Relics of Cold War
Europe's Challenge, Ukraine's Experience

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Contents

Preface

In 2004 Europe will consign the cold war to history in the most emphatic way possible, with the enlargement on a grand scale of both the European Union (EU) and the North Atlantic Treaty Organization (NATO). Contrary to many expectations, this massive expansion of institutions founded on the Western side of the former Iron Curtain is not taking place at the price of new divisions with, or the alienation of, Russia. The Russian Federation's own relations with the EU and NATO are being enhanced, and both institutions are developing 'new neighbour' strategies designed to share a least some of the benefits of integration with non-members along their new eastern frontiers. Other states born from the break-up of the Soviet Union, such as Ukraine, have been offered a more benign environment to explore their own European vocation than anyone could have predicted at the time when the cold war approached its end, just 15 years earlier.

The political transformation of Europe has been accompanied by profound changes in the dimension of security and defence. Formerly divided into two military blocs with a uniquely large and threatening accumulation of conventional and nuclear weapons on both sides, the continent has experienced during the 1990s the world's fastest and most far-reaching disarmament process. Personnel and armaments have been reduced not just under the terms of East–West and global treaties, but on a much larger scale voluntarily. Former adversaries have helped each other with the process in a concrete way and are increasingly pooling their remaining deployable capacities for benign purposes like peacekeeping. As we enter the 21st century, Europe's image and its function on the world strategic scene have evolved so far that some observers are questioning whether Europeans are any longer able to cope with the harsher realities of other regions where hatred and suspicion still dominate.

The problem is that the relics of cold war, even if largely banished from the European vision and spirit, are still all too much present around our feet. Weapons are easier to decommission than to destroy, and soldiers are easier to demobilize than to re-employ. Former military real estate is difficult to clean up and convert, and military force structures and deployment patterns change much more slowly than the strategic environment which in principle should dictate them. In the eastern part of Europe especially, and in the Balkans where the first post-cold war decade was one of conflict, large surplus stocks still exist of conventional weapons, munitions and anti-personnel mines. In Russia, daunting quantities of nuclear weapons, materials and facilities still await disposal and only about 3 per cent of the chemical weapons scheduled for destruction under international agreements have been eliminated so far.

Of course, these problems have not gone unnoticed. Since 1990 a whole series of multilateral and bilateral initiatives have aimed to fix and monitor the targets for disposal of different kinds of mass destruction and heavy conventional weapons, or to provide direct support for their safe destruction, or both. In terms of impact,

however, all these have so far made only limited inroads into the inherited challenge. Much less attention has been paid to conventional weapons overall, or to manpower reductions and reintegration, and hardly anything has been done to convert bases in an organized fashion. At least one very worrying equipment category remains—tactical nuclear weapons—for which even a reduction target and process have yet to be agreed.

Not every weapon system, soldier or piece of military real estate left from the cold war is dysfunctional or useless today: but bad planning, neglect, ignorance and lack of resources have left Europe burdened with large relict capacities suited neither to the spirit nor the practical needs of the new environment. For the nations which hold them, such leftovers may represent an embarrassment, an economic burden or at worst a threat to health and safety and to the local environment. If items from them are transferred (legally or illegally) to other regions, however, they could still play a role in sparking and aggravating new conflict. In criminal or terrorist or 'rogue state' hands they could rebound very directly against Europe's own security. The challenge is therefore one which an enlarged Europe and its neighbours cannot afford to ignore, and the current debate over Europe's security interaction with the rest of the world lends it an extra urgency.

This SIPRI Policy Paper aims to illuminate the problem, and to provide a basis for debate on future policy approaches, through a general review of the challenges followed by a detailed case study of the scale, impact and policy handling of the cold war's defence-related legacy in Ukraine. We would like to thank the Ukrainian Centre for Economic & Political Studies (UCEPS) Razumkov Centre in Kyiv for essential support and author Oleksiy Melnyk for his personal contribution, as well as co-author Ian Anthony and editor Jetta Gilligan Borg who have worked on the text at SIPRI. We hope that this paper will be the forerunner of a detailed book-length study of all dimensions of the defence legacy of the East–West confrontation in Europe, to be carried out in cooperation principally between SIPRI and the Bonn International Center for Conversion (BICC).

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Acronyms

ACV	Armoured combat vehicle
AIFV	Armoured infantry fighting vehicle
ALCM	Air-launched cruise missile
APC	Armoured personnel carrier
APM	Anti-personnel mine
ASM	Air-to-surface missile
BW	Biological weapon
BTWC	Biological and Toxin Weapons Convention
CBW	Chemical and biological weapons
CENTO	Central Treaty Organization
CFE	Conventional Armed Forces in Europe (Treaty)
CFSP	Common Foreign and Security Policy
CIS	Commonwealth of Independent States
CRDF	Civilian Research & Development Foundation
CSBM	Confidence- and security-building measure
CTR	Cooperative Threat Reduction
CW	Chemical weapon
CWC	Chemical Weapons Convention
DCI	Defence Capabilities Initiative
DTRA	Defense Threat Reduction Agency
EAPC	Euro-Atlantic Partnership Council
EEA	European Economic Area
ENCI	European Nuclear Cities Initiative
EU	European Union
G8	Group of Eight
GDP	Gross domestic product
GDR	German Democratic Republic
IAEA	International Atomic Energy Agency
ICBM	Intercontinental ballistic missile
ICRC	International Committee of the Red Cross
IFSA	International Fund for Social Adaptation
IMF	International Monetary Fund
INF	Intermediate-range Nuclear Forces (Treaty)
ISTC	International Science and Technology Center
ITC	Interregional Training Centre
JACIG	Joint Arms Control Implementation Group
KONVER	EU conversion initiative
MD	Military district

MIRV	Multiple independently targetable re-entry vehicle
MOD	Ministry of Defence
NAMSA	NATO Maintenance and Supply Agency
NATO	North Atlantic Treaty Organization
NBC	Nuclear, biological and chemical
NCC	National Co-ordinating Centre
NCI	Nuclear Cities Initiative
NCO	Non-commissioned officer
NGO	Non-governmental organization
NPT	Non-Proliferation Treaty
NTI	Nuclear Threat Initiative
OECD	European Organisation for Economic Co-operation and Development
OSCE	Organization for Security and Co-operation in Europe
PFP	Partnership for Peace
POL	Petrol, oil and lubricants
R&D	Research and development
RCJP	Regional centres for job placement
RDX	Cyclotrimethylenetrinitramine
SALT	Strategic Arms Limitation Talks
SALW	Small arms and light weapons
SAM	Surface-to-air missile
SEATO	Southeast Asia Treaty Organization
SLBM	Submarine-launched ballistic missile
SORT	Strategic Offensive Reductions Treaty
START	Strategic Arms Reduction Treaty
STCU	Science & Technology Center in Ukraine
TACIS	Technical Assistance to the Commonwealth of Independent States
TLE	Treaty-limited equipment
UAF	Armed Forces of Ukraine
UN	United Nations
UNROCA	UN Register of Conventional Arms
WEU	Western European Union
WMD	Weapons of mass destruction
WTO	Warsaw Treaty Organization (Warsaw Pact)

