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# Appendixes

## Appendix A

# Defense Technology and Industrial Base Policies of Allied Nations

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U.S. strategies for restructuring the defense technology and industrial base (DTIB) will be influenced by the DTIB strategies of our principal allies as well as any potential adversaries. For example, allied emphasis on collaborative procurement may affect the tendency of the United States to engage in such efforts. Also, international arms sales will affect both U.S. sales and possible levels of U.S. R&D. This appendix provides a tabular overview of foreign DTIB structures and policies for Canada, France, Germany, Japan, and the United Kingdom. The defense bases of these nations are all facing pressures similar to those on the U.S. DTIB.

Table A-1 describes the structure of the DTIBs of the five countries. Indicators are the size of the industry

(measured by personnel), percent owned by the state, and export sales.

Table A-2 indicates current spending and trends in defense spending (where available), including investment in military R&D and procurement.

Table A-3 lists the countries' goals for restructuring their defense bases, such as what design and manufacturing capabilities each country wishes to preserve, priorities for defense R&D and procurement, and plans for surge production or industrial mobilization in crisis and war.

Finally, table A-4 describes government strategies for achieving the desired goals.

**Table A-1—Structure of the Allies' DTIBs**

Country	Industry size (direct employees)	Percent state-owned	1990 Export sales (billions of U.S. dollars)
Canada .....	80,000	0%	\$0.88 <sup>b</sup>
France .....	260,000	80%	N <sup>c</sup>
Germany .....	265,000	almost 0%	
Japan .....	NA	0-10%	
United Kingdom .....	300,000 <sup>a</sup>	almost 0%	w <sup>0</sup> .4

NOTE: Conversion rates: \$1 = 0.56£; \$1 = 5.5FF; \$1 = 1.19 Cdn.

NA = not available.

a Financial year 1989/90. Includes 150,000 jobs sustained by defense exports.

b Most exports are to the United States.

c A relatively small amount.

SOURCE: Office of Technology Assessment, 1992.

**Table A-2—Fiscal Year 1992 Allied Defense Spending  
(billions of U.S. dollars)**

Country	Total defense budget	Defense R&D budget	Procurement budget	Percent GNP
Canada .....	\$10.6	\$0.12	\$5.1	1.8%
France .....	\$35.5	\$5.5	\$18.7	3.3 %/0
Germany .....	\$40.2	\$1.8	\$4.8	2.5%
Japan .....	\$34.2	\$0.93	\$6.5	0.9 %/0
United Kingdom .....	\$43.1	\$4.7	\$16.1	4.0%

NOTE: Defense budgets converted to U.S. dollars using the following exchange rates

\$1 = 1.19 Cdn

\$1 = 135 ¥

\$1 = 1.64 DM

\$1 = 5.5 FF

\$1 = 0.56 f

SOURCE: Office of Technology Assessment, 1992.

Table A-3-Priorities for Restructured DTIBs

Country	Core capabilities	R&D	Procurement	Surge/mobilization
Canada . . . . .	Complex subsystems, shipbuilding, light armored vehicles, trucks, small arms, helicopters.	Focus at subsystems level; government facilities specialize in militarily unique technologies.	~anaafl'an pawol'Ingale,'llgm armored vehicles, tactical command and control systems, helicopters.	i nsrtwudnallzao 'aelense i Mustry planning, stresses {operation with the United 1 ;tates.
France . . . . .	Full range of major tactical weapon platforms, nuclear weapons.	New emphasis on space systems, command and control, and guided standoff missiles.	Rafa/e fighter, Leclerc tank, Arn6fhyste submarine, Charles de Gaul/e carrier, Hdlios and Syracuse satellites.	Little emphasis on planning by ! ;ervices.
Germany . . . . .	Issue is currently under study.	Stresses joint development programs, aerospace.	Major cuts over next decade in heavy armor. Continued commitment to the European Fighter Aircraft in question.	tlo detailed defense industrial r mobilization planning.
Japan. . . . .	Develop wartime maintenance and supply capabilities, relies on avilian R&D, supports aircraft electronics.	Increased emphasis on defense R&D, aircraft, missiles, logistics and support, but relies on civilian technical developments in key high technology areas.	Present program stresses improvement and modernization of existing equipment.	Flo detailed defense industrial n~obilization planning.
United Kingdom . . . . .	Determined by market forces.	Aviation, stealth, and electronics.	Challerrgertank, European Fighter Aircraft, attack helicopter, nuclear deterrent.	Currently relies on limited, ad hx planning, but may move to nlore structured planning.

SOURCE: Office of Technology Assessment, 1992.

Table A-4-Allies' DTIB Strategies

Country	National Plan	International collaboration	Civil-military integration	Consolidation
Canada . . . . .	Focus is on continued close cooperation with U. S., limited government intervention, and increased government/industry consultation.	Participates in NATO's Conventional Armaments Planning System, but this is not a major policy thrust. Efforts are encouraged at the firm level.	Recognition of increased importance of dual-use technologies, closer ties between defense and civil R&D organizations.	R 91ying on market forces, fcreign demand.
France . . . . .	Central government strategy is to maintain areas of excellence in French defense industry, stress international sales.	Systematic approach to European collaboration and strategic alliances, but go-slow approach to free arms market within the EC.	Government encourages diversification of firms, no barriers to civil-military integration.	G >vernment promoting some a rrsolidation, cross-border m wgers.
Germany . . . . .	Free-market orientation, with close exchange of information between government and industry.	Strong and growing emphasis on collaboration.	Stressing avilian products where militarily acceptable.	In justry is down-sizing, g( vernment currently sees no m ed for major additional restructuring of base.
Japan. . . . .	Limited defense planning, stress on U.S. relationship, use of dual-use technology.	Strictly limited by law, cooperation with U.S. is viewed as important.	Considerable integration; most defense firms produce civilian products, but a few firms produce most Japanese defense items.	Ostensibly left as a caporate d(cision, but most Japanese irnjustrial-sector decisions irv~olve government ac ministrative guidance.
United Kingdom. . . . .	Reliance on the private sector, greater civil-military integration, exports, limited government intervention.	Supports collaboration with allies, expects it to increase as budgets are reduced and forces become more international.	Key component-relaxed requirements to permit use of dvil technology, most defense firms diversified into avil sector.	Rfdying on market forces, government provides inf ximation to industry about ful ure defense plans and intentions.

SOURCE: Office of Technology Assessment, 1992.