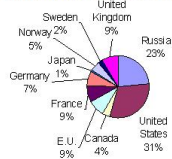


Table 3. Submarine Dismantlement and Related Activities: Funding Needs and Proposed Solutions (dollar amounts approximate)

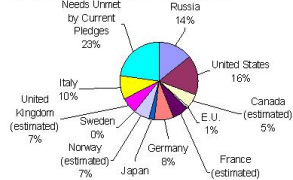
Note: This is likely only a partial list of needs in this area.

Activity	Costs, Expenditures, Pledges, and Unmet Needs
<p>Submarine dismantlement.</p> <p>32 attack and cruise missile submarines yet to be scrapped in the North, and 20 in the Pacific.</p> <p>Minatom lists an additional 35 boats as "under dismantlement."</p> <p>(Cost estimated at \$7 million per boat; certain boats may cost more, and many slightly less.)</p>	<p>Northern Fleet: \$224 million Pacific Fleet: \$140 million Total need: \$364 million (If funds are still required for vessels currently under dismantlement, then funding needs may increase another \$245 million.)</p> <p>Norway, Japan, and the United Kingdom are currently funding dismantlement of 5 vessels. They have indicated that they are likely to fund additional boats. The United States is funding the dismantlement of all Russian ballistic missile submarines.</p> <p>Unmet needs total at least \$364 million (and as much as \$574 million if boats under dismantlement are included).</p> <p>Since Japan is the only nation dismantling submarines in the Pacific, new donors are particularly needed in this area. The Pacific nations of Australia, Canada, New Zealand, and South Korea, if they decide to join the Global Partnership, should consider aid here. Northwest Russia also has unmet needs. Potential new donors include Belgium, Ireland, and Spain, while Global Partnership members France and Italy have already been engaging Russia in discussions over possible projects in this area. Russia itself has also been funding tasks necessary for submarine dismantlement.</p> <p>If 8 countries each spent \$72 million, all nuclear submarines could be dismantled.</p>
<p>Submarine defueling.</p> <p>27 vessels in the North and 28 in the Pacific still have fuel.</p> <p>(Cost estimated at \$1 million per boat, includes construction of casks to house fuel and transportation costs.)</p>	<p>Total need: \$55 million Unmet need: \$55 million</p> <p>Boats currently being dismantled were defueled using Russian funds. However, the United Kingdom has indicated in future it intends to handle defueling as well as dismantling.</p> <p>Additional contributors might include Australia, Belgium, Canada, France, Japan, Norway, Spain, or Sweden.</p>
<p>Protection of 3 damaged submarines (all in Primorye, Russian Far East).</p>	<p>Total need: unknown, likely to be large</p> <p>Moscow has begun to construct a sarcophagus for damaged boats. Given the liability issues involved, foreign donors are not likely to become involved in this project, but Moscow should be given credit for the expenditures it makes in this area.</p>
<p>Nuclear-powered surface vessel dismantlement.</p> <p>2 vessels, one in the North, one in the Pacific.</p> <p>(Cost is very rough estimate--technology to dismantle these vessels must be developed.)</p>	<p>Total need: \$20 million Unmet need: \$20 million</p> <p>Russia has proposed that Italy undertake dismantlement of one ship. Another donor is needed in the Pacific.</p>
<p>Land-based reactor storage.</p> <p>1 facility each needed in North and Pacific.</p> <p>(Minatom estimates construction of a land-based reactor storage facility in the Pacific will cost \$71.8 million. The German program totals \$300 million as it also includes the cost of cutting out reactor sections, cranes, transportation, and other related activities.)</p>	<p>Total need: \$144 million Unmet need: \$72 million</p> <p>Germany is undertaking construction of reactor storage in the North, at a cost of about \$72 million.</p> <p>Although Japan has been discussing reactor storage construction with Russia, it has yet to make a commitment in this area. Given the critical nature of this project, other nations should also consider providing assistance.</p>
<p>Preparing reactor blocs for long-term storage.</p> <p>(It is not clear exactly what projects are included in Minatom's estimate for this activity.)</p>	<p>Total need: \$900.5 million (Minatom estimate) Unmet need: at least \$700 million</p> <p>Germany has promised to prepare reactors currently in temporary storage in Murmansk region's Sayda Bay for long-term storage, at a cost of some \$200 million.</p> <p>If another four countries contribute nearly this amount, all reactors can be put in safe and secure long-term storage. Russia itself should contribute to this effort, but more donors are needed. Moscow will also have to undertake additional tasks in several decades, in order to permanently dispose of these reactors.</p>