1. Military legacies of the cold war in Europe: the general challenge*

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A continent transformed

In 1989, the year when the death knell sounded for the Communist bloc in Europe and for the 'cold war' which it had pursued with the West, a total of 6–7.6 million personnel depending on the method of counting (2.5–3.7 million from the North Atlantic Treaty Organization, NATO, and 3.5–3.9 million from the Warsaw Treaty Organization, WTO) stood in arms within the European theatre.[1] This included some 915 000 forces stationed outside their national borders *inter alia* from Canada, the Soviet Union and the United States. In the same area there were 80 400 main battle tanks, 76 300 armoured combat vehicles (ACVs), 67 700 heavy artillery pieces, 11 160 combat aircraft and 2615 attack helicopters—as well as many millions of smaller and lighter weapons.[2] Aimed at each other as part of the East–West strategic confrontation, the USA and the USSR in 1990 deployed 10 563 and 10 271 strategic nuclear warheads respectively, while the United Kingdom possessed 300 and France 621.[3] In addition, significant proportions of European territory (especially in the 'front-line' states such as the Federal Republic of Germany and the German Democratic Republic, GDR) were taken up by military bases, exercise areas and other facilities such as airfields and pipelines. Large sectors of industry and of scientific, technological, and research and development (R&D) work were devoted to the needs of military defence. The resources involved were shut out from peaceful, civilian use more emphatically than would normally be the case today, because the bitterness of the strategic confrontation—and the associated risks of espionage and subversion—imposed a degree of secrecy often creating a situation where the citizens of a given state did not know what was happening on their own territory.

Even states in the region which did not belong to either military bloc were obliged to maintain a high degree of armed readiness. The West European neutral

* SIPRI researchers John Hart, Shannon N. Kile, Zdzislaw Lachowski and Martin Sjögren contributed valuable material to this chapter.

[1] Different definitions and counting rules were used by the two blocs at the time. The official WTO data, showing a balance between the blocs' manpower (3.6 million for WTO and 3.7 million for NATO), did not include internal forces and border troops. See 'On the correlation of Warsaw Treaty and North Atlantic Alliance force strengths and armaments in Europe and adjoining waters', *Pravda,* 30 Jan. 1989, p. 5; and International Institute for Strategic Studies (IISS), *The Military Balance 1989–1990* (IISS: London, 1989).

[2] Equipment statistics are from *The Military Balance 1989–1990* (note 1).

[3] 'Nuclear weapons', *SIPRI Yearbook 1991: World Armaments and Disarmament* (Oxford University Press: Oxford, 1991), pp. 22–23.

states—Austria, Finland, Ireland, Sweden and Switzerland—had to spend 1.2 per cent, 1.4 per cent, 1.5 per cent, 3.0 per cent and 1.9 per cent, respectively, of their gross domestic product (GDP) on defence in 1989 (compared with an average of 3.2 per cent for the European members of NATO). Together, they had the not inconsiderable total of 154 500 active military personnel. The (still united) Federal Republic of Yugoslavia, which was formally non-aligned and outside the Warsaw Pact, spent 3.9 per cent of its GDP on defence and had standing forces of 180 000, making the Federal Yugoslavian Army an important political player within the state—and, some would argue, the main cement holding it together.[4]

By the year 2002, the corresponding figures for the European theatre had fallen to some 3.6 million personnel in arms, 27 451 main battle tanks, 45 910 ACVs, 29 651 artillery pieces, 8117 combat aircraft and 2096 attack helicopters.[5] All Canadian forces had withdrawn from Europe, and the USA's stationed forces were down from 326 400 to just over 100 000. No Russian forces were left on the territory of former WTO states or in the Baltic states formerly incorporated in the Soviet Union, where the last Russian soldier left in 1994.[6] (Russian forces are, however, still present further east in some post-Soviet states on the edge of Europe, like Armenia, Georgia and Moldova). The US and Russian strategic nuclear holdings in 2002 were down to 5948 and 4852 deployed nuclear warheads respectively, while the UK had reduced its strategic nuclear holdings to 185 and France to 348.[7] The aggregate active forces of Austria, Finland, Ireland, Sweden and Switzerland were down to 114 310 in total.[8] Yugoslavia was a special story because of the series of armed conflicts associated with its split-up into component republics and the continuing rifts within Serbia and Montenegro, but here, too—if belatedly—a downsizing process took place in the form of the post-conflict Florence Agreement,[9] achieving total cuts of 6580 heavy equipment items as early as end-1997 plus a cap on each republic's manpower.

Politically also, the face of Europe was transformed during this 13-year period from a continent of confrontation to one of cooperation, capable to a striking

[4] Statistics are from *The Military Balance 1989–1990* (note 1) Switzerland called up a further 18 000 personnel for short-term service on 2 occasions each year.

[5] Figures for NATO and former WTO countries only; from the Treaty on Conventional Armed Forces in Europe (CFE Treaty) Joint Consultative Group, Group on Treaty Operation and Implementation, Joint Consultative Group document JCG.TOI/22/03, 23 June 2003.

[6] Aside from a small number of personnel, who were left by agreement until 1998 to guard the radar site at Skrunda in Latvia.

[7] Kristensen, H. M. and Kile, S. N., 'World nuclear forces', *SIPRI Yearbook 2003: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2003), p. 611.

[8] Figures for 2001 from IISS, *The Military Balance 2002/2003* (Oxford University Press: Oxford, 2002). Switzerland now calls up reservists for short-term duty in batches of 12 055.

[9] The 1996 Agreement on Sub-Regional Arms Control (Florence Agreement, also known as the Article IV Agreement)—signed by Bosnia and Herzegovina and its two entities (the Muslim–Croat Federation of Bosnia and Herzegovina, and the Republika Srpska), Croatia and the Federal Republic of Yugoslavia (FRY, now Serbia and Montenegro)—remains the only structural (i.e., dealing with arms reductions and limitations) regional arms control arrangement still operating below the European level. The text of the Florence Agreement is reproduced in *SIPRI Yearbook 1997: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1997), pp. 517–24.

degree of the 'export of security'. At the end of 2002 it was decided that 7 further post-Communist states[10] (making a total of 10 states with the Czech Republic, Hungary and Poland, which were admitted in 1999) should join NATO in 2004, and that in the same year the European Union (EU) should admit 8 such states plus Cyprus and Malta.[11] (Bulgaria and Romania have a prospect of membership in 2007.) The Russian Federation has chosen not to oppose either expansion actively but has sought increasingly close and formalized relationships for itself with both Western institutions. Several of the other states in the Western part of the former Soviet Union have discovered a 'European vocation', extending in some cases to formal demands for EU and/or NATO membership. Meanwhile, all non-members are able to take part in various forms of active partnership with NATO through the Partnership for Peace (PFP) and the Euro-Atlantic Partnership Council (EAPC), and with the EU through various individual agreements (plus the European Economic Area, EEA, for Iceland, Liechtenstein and Norway). The main positive military outcome of the new relationships has been the release of more forces to take part in peacekeeping and other military missions in the remaining crisis areas of the greater Europe and outside European territory. Both the EU and NATO have played a part in developing 'coalition' structures and standards of interoperability which allow states from all parts of the former divided Europe to go into the field for such operations together, with steadily increasing efficiency.

