspects.

Sampling and analysis will be carried out using appropriate methodologies and laboratories. Replicate analyses of individual samples will be performed together with analyses of certified reference materials to document analytical performance. Laboratories will be selected on the basis of their documented ability to accurately analyze the relevant substances in the media concerned. In all cases, work will be conducted within Russian laboratories to the greatest extent possible. Again, through its previous work, AMAP has identified laboratories possessing the necessary capability, and operating both internal and external QA/QC procedures. If necessary, further laboratories will be identified in the course of the project, and capability within these laboratories developed. External control will be applied on the basis of the laboratory participation in recognized QA/QC programmes and exercises, and through duplicate analyses of split-samples by reference laboratories.

### **Sampling and sample handling**

Sampling will be performed mainly by experts from Russia, however, western experts will also be involved in both the design and conduct of this work to ensure that procedures are compatible with those being operated in other circumpolar countries, and therefore capable of yielding comparable data. Representatives of indigenous peoples will also be involved in the activities within the different regions, to inform the local populations both about the objectives of the project and the likely benefits of the project in terms of its relevance to questions and issues that the project will aim to answer or address. They will also be involved in the practical arrangement concerning when and where sampling will take place, verification of information on local sources, and, at a later stage, communicating the results of the project to the local peoples.

Sampling, sample pre-treatment, storage and shipment will be performed according to internationally accepted standards (with associated QA/QC requirements) adopted by international programmes such as those operated by AMAP, GEMS, EMEP, ICES, etc., and approved guidelines applied within the Russian Federation. The sampling strategies are developed to include appropriate sample replication to allow estimation of sampling variability and to maximise the statistical power of the sampling and analytical programme (within the constraints of the project budget).

Sampling considerations associated with specific project activities are as follows:

*Atmospheric monitoring:* Atmospheric monitoring data will be provided within the framework of the AMAP, bilateral and national monitoring activities of the Arctic countries as baseline contribution to the project.

*Freshwater monitoring:* Sampling to estimate the transport of contaminants by rivers will take place at a minimum of two sites in each river, at locations of routine hydrological data collection. Ideally, one site will be located where the river enters the Arctic area and the second in the lower reaches of the river, at the hydrological station associated with the closing cross-section or in the vicinity (upstream) of the settlement where indigenous peoples that are part of this study live. Samples will be collected from at least three depths at each of three points in the river cross-section; samples will be bulked as appropriate to allow characterisation of the river contaminant load. Analyses will include river water, suspended particulate matter (SPM) and river sediments.

For environmental screening, a minimum of three sample replicates will be taken per station. Freshwater fish will be collected from locations fished by indigenous peoples.

*Human health studies:* Monitoring of contaminant levels in humans will be achieved through the collection of blood samples from mother-child pairs. The study will comprise indigenous women volunteering to participate in the project, and be conducted according to relevant ethical principles including confidentiality of data, etc. The majority of the samples will be collected at local community hospitals, with some samples collected at more isolated communities; in all cases blood samples will be taken by trained medical personnel. In addition to the blood sampling, the project will collect data on pregnancy outcome (size and weight of baby, development indices, etc.), and in some regions include a more detailed registrations of epidemiological information.

*Dietary survey:* All women participating in the study will be interviewed with respect to diet (types and quantities of foods consumed, etc.). Additional information about lifestyle and life history of the mothers will be obtained using standardised questionnaires, to allow factors such as smoking to be taken into account when interpreting data. To achieve statistically reliable information about life style and nutrition, additional members of the local communities of different age groups, etc., will be interviewed using the same type of questionnaire. A vital role in this work will be played by indigenous representatives trained to conduct the interviews and compile the resulting data.

*Levels in environment and food stuffs (food chain studies):* Sampling important components of the diet (foodstuffs), and of environmental compartments and key species in food chains that lead to consumed top predator species will be carried out. This will enable the contamination status in key environmental compartments to be characterised. It will also provide information on how contaminants accumulate and biomagnify in food chains, information that can assist in developing dietary advice on how to avoid or minimise contaminant intake.