<p>Spent fuel storage and security.</p> <p>(Minatom has estimated costs total \$1.023 billion.)</p>	<p>Total need: \$1.023 billion Unmet need: nearly 1 billion</p> <p>The United States, Sweden, Norway, and the United Kingdom have undertaken projects to secure and improve the storage of spent fuel. While they are likely to contribute more funding in this area, much more remains to be done. Since spent nuclear fuel poses a proliferation threat, this should be a priority task.</p> <p>If 8 countries each commit \$125 million, all spent fuel can be securely and safely stored. Canada might consider allotting some of its promised funds to spent fuel in the Pacific. France is likely to help in this area at Gremikha. Other nations such as Australia, Japan, and South Korea in the Pacific, and Ireland, Spain, and Sweden in the North should consider helping in this critical area.</p>
<p>Defueling and dismantlement of 44 nuclear service ships.</p> <p>(Some of these vessels, like the <i>Lepse</i>, house damaged SNF, and will be expensive and difficult to dismantle. Other vessels, with low-level radioactive waste, will cost far less.)</p>	<p>Total need: \$44 million Unmet need: \$42 million</p> <p>France and Norway have allocated funds for the <i>Lepse</i> service ship, which has damaged nuclear fuel on board. Russia itself has unloaded damaged fuel from a similar boat in the Pacific. However, more needs to be done to secure the spent fuel on these vessels, and improve their safety. Russia has approached Italy in this regard. Other donors are needed, particularly in the Pacific.</p>
<p>Solid radioactive waste handling and storage.</p> <p>While Japan and the United States have provided facilities to treat liquid radioactive waste, facilities to handle and store the solid radioactive waste resulting from submarine dismantlement are still needed.</p>	<p>Total need: \$86 million, including some rehabilitation costs Unmet need: \$86 million</p> <p>If just two donors spent \$43 million, this problem could be solved.</p> <p>Suggested donors include: Australia, Belgium, Ireland, Norway, Spain, or Sweden.</p>
<p>Toxic waste handling.</p> <p>Toxic byproducts from dismantlement pose an environmental hazard, and could prove to be a bottleneck in the dismantlement process.</p>	<p>Total need: \$191 million Unmet need: \$191 million</p> <p>Many countries have expertise in this area, and could engage national companies in this effort. Donors concerned about the environment might give particular consideration to helping in this area.</p>
<p>Environmental remediation, other costs (including \$70 million for safe storage of submarines, nuclear-powered surface ships, service ships, and reactor compartments; \$30 million for transportation, and \$752 million for environmental rehabilitation at onshore spent fuel storage sites).</p>	<p>Total need: \$852 million Unmet need: \$850 million</p> <p>While some special railcars to transport SNF have been built (with U.S. and Norwegian funds) and several countries have undertaken environmental remediation at onshore SNF storage sites, much remains to be done. At least \$100 million is needed in the very near future to ensure that problems do not get worse before clean-up begins.</p>
<p>Development of "master plans" to coordinate assistance work.</p>	<p>Total need: unknown.</p> <p>The NDEP is funding the development of a Strategic Master Plan for Northwest Russia. Another donor should fund a similar plan for the Pacific, to identify security problems, unmet needs, or possible bottlenecks, and help coordinate assistance.</p>
<p>Sustainability.</p> <p>Work with nuclear inspectorate and others to ensure safety and security are maintained in the future.</p>	<p>Total need: unknown, as Minatom has not asked for work in this area. However, Sweden has shown that small sums (less than \$1 million) can fund successful projects in this area. All donors should include work in this area as part of their other projects, which some donors might engage in projects aimed at sustainability of security measures (including education) and maintenance of environmental safety (through assistance to the civilian nuclear inspectorate).</p>
<p>TOTAL COST</p>	<p>Approximately \$4.5 billion.</p>

Actual Contributions since Formation of Global Partnership:**



Pledges in Proportion to Projected Needs:***



**Includes contributions made to the NDEP fund, by Canada, European Union, France, Germany, Norway, Sweden, and the United Kingdom. Most of this money has yet to be spent on actual projects.

*** Since several countries have not made 10-year Global Partnership pledges in the naval sphere, their total commitments have been extrapolated from current activities and negotiations.