While the new Europe faces very real problems of its own, it is easy at the start of the 21st century to assume that all habits and concerns associated with the 'bad old days' of the cold war can now be set behind. Traditional defence fears and traditional military activities alike would appear to play little or no part in the daily lives of most European citizens. The trouble is that the physical transformation of defence assets has not moved as fast as the transformation of thinking and activity. What happened to all the servicemen who were put out of jobs? What happened to the weaponry that was taken out of service, and the military installations, and the industrial and scientific capacities?

The answers[12] reveal some impressive achievements in reduction and transformation, but they also point to a large (and unevenly distributed) backlog of leftover

[10] NATO enlargement is discussed in Anthony, I. *et al*., 'The Euro-Atlantic system and global security', *SIPRI Yearbook 2003* (note 7), pp. 62–65.

[11] EU enlargement is discussed in Anthony, I., 'Supply-side measures', *SIPRI Yearbook 2003* (note 7), pp. 741–42.

[12] The process of military reductions and conversion has been documented most fully by the Bonn International Center for Conversion (BICC) in its series of annual Conversion Surveys (published by Nomos Verlagsgesellschaft) and its ad hoc reports. See the BICC Internet site at URL <http.//www.bicc.de>.On the issue of bases see particularly Cunningham, K. and Klemmer, A., *Restructuring the U.S. Military Bases in Germany: Scope, Impacts and Opportunities*, BICC Report 4 (BICC: Bonn, June 1995); and Cunningham, K. B., *Base Closure and Redevelopment in Central and Eastern Europe*, BICC Report 11 (BICC: Bonn, July 1997); on surplus weapons Laurance, E. J. and Wulf, H. (eds), *Coping with Surplus Weapons: A Priority for Conversion Research and Policy*, BICC Brief 3 (BICC: Bonn, June 1995); and BICC, *Conversion Survey 1997: Global Disarmament and Disposal of Surplus Weapons* (Oxford University Press: Oxford, May 1997); and on manpower issues Pauwels, N. (ed.), *War Force to Work Force: Global Perspectives on Demobilization and Reintegration* (Nomos Verlagsgesellschaft: Baden-Baden, 2000); and Heinemann-Grüder, A., *Becoming an Ex-*

objects and capacities. All of them are a nuisance and a drain on the economy, many of them pose dangers to health and the environment, and many are capable also of doing great harm if they were taken up again in the wrong hands—for instance, if they leak into regions of continuing conflict. Belittling or ignoring this residual problem just at the time when Europe's political transformation is being consummated would not only carry the risk that the new cooperation may be constructed on still-shaky foundations. The new priority being given in EU and NATO security strategies and in national policies through Europe to non-traditional threats such as terrorism, crime and the proliferation of mass destruction technologies provides a new reason for anxiety about surplus defence stocks of any kind. Their theft, loss through negligence, or illegal or ill-advised transfer to any of Europe's perceived new adversaries could swiftly reconstitute the kind of physical threat to European territories which was hoped to have been relegated to the past. Europe's vulnerability would be all the greater today precisely because of the frontier-defying openness associated with the spread of Western-style integrative practices to the whole continent.

This chapter is designed to provide a framework for appreciating the detailed study of cold war legacies and attempted remedies in the case of Ukraine, which occupies the latter half of this policy paper. Subsequent sections of this chapter deal (from a pan-European point of view) with the form and the effectiveness of reduction processes applied to the various types of post-cold war residues; with the possibility that more intangible cold war habits and preconceptions may still be hampering the transformation of Europe's defences to match the new environment; with the overspill of Europe's East–West armed competition to other regions of the world; and finally, with the question of how the remaining policy challenges could and should be addressed.

Processes and residues

General

In the years since 1989–90, the leftovers of the cold war have been disposed of essentially through two processes: formal agreements on reduction or elimination which have been negotiated among the European players (or in some cases in a global legal framework), and voluntary action by the nations owning the assets. Broadly speaking, the latter process has achieved far more significant results in the sphere of conventional armaments and manpower, while more formalized arrangements–with greater emphasis on the final destruction of materials and/or enforceable ceilings—have been applied to non-conventional materials. This is understandable not just because of the greater danger and sensitivity of nuclear, biological and chemical (NBC) weapons, but also because the financial arithmetic in the two spheres works out differently. Conventional reductions can save more

military Man: Demobilization and Reintegration of Military Professionals in Eastern Europe, BICC Brief 26 (BICC: Bonn, Oct. 2002).

money, quickly, with relatively small 'process costs' (although the indirect burdens, for example, of social adjustment may be considerable). In this setting finance ministers can become the best disarmers. Reduction of NBC items releases fewer resources *inter alia* because they tend to be less manpower-intensive, and the costs of safe destruction, decontamination and storage are relatively large both in cash terms and as a function of the scarcity of required expertise. The non-conventional area is not, therefore, where the main 'peace dividend' was looked for or found in the 1990s, and experience in those parts of the operation not actually regulated by treaty has confirmed that it cannot safely be left to normal market forces.

Voluntary reductions, on the other hand, always imply a free choice of methods of disposal and of the items' ultimate destination—subject only to any generally applicable national and international rules. There are several scenarios under which the process might create new security headaches. In pre-modern times, discharged soldiers regularly became bandits preying on the population and while this could generally be avoided in late 20th century Europe, several ex-Warsaw Pact states (in particular) had cause to fear internal security repercussions if they did not cushion the demobilization process carefully enough. Many observers were concerned that disgruntled former officers there would intervene in politics with violent means. In some situations, as shown by the multilateral efforts to provide resettlement facilities for Russian troops leaving the Baltic states, the safe disposal of demobilized personnel could matter for more than just the mother nation. Equipment freely reduced was generally also free for sale, and might be transferred either for rational ends to reliable customers, or the opposite (a point addressed again in the 'Partners and proxies' section below). In areas where some tension remained, as between Russia and the West, uncertainty over precisely what had been done with certain equipment might itself take on security overtones. Perhaps less obvious are the problems arising from the fact that voluntary national reductions were not subject to oversight in terms of their rationality for future defence requirements (and where applicable, for multinational collaboration and role-sharing). When acting freely and in response to primarily economic drives, states might not only reduce too much too quickly, but reduce in the wrong places. This issue is taken up again in 'The invisible legacy?' section below.