Marine monitoring: Sampling of some marine mammals used for food (e.g., walrus, whale) will require participation of local hunters. In addition to samples taken for scientific work from animals hunted and killed by native hunters for food, biopsy samples (e.g. blubber and blood) may be obtained from live animals. Fish, shellfish, birds and bird eggs, etc. that are part of the traditional diet will be sampled from the same areas that are normally utilised by indigenous peoples. Additionally, environmental samples (water, sediments, etc.) will be taken for assessment of food chains.

Terrestrial monitoring: For terrestrial studies (mainly studies related to analysis of food chain components), samples of animals and plants will be collected within the areas normally used by the local indigenous hunters, to ensure that samples are representative of consumed traditional foods allowing realistic estimation of exposure to contaminants. At same locations, samples of soil and peat cores will be collected.



## ANNEX B – REGIONAL BREAKDOWN OF ACTIVITIES AND THEIR COSTS

### CORE ACTIVITIES

Activities	Actions and studies	Cost, USD		
		Direct*	In-kind	Total
<i>A1: Co-ordination, management, and support to the project</i>	Project manager (18 man/month)	90.000		90.000
	International consultant of human health (18 man/month)		60.000	60.000
	2 Russian human health coordinators (36 man/month)	36.000		36.000
	Indigenous coordinator, RAIPON (18 man/month)	18.000		18.000
	Travelling expenses	115.000		115.000
	4 Steering Group Meetings	16.000		16.000
	6 Coordination meetings	15.000		15.000
	Translation and interpretation	20.000		20.000
	Copying of documents, communication expenses	20.000		20.000
	Renting of the project office in Moscow (2.000 x 36 months)	72.000		72.000
	Purchase of equipment for the Moscow project office (PC set, fax, copier)	10.000		10.000
	Other expenses	30.000		30.000
<i>A2: Assessment of local sources</i>	Co-ordination of local environmental protection authorities	20.000		20.000
<i>A3: Assessment of distant sources</i>	Co-ordination of regional branches of hydrometeorological service	20.000		20.000
<i>A2-A7</i>	Data handling	50.000		50.000
<i>A8: Capacity building</i>	Preparation of guidelines for environmental and human sampling, dietary surveys	15.000		15.000
<i>A9: Dissemination</i>	Publishing of Interim and Final Reports	100.000		100.000
<b>Total</b>		<b>647.000</b>	<b>60.000</b>	<b>707.000</b>

\* - direct cost includes GEF funding and co-financing

### KOLA PENINSULA

**Sources:** The Kola region of north-western Russia is influenced by a number of sources: POPs and heavy metals from sources in industrialized western Europe via long-range atmospheric transport and marine pathways entering the Barents Sea via the Norwegian coastal current; heavy metals and acidifying substances from major local sources including the non-ferrous smelters at Nikel, Zapolyarnyy and Monchegorsk; potential sources of radioactive contamination from the Russian naval installations on the Kola Peninsula, and sources associated with urban centres and port/shipping activities (Murmansk, etc.)

**Communities:** The indigenous peoples of the region are the Kola Saami, the Russian group of the Saami people that are distributed across northern Scandinavia (Norway, Finland, Sweden) and the Kola Peninsula. The Saami are known for reindeer herding and reindeer form an important part of their traditional diet and culture. In addition, coastal and fjord Saami

communities exploit inshore marine and freshwater fish. Terrestrial plants (berries and mushrooms, etc.) are also important traditional dietary components. The Kola region also has major urbanized communities and industrial centres in the Arctic, including Murmansk, the largest Arctic city, with a population of 473 000. Information on human health in these population centres will contribute to the comparative assessment of the indigenous and non-indigenous population in the region.

**Human health programme:** Together with Scandinavian Saami, Russian indigenous and non-indigenous groups in the Kola region have been included in earlier human health screening studies through work under bilateral Norwegian-Russian programmes and AMAP coordinated activities at the community hospitals in Nikel, Murmansk, Monchegorsk and Apatity. These studies have shown that the non-indigenous populations are exposed to contaminants mainly through their work, and the indigenous peoples through their diet from herding, hunting and fishing activities. The proposed new work will concentrate on the Lovozero community - a mainly indigenous community close to the Russian-Finnish border.

The human health programme implementation structures established during earlier screening studies can now be exploited to provide a much improved basis for a detailed understanding of pollution effects on human health in the area, and their relation to sources of pollution.

**Human contaminant intake programme:** Analyses of contaminants in the traditional diet will focus on reindeer, freshwater fish and other components of the traditional diet, selected on the basis of the dietary survey.

**Environmental screening programme:** Because of its proximity to Norway, Sweden and Finland and the bilateral activities between Russia and these three countries, the Kola region is one of the better documented regions of Russia in relation to its pollution status. In particular atmospheric pollution is monitored through the EMEP air monitoring station network, including the AMAP master station at Pallas, and through monitoring studies directed at the Kola smelter emissions. The background air monitoring station at Ny-Alesund collects relevant data on regional long-range transport. Source assessment work such as that conducted under the AMAP-NEFCO studies 'Barents Region Environmental Programme: Proposals for environmentally sound investment projects in the Russian part of the Barents Region' have documented a number of the main sources within the region. The proposed environmental screening work is therefore directed at sampling to establish trends through retrospective analysis of core samples (peat and lake sediments) and sampling of key food chain species in connection with the human intake studies.

Activities	Actions, studies	Cost, USD		
		Direct*	In-kind	Total
<i>A1: Co-ordination, management, and support to the project</i>	Regional coordinator, travelling expenses, administrative costs	24.000		24.000
<i>A2: Assessment of local sources</i>	Inventory of local pollution sources based on statistical reports, questioning of local population, assessment of the previous inventory results	7.000		7.000
<i>A3: Assessment of distant sources</i>	<b>Atmospheric transport:</b> modelling of transport and deposition by MSC-E	Covered by baseline activities		
<i>A4: Study of biomagnification in food chains</i>	Logistical support, sampling, sample pre-treatment and shipment of 70 samples of environmental compartments, key food chain species and consumed species/plants	34.000		34.000
	Analysis 70 samples	25.000	15.000	40.000
	Analysis of 10% samples for dioxins/furans	6.000	4.000	10.000
	QA and data reporting	5.000		5.000
<i>A5: Dietary surveys</i>	Distribution and collection of questionnaires	10.000		10.000
<i>A6: Monitoring of PTS levels in Humans</i>	Logistical support, sampling, pre-treatment and shipment of 60 samples	25.000		25.000
	Analysis of 60 blood samples	21.000	13.000	34.000
	Analysis of 10% samples for dioxins/furans	5.000	3.000	8.000
	QA and data reporting	5.000		5.000
<i>A7: Assessment of combined pollution effects on health, and recommendations:</i>	Assessment of combined effects of pollution factors, including PTS and radioactivity, and health risks; development of health recommendations in collaboration with indigenous peoples and regional health authorities	16.000		16.000
<i>A8: Capacity building</i>	Training personnel for environmental sampling	10.000		10.000
	Training personnel to conduct dietary surveys	6.000		6.000
	Training hospital personnel for human sampling	10.000		10.000
	Regional workshop for environmental and medical laboratory personnel "Methods of environmental and biological analytical chemistry" (jointly with the Pechora project component)	25.000		25.000
<i>A9: Dissemination</i>		20.000		20.000
<b>Total</b>		<b>254.000</b>	<b>35.000</b>	<b>289.000</b>

\* - direct cost includes GEF funding and co-financing

## **NORTHERN PART OF THE PECHORA BASIN**

**Sources:** The Northern part of Pechora River basin is within a region that is currently under development for its oil and gas reserves. In addition, the Pechora is a major pathway of aquatic transport of pollutants to the Arctic from lower latitudes. Taking into account that the Russian nuclear test sites (Novaya Zemlya) are located in the vicinity of this region, this source should be also considered in connection with assessment of combined effects of different pollution factors on human health. This area is likely to be also affected by long-range atmospheric transport from heavily industrialized regions.

**Communities:** The region falls within the Nenets Autonomous District with communities of the Nenets people. Main attention is planned to be addressed to the community of Nelms Nos in the mouth of the Pechora River, the main area of compact Nenets settlement in this Autonomous District.

**Human health programme:** The human health activities focus on Nenets communities in the Nenets Autonomous District, with the Naryan Mar hospital as the base for these studies. Earlier screening activities involving some of these groups will provide a sound basis for extended work on the relationship between health and contaminant exposure and lifestyle factors.

**Human contaminant intake programme:** Freshwater fish, reindeer meat and a range of other traditional terrestrial foodstuffs form an important component of the traditional diet for communities living on the lower Pechora.