Manpower and conventional armaments

The Treaty on Conventional Armed Forces in Europe (CFE Treaty), negotiated during the end of the cold war but not signed until 1990, set national ceilings applicable to NATO and WTO states for five categories of major military equipment and (through the 1992 CFE-1A Agreement) for ground and air manpower.[13] The reduction obligations undertaken by the Soviet Union were subsequently

[13] For the text of the CFE Treaty and Protocols see Koulik, S. and Kokoski, R., SIPRI, *Conventional Arms Control: Perspectives on Verification* (Oxford University Press: Oxford, 1994), pp. 211–76; and the OSCE Internet site at URL <http://www.osce.org/docs/english/1990-1999/cfe/cfetreate.htm>. The CFE-1A Agreement is briefly summarized in *SIPRI Yearbook 2003* (note 7), p. 781.

Table 1.1. Total CFE Treaty/CFE-1A limits and holdings, 1990–2003

Holdings, 1990	Limits: CFE Nov. 1990 CFE-1A, July 1992	Holdings, 1995 (end reduction)	Adapted CFE limit, 1999	Holdings, Jan. 2003
Treaty-limited equipment				
201 005	154 712	130 813	145 653	113 225
Manpower				
6–7.6 million[a]	5 789 181	5 470 695	–	3 356 315

[a] Compiled from 'On the correlation of Warsaw Treaty and North Atlantic Alliance force strengths and armaments in Europe and adjoining waters', *Pravda* (Moscow), 30 Jan. 1989, p. 5; and International Institute for Strategic Studies (IISS), *The Military Balance 1989–1990* (IISS: London, 1989).

Sources: Harahan, J. P. and Kuhn, J. C., *On-Site Inspections Under the CFE Treaty* (On-Site Inspection Agency, US Department of Defense: Washington, DC, 1996); *Arms Control Today*, Mar. 1993, p. 28; and Treaty on Conventional Armed Forces in Europe (CFE Treaty) Joint Consultative Group, Group on Treaty Operation and Implementation, Joint Consultative Group document JCG.TOI/22/03, 23 June 2003.

apportioned among the relevant former Soviet republics by the 1992 Collective Security Treaty (Tashkent Treaty).[14] By 1995—the deadline for completing CFE manpower reductions—all but one of the signatory states (Greece) had voluntarily reduced its manpower in the treaty area even further than the CFE-1A ceiling required, and in every case (including Greece) significant additional reductions were made by 2002. The total percentage cut in manpower from 1992 to 2002 was as high as 54 per cent for Russia, 57 per cent for both Hungary and Romania, 52 per cent for Slovakia, 48 per cent for the Czech Republic, and 47 per cent for Poland and Italy. Of the leading European NATO members, France made the largest cuts at 46 per cent (albeit associated with structural changes) and Greece and Turkey the smallest with 13 per cent apiece.

A similar picture emerges regarding the five categories of treaty-limited equipment (TLE) under the 1990 CFE Treaty. Ceilings for these were revised under the Agreement on Adaptation of the CFE Treaty of November 1999,[15] which has not yet entered into force because of delays over prescribed Russian troop withdrawals from Georgia and Moldova. However, NATO accepted in 2002 that Russia had met its actual equipment limits in the eastern 'flank' region. Overall, every signatory state has brought its TLE holdings down below the original and adapted ceilings, in some cases by very significant margins. Since 1990, Belgium, the Nether-

[14] Anthony *et al.* (note 10), p. 76.

[15] For the text of the Agreement on Adaptation see *SIPRI Yearbook 2000: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2000), pp. 627–42; and the OSCE Internet site (note 13). A consolidated text showing the amended CFE Treaty as adapted in accordance with the 1999 Agreement on Adaptation is reproduced in Lachowski, Z., *The Adapted CFE Treaty and the Admission of the Baltic States to NATO* (SIPRI: Stockholm, Dec. 2002), URL <http://editors.sipri.se/pubs/CFE_Treaty_report.pdf>.

lands, Poland and Romania have all cut their TLE by more than half and Germany and the UK by more than one-third. The USA's TLE holdings in Europe are down by 82 per cent over the same period, reflecting the overall drop in its troop presence.

The figures make clear that CFE has not dictated the pace or scale of European states' conventional reductions. Its role has perhaps rather been to guarantee a balanced and transparent framework within which they could push their national holdings as low as they dared, both to maximize the economic dividend and to facilitate restructuring. From most viewpoints this would be good news, but the increased scale of the TLE cuts—more than 58 000 items officially reported since 1990 and in reality something more like 87 780, compared with the obligatory reduction of 46 300[16]—sharpens the question of what actually happened to all this equipment (see table 1.1).

Under the CFE Treaty, 'reduced' items could be destroyed, converted to non-military uses, placed on static display, used as training targets, or exported in some limited circumstances—including cascading as gifts to needy allies. The latter were obliged to make compensating reductions in their existing TLE: but the scale of equipment modernization which Greece and Turkey enjoyed as a result of such transfers from other NATO members—some 2000 modern pieces of equipment each—caused some unease that the stabilizing spirit of the treaty might have been less than fully respected.

For TLE cuts in excess of treaty stipulations, states could, of course, choose their own means of disposal and there was no international oversight, other than the (voluntary) process of reporting transfers abroad to the UN Register of Conventional Arms (UNROCA).[17] There is ample evidence that defence sales were used to solve the problem, especially by poorer states lacking funds for destruction. In the six years (1993–98) before it reported meeting its TLE ceiling, Belarus exported 220 TLE items, including 40 tanks to Hungary:[18] its customers for arms sales generally included a number of states now considered as risky destinations (e.g., Algeria, Ethiopia, Sierra Leone and Sudan). In four years (1992–95) before it met its ceiling, Ukraine exported 242 TLE items. Within NATO, Germany found itself with an exceptional equipment surplus from ex-GDR holdings and disposed of 3109 TLE items by gifting and export, including 2619 transfers to other European states ranging from Greece and Turkey (as noted above), through Denmark and the Baltic states, to the non-allies Finland and Sweden. Israel and the USA received

[16] In the official treaty information exchange on 18 Nov. 1990, the CFE states parties declared an aggregated total of 201 005 pieces of TLE. As of 1 Jan. 2003, the aggregated number of TLE possessed by the CFE parties was 113 225 items. Harahan, J. P. and Kuhn, J. C., *On-Site Inspections Under the CFE Treaty* (On-Site Inspection Agency, US Department of Defense: Washington, DC, 1996), p. 20; and CFE Treaty Joint Consultative Group (note 5).