**Environmental screening programme:** The environmental screening work is aimed at establishing the flux of contaminants entering the Arctic from the Pechora River system. In addition to environmental screening work for POPs and metals, some work is proposed on PAHs and oil hydrocarbons in connection with the oil and gas development activities in the region. The Amderma monitoring station will provide data for long-range atmospheric transport of POPs and mercury. Monitoring of radioactivity and assessment of its impact of health of indigenous population will be presented as parallel activities important for assessment of combined effects.

Activity	Actions, studies	Cost, USD		
		Direct*	In-kind	Total
<i>A1: Co-ordination, management, and support to the project</i>	Regional coordinator, travelling expenses, administrative costs	24.000		24.000
<i>A2: Assessment of local sources</i>	Inventory of local pollution sources based on statistical reports, questioning of local population, assessment of the previous inventory results	9.000		9.000
<i>A3: Assessment of distant sources</i>	<u>Atmospheric transport</u> : modelling of transport and deposition by MSC-E	Covered by baseline activities		
	<u>Pechora riverine transport</u> : logistical support, sampling, sample pre-treatment and shipment of 88 samples (11 x 2 x 4 seasons)	40.000		40.000
	<u>Pechora riverine transport</u> : analysis of 88 water samples	31.000	19.000	50.000
	QA and data reporting	5.000		5.000
<i>A4: Study of biomagnification in food chains</i>	Logistical support, sampling, sample pre-treatment and shipment of 70 samples of environmental compartments, key food chain species and consumed species/plants	34.000		34.000
	Analysis of 70 samples	25.000	15.000	40.000
	Analysis of 10% samples for dioxins/furans	6.000	4.000	10.000
	QA and data reporting	5.000		5.000
<i>A5: Dietary surveys:</i>	Distribution and collection of questionnaires	10.000		10.000
<i>A6: Monitoring of PTS levels in humans</i>	Logistical support, sampling, pre-treatment and shipment of 60 samples	25.000		25.000
	Analysis of 60 blood samples	21.000	13.000	34.000
	Analysis of 10% samples for dioxins/furans	5.000	3.000	8.000
	QA and data reporting	5.000		5.000
<i>A7: Assessment of combined pollution effects on health, and recommendations</i>	Assessment of combined effects of pollution factors, including PTS and radioactivity, and health risks; development of health recommendations in collaboration with indigenous peoples and regional health authorities	16.000		16.000
<i>A8: Capacity building</i>	Training personnel for environmental sampling	10.000		10.000
	Training personnel to conduct dietary surveys	6.000		6.000
	Training hospital personnel for human sampling	10.000		10.000
	Regional workshop for local environmental and medical laboratory personnel "Methods of environmental and biological analytical chemistry" (jointly with the Kola project component)	25.000		25.000
<i>A9: Dissemination</i>		20.000		20.000
<b>Total</b>		<b>332.000</b>	<b>54.000</b>	<b>386.000</b>

\* - direct cost includes GEF funding and co-financing

## **TAIMYR PENINSULA, LOWER YENISEY**

**Sources:** The central Siberian region of the Taimyr Peninsula, together with the lower Yenisey catchment, includes a number of important existing or potential pollution sources. The first of these is the Yenisey River itself, with its vast catchment and the numerous industrial, urban and agricultural discharges that take place along its course. In particular, previous studies have indicated that the Yenisey River may carry high loadings of POPs to the Arctic Ocean (possibly from continuing use of restricted substances such as DDT, and HCH); these observations need further investigation. The Yenisey system also has potential for radioactive contamination from past releases from the Krasnoyarsk nuclear facilities. The proposed region also includes Norilsk, a major industrial pollution source above the Arctic Circle, but one which is currently poorly documented. Combined effects of these pollution factors on human health in this area, and within the lower reaches of the Ob River, may provide some of the strongest human health signals in the Arctic.

**Communities:** A number of indigenous peoples are represented in the Taimyr region including Nenets, Enets, Ngasans, and Dolgan peoples. These peoples represent a range of indigenous lifestyles with different traditional diets, and together with non-indigenous populations will allow comparisons to be made in relation to the different contamination regimes affecting these areas.

**Human health programme:** The human health activities propose to cover communities of the indigenous peoples listed above. Major studies will be based on hospitals located in Dudinka and Karaul, in the western part of the region, and in Khatanga in the eastern part. In addition, studies of non-indigenous populations will be made, based on the hospital in Norilsk.

**Human contaminant intake programme:** The groups covered by the human health activities include those relying on reindeer herding, freshwater fish, wild game and fowl and various plant components. This range of diets is reflected in a dietary contaminant programme.

**Environmental screening programme:** The environmental screening work is aimed at establishing the flux of contaminants, including possible radioactive contamination, transported by the Yenisey River system. In addition to the analytical work specified as part of the immediate project work, the programme includes proposals for sampling and storage of additional material for subsequent analysis if additional funding for this work can be found. The Norilsk area will be a focus for any additional environmental screening programme work to assess its impact on food chains and human health.

Activities	Actions, studies	Cost, USD		
		Direct*	In-kind	Total
<i>A1: Co-ordination, management, and support to the project</i>	Regional coordinator, travelling expenses, administrative costs	24.000		24.000
<i>A2: Assessment of local sources</i>	Inventory of local pollution sources based on statistical reports, questioning of population, assessment of the previous inventory results	8.000		8.000
<i>A3: Assessment of distant sources</i>	<u>Atmospheric transport</u> : modelling of transport and deposition by MSC-E	75.000		75.000
	<u>Yenisey riverine transport</u> : logistical support, sampling, sample pre-treatment and shipment of 88 samples (11 x 2 x 4 seasons)	40.000		40.000
	<u>Yenisey riverine transport</u> : analysis of 88 water samples	31.000	19.000	50.000
	QA and data reporting	5.000		5.000
<i>A4: Study of biomagnification in food chains</i>	Logistical support, sampling, pre-treatment and shipment of 140 samples	60.000		60.000
	Analysis of 140 samples	48.000	32.000	80.000
	Analysis of 10% samples for dioxins/furans	11.000	7.000	18.000
	QA and data reporting	5.000		5.000
<i>A5: Dietary surveys</i>	Distribution and collection of questionnaires	20.000		20.000
<i>A6: Monitoring of PTS levels in humans</i>	Logistical support, sampling, pre-treatment and shipment of 120 samples	50.000		50.000
	Analysis of 120 blood samples	42.000	25.000	67.000
	Analysis of 10% samples for dioxins/furans	10.000	6.000	16.000
	QA and data reporting	5.000		5.000
<i>A7: Assessment of combined effects on health, and recommendations</i>	Assessment of combined effects of pollution factors, including PTS and radioactivity, and health risks; development of health recommendations in collaboration with indigenous peoples and regional authorities	16.000		16.000
<i>A8: Capacity building</i>	Training personnel for environmental sampling	10.000		10.000
	Training personnel to conduct dietary surveys	6.000		6.000
	Training hospital personnel for human sampling	10.000		10.000
	Regional workshop for environmental and medical laboratory personnel "Methods of environmental and biological analytical chemistry	50.000		50.000
<i>A9: Dissemination</i>		20.000		20.000
<b>Total</b>		<b>546.000</b>	<b>89.000</b>	<b>635.000</b>

\* - direct cost includes GEF funding and co-financing

## CHUKOTKA PENINSULA

**Sources:** The Far North-East of Russia, Chukotka peninsula in particular, is influenced both by air masses and marine currents that transport persistent toxic substances to the Arctic from the major source areas of South-East and Far East Asia. Of particular significance in this context are pesticides originating from high-use areas in the tropics of South-East Asia, and mercury emissions from coal burning in China. Regarding local sources, attention will be directed to mercury on Chukotka (due to its increased background levels).

**Communities:** Human health studies will be directed towards the indigenous peoples of Chukchi and Yupik. The central role of marine resources, in particular marine mammals, in the traditional diet of indigenous communities in Chukotka is of considerable interest. High levels of intake of POPs and mercury by indigenous peoples in Canada and Greenland with a high consumption of marine mammals is well documented. The proposed studies will make it possible to see if the traditional diet is responsible for similar exposures for the populations in north-eastern Russia, and whether these can be linked to sources of long-range transported contaminants reaching the area.

**Human health programme:** The human health activities are concentrated on Chukchi and Yupik peoples in the Chukotka Autonomous Region. Local hospitals will be used as a base for these studies (Uelen, Iultin). Comparison between these indigenous groups will be assessed in relation to lifestyle and may provide clues to the significance of pollution gradients away from major source regions.