[17] See Wezeman, S. T., *The Future of the United Nations Register of Conventional Arms*, SIPRI Policy Paper no. 4, SIPRI, Aug. 2003, available at URL <http://editors.sipri.se/recpubs.html>.

[18] For further details see *SIPRI Yearbook 1997* (note 9), pp. 729–30.

samples of weapons for technical analysis.[19] Other ex-GDR equipment was used for NATO training purposes.

An intermediate case concerned 57 300 TLE items moved east of the Urals by Russia just before signing the CFE Treaty, which breached the spirit, but not the letter of the treaty. In 1991 Russia agreed that it would destroy 14 500 of these items and store another 29 500 away from active use. The destruction commitments were passed on in part to other post-Soviet states and were completed in 2003. The 29 500 items supposedly in storage have not been subject to inspection and there were reports from time to time of their being recycled for use.

The challenge of 'unregulated' post-cold war equipment disposal immediately looms much larger if the question is extended to items not covered by the CFE Treaty, notably small arms and light weapons (SALW), anti-personnel mines (APM), and other 'explosive remnants of war'. In recent years, the international community has come to realize that transfers of SALW can be an aggravating factor both in sparking and intensifying new conflict, especially in developing regions. They account for many times more deaths around the world than high-tech warfare and terrorist manifestations put together. European nations and institutions are among those having tried hardest to contain this problem: *vide* for example the EU's Joint Action on Small Arms of 12 July 2002,[20] and the Organization for Security and Co-operation in Europe (OSCE) 2000 Document on Small Arms and Light Weapons.[21] All current and acceding EU members apart from Finland are also party to the 1997 Convention on the Prohibition of Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction (APM Convention, also known as the Ottawa Convention)[22] requiring the abolition of APM. Despite all these good intentions, however, stocks of SALW and APM left over in the larger Europe from the cold war (and Balkan conflicts) have presented problems on a scale which make their elimination a huge and protracted task even for the richest nations.[23] Germany, for instance, was left with a surplus of 1.2 million SALW purely as an effect of reunification in the early 1990s: it exported over 400 000 SALW including 300 000 to Turkey, which gave rise to a major domestic

[19] On the disposal of the arsenal of the National Peoples Army (Nationale Volksarmee, NVA) of the GDR see Nassauer, O., 'Surplus: the NVA's heritage' in Laurance and Wulf (note 12).

[20] The Joint Action calls *inter alia* for the 'effective removal of surplus arms encompassing safe storage as well as quick and effective destruction of these arms and their ammunition, preferably under international supervision'. See European Commission, 'EC mine action 2002–2004, strategy and multiannual indicative programming', Dec. 2002, URL<http://europa.eu.int/comm./external_relations/mine/intro/02_04en.pdf>.

[21] Text reproduced in 'Documents on conventional arms control', *SIPRI Yearbook 2001: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1991), pp. 590–98.

[22] The APM Convention is reproduced in Goldblat, J., PRIO, SIPRI, *Arms Control: The New Guide to Negotiations and Agreements* (SAGE: London, 2002), pp. 700–11. For further details and references on APM developments see Blom, F., 'Landmines and destruction efforts', *SIPRI Yearbook 2003* (note 7), pp. 712–26..

[23] For a study of selected nations' experience see Faltas, S. and Chrobok, V. (eds), *Disposing of Surplus Small Arms: Policies and Practices in OSCE Countries* (BASIC/BICC/Saferworld: London, 2003).

controversy. Influenced by the latter, the German authorities have turned to destruction as their preferred and, increasingly, exclusive solution for SALW: 1 478 011 items were accordingly destroyed from 1990 to 2001, plus quantities of APM.[24] Poorer nations have sometimes also been able to destroy SALW and/or APM quickly thanks to outside help from other countries or institutions—for example, 1 683 860 Albanian APM destroyed by April 2002 with NATO assistance.[25] A very ambitious NATO programme of the same kind for Ukraine is described below. Nevertheless, some 16 million APM remain stockpiled today across the OSCE area as a whole,[26] and this figure does not take account of known stocks which have not been formally reported such as those of US troops in Europe, Russia, Armenia, Azerbaijan, Finland, Turkey and various Central Asian republics. Russia alone is estimated to possess some 60–70 million APM in total.[27]

A further problem which has attracted increasing attention is the security risk created by excessive surplus stockpiles of ammunition and explosives for use in conventional armaments (other than small arms) and by similar stocks awaiting destruction in the OSCE area. An OSCE workshop on this topic was held in May 2003 with a view to developing principles, standards and measures to address such situations and to coordinating offers of assistance by OSCE participating states.[28] During the workshop, several countries were identified as having particularly large stockpiles of surplus ammunition and explosives. These are Albania (108 000 tonnes), Belarus (99 000 tonnes), the Czech Republic (100 000 tonnes), Georgia (thousands of tonnes) and Ukraine (250 000 tonnes). Other countries known to have large stockpiles on their territory are Russia and Moldova (the latter having some 40 000 tonnes).[29] As of now, several of these stockpiles are being addressed by some form of disposal programme. For example, the NATO Maintenance and Supply Agency (NAMSA) is conducting a programme to dispose of the stockpiles

[24] FRG, *Annual Report 2002: Submitted by the Federal Republic of Germany to the Information Exchange Pursuant to the OSCE Document on Small Arms and Light Weapons,* available at URL <http://www.auswaertiges-amt.de/www/de/infoservice/download/pdf/friedenspolitik/abruestung/kleinw_2002.pdf>.

[25] 'Facts on Germany and Albania from BICC', *Conversion Survey 2003: Global Disarmament, Demilitarization and Demobilization* (Nomos Verlagsgesellschaft: Baden-Baden, 2003).

[26] The International Campaign to Ban Landmines, *Landmine Monitor Report 2003: Toward a Mine-Free World* is available at URL <http://www.icbl.org/lm/2003/>. It identifies stocks of over 1 million APM apiece in Greece, Poland, and Serbia and Montenegro; over 4 million in Belarus; and over 6 million in Ukraine. Other states thought to retain large stocks are Turkey and Kazakhstan.

[27] International Campaign to Ban Landmines, *Landmine Monitor Report 2003: Toward a Mine-Free World*, URL <http://www.icbl.org/lm/2003/russia.html>. There were unconfirmed reports in 2003 that 16.8 million Russian APM had been destroyed. The *Landmine Monitor Report* provides a figure of 10.4 million for total US stocks of APM but cannot specify how many of these may be held by US forces stationed in Europe.

[28] OSCE, Decision no. 18/02, Security risks arising from stockpiles of ammunition and explosives for use in conventional armaments in surplus or awaiting destruction in the OSCE Area, OSCE document FSC.DEC/18/02, 27 Nov. 2002.

[29] Compiled from documents of the Workshop on Security Risks Arising from Stockpiles of Ammunition and Explosives for use in Conventional Armaments in Surplus or Awaiting Destruction in the OSCE Area, Vienna, 27–28 May 2003. See especially the Chair's Report, OSCE document FSC.Del/247/03, 17 June 2003.

in Albania; the OSCE has a project in Georgia; and Belarus and the Czech Republic are carrying out national programmes. However, it is clear that current efforts are not sufficient to deal with the magnitude of the problem. Its scale will increase rather than decrease in a number of countries as more and more ammunition is taken out of use.

A final problem relevant to all these categories of weapons is that of territories within the wider Europe which are of disputed sovereign status, and which in practice—as a result of active or 'frozen' armed conflicts—fall outside the control of any one government for purposes *inter alia* of execution of arms control agreements. Such 'black holes' in the international legal fabric have fortunately now been eliminated in the Balkans but they exist, quite close to the boundaries of the enlarged EU and NATO, in the Trans-Dniester region (part of Moldova, known to contain some 40 000 tonnes of ammunition), in regions of Georgia (Abkhazia and South Ossetia), and in the province of Nagorno-Karabakh which is disputed between Azerbaijan and Armenia. Hundreds of heavy weapons are believed to exist, unaccounted for and without benefit of any control process, in Nagorno-Karabakh alone. The province of Chechnya arguably comes into the same category to the extent that parts of it are still not under de facto Russian control. All these cases are more complicated to handle because of the former or continuing presence of Russian forces and/or Russian military aid; while the fact that the Adapted CFE Treaty is not yet in force—precisely because of disputes over Russia's military presence in the region—further weakens the international community's *de jure* grip on the situation. Elsewhere in the world, the International Committee of the Red Cross (ICRC) has brokered attempts to have non-state combatant communities associate themselves voluntarily with arms control norms established, for example, by the APM Treaty; but nothing of the kind has been tried, or would probably be possible, in these particular regions. Efforts are, of course, still being made in the OSCE in particular to tackle the whole problem of 'frozen conflict' and the dynamics of enlargement can be expected to attract greater political energy to this endeavour over the coming years. So long, however, as no breakthrough has been achieved, the 'black hole' provinces offer plentiful opportunity for illegal and destabilizing arms transfers both into and out from the European region, among which ex-Soviet stocks have most certainly been implicated.

Nuclear issues

The existence of large stockpiles of nuclear weapons and associated delivery vehicles is one of the most enduring legacies of the cold war in the wider Europe. Despite all the progress made through unilateral and treaty-mandated reductions in nuclear forces over the past decade, these remain at levels which do not reflect the fundamental changes in the security environment. Even if the number of possessor states is small and the number of stationing areas within Europe much reduced, the exceptionally damaging potential both of the remaining weapons themselves and of associated pollution risks makes the subject one of truly pan-European concern.

The most significant progress toward liquidating the cold war nuclear legacy has been made in implementing two Russian–US arms control treaties. These treaties mandate deep reductions in the parties' deployed strategic nuclear forces, which previously were the prime benchmark of superpower military strength and themselves a source of tension. The first is the 1991 Treaty on the Reduction and Limitation of Strategic Offensive Arms (START I Treaty).[30] Under START I, Russia and the USA undertook to make phased reductions to their strategic offensive nuclear forces over a seven-year period, starting from the treaty's entry into force on 5 December 1994, to no more than 1600 strategic nuclear delivery vehicles and 6000 treaty-accountable nuclear warheads. The successful completion in 2001 of the START I reductions meant that the number of deployed treaty-accountable nuclear warheads had declined by 44 per cent on the US side and 46 per cent on the Russian side compared to 1991.

The second accord is the US–Russian Strategic Offensive Reductions Treaty (SORT), which was signed in May 2002.[31] SORT obligates Russia and the USA to reduce the number of their operationally deployed strategic nuclear warheads so that the aggregate numbers of such warheads does not exceed 1700–2200 each by the end of 2012. This will involve a two-thirds cut in the current number of deployed nuclear warheads; it also entails cuts substantially below the 3500-warhead ceiling mandated by the 1993 Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II Treaty), which was signed and ratified by Russia and the USA but subsequently failed to enter into force.

SORT has been controversial because it places no restrictions on how the parties come down to the final ceilings on deployed strategic nuclear warheads. Unlike START I, it does not impose sub-limits on the number of strategic nuclear delivery vehicles (intercontinental ballistic missiles, ICBMs, submarine-launched ballistic missiles, SLBMs, and heavy bombers) that each party may deploy or ban particular categories of weapons. At the USA's insistence, SORT further enhances the flexibility of the parties by *not* requiring the irreversible elimination of nuclear warheads which are removed from operational deployment (i.e., the verified dismantlement of the surplus warheads and secure disposal of the fissile material that they contain). One consequence is that Russia and even more so the USA are moving thousands of 'operationally deployed strategic warheads' out of declared operational status into various 'unaccountable' categories of reserve weapons. Thousands of other weapons are also held in reserve. The result is that the Russian and US nuclear weapon arsenals are becoming increasingly opaque and difficult to monitor—above all for outside observers.

As of January 2003, the total US nuclear stockpile, including reserves, contained about 10 600 warheads as well as 5000 plutonium pits in storage. The total Russian stockpile contained some 20 000 warheads, of which approximately 11 800 were in

[30] It is reproduced in Goldblat (note 22), pp. 366–96.

[31] SORT is discussed in Kile, S. N., 'Nuclear arms control, non-proliferation and ballistic missile defence', *SIPRI Yearbook 2003* (note 7), pp. 600–603.

storage and/or awaiting dismantlement.[32] The nuclear arsenals of France and the UK have always been considerably smaller than those of the USA and Russia, and are almost exclusively sea-based. While the number of deployed British and French nuclear weapons has declined over the past decade, these reductions have been made unilaterally, without any verification regime or procedures for monitoring the elimination of weapons. Both states continue to modernize their nuclear forces and are committed to retaining them for the indefinite future.

Non-strategic nuclear weapons: Russia and the USA continue to possess large inventories of non-strategic (or tactical) nuclear warheads. These weapons seem set to remain an integral component of both countries' military capabilities in the light of recent doctrinal changes, which expand the potential role of nuclear weapons in regional conflicts and in response to attacks involving chemical or biological weapons (CBW). Russia currently has about 3000–4000 operational non-strategic nuclear warheads of various types; the US inventory is believed to contain 1670 such weapons.[33]

The number of non-strategic nuclear weapons deployed in Europe proper has declined precipitously. Russia no longer deploys nuclear weapons outside its territory. The USA currently deploys approximately 150 weapons in Western Europe, down from more than 6500 weapons deployed there at the end of the 1980s. NATO has unilaterally decided not to station nuclear weapons of any sort on its new allies' territory in peacetime. In addition, under the terms of the 1987 Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty), Russia and the USA have destroyed all land-based missiles with a range of 500–5500 kilometres.