**Human contaminant intake programme:** Analyses of contaminants in the traditional diet of coastal communities will focus on marine foodstuffs, in particular marine mammals (walrus, ringed seal, beluga and bowhead whale). In the inland communities, the main focus will be on freshwater fish, reindeer meat and other terrestrial foodstuffs that will be selected on the basis of the dietary survey.

**Environmental screening programme:** The inherent difficulties in sampling remote areas in Chukotka have meant that, to date, information on the pollution status of the region is extremely limited. Consequently, in conjunction with the human health work, a reasonably extensive programme of sampling environmental media is proposed, in particular aimed at identifying sources of contamination and providing background data for study of biomagnification in food chains.



Activities	Actions, studies	Cost, USD		
		Direct*	In-kind	Total
<i>A1: Co-ordinationng, management, and support to the project</i>	Regional coordinator, travelling expenses, administrative costs	24.000		24.000
<i>A2: Assessment of local sources</i>	Inventory of local pollution sources based on statistical reports, questioning of local population, assessment of the previous inventory results	9.000		9.000
<i>A3: Assessment of distant sources</i>	<u>Atmospheric transport</u> : modelling of transport and deposition by MSC-E	75.000		75.000
<i>A4: Study of biomagnification in food chains</i>	Logistical support, sampling, sample pre/treatment and shipment of 140 samples of environmental compartments, key food chain species and consumed species/plants	60.000		60.000
	Analysis of 140 samples	48.000	32.000	80.000
	Analysis of 10% samples for dioxins/furans	11.000	7.000	18.000
	QA and data reporting	5.000		5.000
<i>A5: Dietary surveys: Human Health</i>	Distribution and collection of questionnaires	14.000		14.000
<i>A6: Monitoring of PTS levels in humans</i>	Logistical support, sampling, pre-treatment and shipment of 120 samples	50.000		50.000
	Analysis of 120 blood samples	42.000	25.000	67.000
	Analysis of 10% samples for dioxins/furans	10.000	6.000	16.000
	QA and data reporting	5.000		5.000
<i>A7: Assessment of combined effects on health, and recommendations</i>	Assessment of combined effects of pollution factors, including PTS and radioactivity, and health risks; development of health recommendations in collaboration with indigenous peoples and regional health authorities	16.000		16.000
<i>A8: Capacity building</i>	Training personnel for environmental sampling	10.000		10.000
	Training personnel to conduct dietary surveys	6.000		6.000
	Training hospital personnel for human sampling	10.000		10.000
	Regional workshop for local environmental and medical laboratory personnel "Methods of environmental and biological analytical chemistry"	50.000		50.000
<i>A9: Dissemination</i>		20.000		20.000
Total		465.000	70.000	535.000

\* - direct cost includes GEF funding and co-financing

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FAX 1

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ПО ОХРАНЕ ОКРУЖАЮЩЕЙ СРЕДЫ**

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Dear colleagues,

117-03-80/914  
UNEP  
GEF COORD. OFFICE  
RECEIVED  
ACTION NO ☐ REQUIRED YES ☐  
31 MAY 1999  
WHAT.....  
WHO.....  
WHEN COMPLETED.....  
CIRCULATE NO ☐ YES ☐  
FILE IN ☐

Reference is made to preparation of the GEF Project Proposal "Contaminants, Food Security and Indigenous Peoples in the Arctic Russia". I would like to inform you that the State Committee of the Russian Federation for Environmental Protection, as the Russian GEF Focal Point, agrees with the recommendation of the Consultation meeting on preparation of the above Project Proposal (Moscow, 8-9 April 1999) to nominate the AMAP Secretariat as the international coordinator of the Project.

For successful implementation of the Project, it is essential to ensure that about 80% of the Project budget should be allocated for participation of Russian experts and institutions, including the Russian Association of the Indigenous Peoples of the North, Siberia and Far East (RAIPON). In this connection, I am pleased to inform you that the State Committee for Environmental Protection plans to provide its in-kind contribution, equal to 500 K US dollars in three years, to the Project for inventory of local pollution sources in the vicinities of indigenous communities.

Yours sincerely

Alexander Solovyanov  
Deputy Chairman

GEF01

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