The remaining non-strategic nuclear weapons are not included in the existing Russian–US nuclear arms control treaty regime and are covered only by informal limitations. In 1991–92, the Soviet and US presidents announced a series of parallel unilateral initiatives aimed at eliminating most categories of non-strategic nuclear weapons or placing them in central storage. The absence of a formal arms control treaty means that there are no legally binding verification and inspection provisions covering these nuclear weapons. This in turn means that there is no firm data on the existing stockpiles (and locations) as well as on the number of non-strategic nuclear weapons put in storage, eliminated or deployed. The lack of transparency has created uncertainty with respect to the implementation of the Russian–US unilateral initiatives. It has been a source of particular unease for Russia's closest neighbours in Northern and Eastern Europe, not least because of various episodes of Russian sabre-rattling earlier in the 1990s (when Russian spokesmen threatened to deploy short-range nuclear weapons westward in the event of NATO enlargement), and a more recent scare over the possible presence of such weapons in the Russian exclave of Kaliningrad.[34]

[32] Kristensen and Kile (note 7), pp. 610–27.

[33] See note 3.

[34] Gertz, B., 'Russia transfers nuclear arms to Baltics', *Washington Times*, 3 Jan. 2001; and Gertz, B., 'Satellites pinpoint Russian nuclear arms in Baltics', *Washington Times*, 15 Feb. 2001. Establish-

Two other special features of the nuclear disposal challenge in post-cold war Europe deserve special mention, and the first is a success story: the denuclearization of three of the Soviet successor republics, Belarus, Kazakhstan and Ukraine. With the dissolution of the USSR in 1991, these new states had inherited a total of 3417 strategic nuclear warheads carried on ICBMs and long-range heavy bombers based on their territories, although operational control over the weapons remained in the hands of the Russian Ministry of Defence (MOD). A key concern in the international community was to preserve a centralized command and control system for the post-Soviet strategic nuclear forces and to ensure their security and custodial safety, notably by consolidating them on Russian territory. At a meeting of foreign ministers in Lisbon, Portugal, in May 1992, Belarus, Kazakhstan and Ukraine signed the Lisbon Protocol with Russia and the USA,[35] making all five countries parties to the START I Treaty. The three non-Russian former Soviet republics committed themselves to meet the USSR's nuclear arms reduction obligations and pledged to accede to the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) as non-nuclear weapon states. The implementation of the protocol and in particular the consolidation process was delayed, however, both by financial and technical problems and by political complications, especially in the case of Ukraine. After a period of high-level diplomatic bargaining, these problems were overcome when Russia and the USA, along with Britain and France, agreed to provide security guarantees and financial assistance for the other three former Soviet republics. The transfer to Russia of the nuclear weapons located in their territories was completed by the end of 1996.

The second special problem arose from the fact that both sides in the cold war possessed certain conventional assets—naval vessels and submarines—that were powered by nuclear reactors. When such vessels were taken out of commission as a result of voluntary reductions, there was no multilateral treaty or process to determine what should happen to the reactors or indeed to the nuclear and nuclear-contaminated wastes (such as spent fuel) generated by their operation. As of 2000, Russia had decommissioned 120 general-purpose nuclear-powered submarines. Of these, 72 are now located in north-western Russia and 48 in the Russian Far East. Many of these submarines (which receive minimal, if any, maintenance) have serious buoyancy problems and are in danger of sinking with ensuing risks from nuclear leakage into sea water, pollution of fisheries and accidents (as demonstrated by the loss of a decommissioned nuclear-powered submarine being towed through the Barents Sea in August 2003). The enriched uranium used as fuel for these submarines creates a risk of theft and diversion of nuclear materials. This whole set of problems has caused special concern to Russia's Nordic neighbours.

Russia has significant but underutilized domestic capacity to de-fuel and dismantle submarines. This capacity is currently being used to eliminate nuclear-powered submarines that can be used to deliver strategic nuclear weapons. This

ing an arms control framework for non-strategic nuclear weapons in Europe is one of the priority goals of current Finnish and Swedish disarmament policy.

[35] The Lisbon Protocol is described in *SIPRI Yearbook 2003* (note 7), p. 781.

elimination programme is supported financially by the USA. European countries together with Canada and Japan seem ready to take the main responsibility for the decommissioning of general-purpose nuclear-powered submarines—which will require solutions to be found to the follow-on problems of safe and secure storage and disposal of the waste created by de-fuelling and dismantlement.

Chemical and biological weapons

The political, legal and technical challenges resulting from chemical and biological weapon programmes developed in a cold war context have been among the most stubborn and difficult for the international community to deal with.[36] The 1993 Chemical Weapons Convention (CWC) requires that states parties declare any chemical weapons (CW) (including 'old' and/or 'abandoned' items) that they may possess.[37] It also requires that CW stockpiles be verifiably destroyed no later than 29 April 2012. All European countries are party to the treaty. The Russian Federation has the largest declared CW stockpile inherited from Soviet times on its territory, consisting of approximately 40 000 agent tonnes[38] stored at seven locations. However, large-scale destruction operations were not begun until December 2002 and Russia has made clear it will be unable to complete destruction on time.

Parties to the CWC must also provide information on past programmes, including declaring all facilities that produced CW at any time since 1 January 1946. Eleven parties including six within the OSCE area have declared 61 such facilities to date.[39] In addition, approximately 3500–4000 old chemical munitions, 10–20 per cent of which are CW, continue to be recovered annually, mainly from former World War I battlefields in Belgium and France.[40] Following the end of World War II, most European CW stocks were dumped in nearby waters, including in the Baltic Sea where fishermen periodically recover CW. The main threats posed by sea-dumped CW are unhydrolysed sulphur mustard and agents containing

[36] The CWC is the principal international legal instrument dealing with chemical weapons, while the 1972 Biological and Toxin Weapons Convention (BTWC) is the principal international legal instrument dealing with biological weapons. The CWC is implemented by The Hague-based Organisation for the Prohibition of Chemical Weapons (OPCW) which collects annual declarations and carries out on-site inspections. The BTWC, by contrast, has no standing inspectorate and there is no legally binding obligation for BTWC parties to submit information to help demonstrate treaty compliance. See Hart, J., Kuhlau, F. and Simon, J., 'Chemical and biological weapon developments and arms control', *SIPRI Yearbook 2003* (note 7), pp. 645–90.

[37] The CWC defines 'old chemical weapons' as CW produced prior to 1925 or CW produced between 1925 and 1 Jan. 1946 which have been determined to be not usable. It defines 'abandoned chemical weapons' as a chemical weapon that was abandoned by a state on the territory of another state 'without the permission of the latter'. CWC, Article II, para. 5; and Article II, para. 6.

[38] Excluding the weight of munition bodies and bulk storage containers.

[39] The countries are Bosnia and Herzegovina, China, France, India, Iran, Japan, South Korea, Russia, the UK, the USA and the former Yugoslavia (now Serbia and Montenegro). Such facilities must be either destroyed, temporarily converted for use as a CW destruction facility or permanently converted for peaceful purposes.

[40] In 2001 Vimy, France was evacuated for over a week while recently discovered World War I-era materials, including CW, were removed. The countries that have declared old CW to the OPCW are Belgium, Canada, France, Germany, Italy, Japan, Slovenia, the UK and the USA.

arsenic.[41] Concern has periodically been expressed about the potential threat that dumped CW may pose to the environment and human health, particularly after the weapons' containers have corroded. Under the CWC, CW dumped at sea prior to 1 January 1985 need not be declared, and most technical experts oppose disturbing the sites as doing so would risk introducing large amounts of agent into the environment over a short period of time. However, this will not make either the problem or the governmental and popular concerns about it go away.

Biological weapons (BW) are also subject to a global prohibition and destruction requirement, but the 1972 Biological and Toxin Weapons Convention (BTWC) has no standing inspectorate and there is no legally binding obligation for the states parties to submit information to help demonstrate treaty compliance (although some treaty implementation-related information will be provided at annual technical and political meetings of the parties, scheduled to be held until the sixth review conference convenes in 2006). All European countries are party to the treaty. There are no known BW stockpiles in continental Europe,[42] and, in general, the practicalities of BW development—the difficulty and risks of storage set against the ease of rapidly regrowing large quantities from small initial stocks—did not conduce to large-scale production, stockpiling or distribution to the potential battlefield.[43]

Outside its narrower European territory, however, the Soviet Union had the largest and most extensive offensive BW programme of any country in cold war times. This highly secret programme was expanded in the early 1970s and continued until at least spring 1992 when then Russian President Boris Yeltsin publicly acknowledged a 'delay' in his country's implementation of the BTWC.[44] Remaining areas of concern include: continued lack of responsiveness by Russian officials to requests by other governments for clarification regarding the fate of the former Soviet programme; the fact that a number of high-level officials in the current Russian team dealing with defences against CBW are known or suspected to

[41] An outer crusty exterior is formed when sulphur mustard comes in contact with cold water, while the interior remains viscous and can contaminate fishing boats and injure fishermen. Sulphur mustard was generally mixed with other agents partly to lower the its freezing point.

[42] Small amounts of agents may be produced for defensive purposes.

[43] An exception would be agents that are freeze-dried. In sporulated form, *Anthracis bacillus* is relatively hardy and may be stored almost indefinitely, especially if refrigerated.

[44] The existence of this programme was suspected following a deadly anthrax outbreak from a BW production facility in Sverdlovsk in 1979. Soviet authorities attributed the deaths to contaminated meat. Some Russian Government officials have repeated this assertion in public statements. The defection of a Soviet BW scientist, Vladimir Pasechnik, in 1989 to the UK provided the impetus for a series of secret meetings between British, US and Soviet officials to clarify the status of Soviet compliance with the BTWC. On 14 Sep. 1992 Russia, the UK and the USA signed the Trilateral Agreement in which the states reiterated their commitment to the BTWC and agreed to host reciprocal visits at selected facilities in order to enhance confidence in treaty compliance. For an authoritative account of the Sverdlovsk anthrax release, partly based on extensive on-site interviews in Russia, see Guiilemin, J., *Anthrax: The Investigation of a Deadly Outbreak* (University of California Press: Los Angeles, 1999). For an authoritative overview of the Trilateral process by a key participant, see Kelly, D. C., 'The Trilateral Agreement: lessons for biological weapons verification', eds T. Findlay and O. Meier, Verification Research, Training and Information Centre (VERTIC), *Verification Yearbook 2002* (VERTIC: London, 2002), pp. 93–109.

have been a part of the Soviet offensive BW programme; and Russia's refusal ever to allow outside access to four key Soviet BW military R&D facilities. There is also continued concern that individuals formerly involved in the Soviet BW programme may work for countries believed to be interested in pursuing illicit BW programmes.

Military bases and facilities

The years since 1990 have seen a massive, albeit uneven (and unevenly phased) process of closure of military bases, airfields and exercise grounds and the decommissioning of other facilities like pipelines and storage sites. In the European context, closures clearly attributable to the end of the cold war and associated military restructuring can be divided into three categories: European national bases on national territory; bases of stationed forces in the European theatre (e.g., the elimination of Russian, Canadian and extraterritorial Belgian bases and cutback in British and US bases); and bases on the home territory of NATO and former WTO states outside Europe. As an example from Germany, one of the countries most dramatically affected, before 1990 some 2.8 per cent of the country's entire territory (960 000 hectares) was taken up in total by German bases and foreign force bases representing 9 different sending states. Germany had some 15 000 individual military locations in all. By 2003 these had been reduced to some 3000 installations at 600 places, covering nearly 400 000 hectares.[45]

The obvious challenge of this part of the conversion process was to find the best way to restore the buildings or at least rehabilitate the land involved for productive use by the civilian community, and how to cope with the (often substantial) costs. A subsidiary problem—but in the former GDR and other former WTO areas often a very serious one[46]—has been the discovery of pollution of the ground, ground water and buildings at military sites due to leakage of petrol, oil and lubricants (POL) and sometimes of nuclear and chemical wastes. The extent to which these problems can be mastered in a way guaranteeing full *and* appropriate civilian reuse of the sites is more than just a matter of money. Also important is the manner of decision taking and the choice of means for executing the conversion process—which might be wholly state-controlled, might be delegated to the private sector and market forces, or could involve consultation with and a degree of control by regional authorities, non-governmental organizations (NGO) and citizens' groups. Today the last model would be regarded by most European authorities as the ideal, but it is obviously more complicated to apply in the case of foreign bases where

[45] Calculation by BICC, based on comparison of Karl Wolfram Schäfer *et al*., *International Experience and Expertise in Registration Investigation, Assessment, and Clean-Up of Contaminated Military Sites*, R&D project 103 40 102/01, UBA-TEXT 5/97 (Umweltbundesamt: Berlin, 1997) with information provided by the German Bundeswehr Internet site at URL <http://www.bundeswehr.de/service/bund_wirtschaft/liegenschaften041002>.

[46] The problem was worse in former Communist countries *inter alia* because of the culture of military secrecy and lack of civilian or public oversight, which meant not just that the military could get away with careless practices but that the resulting facts of pollution (and the substances involved) were particularly hard to determine.

outside actors have certain rights. The latter can easily give rise to state-to-state disputes over the timing and conditions of withdrawal including who-pays-for-what: and in at least one case (Russian bases in the Crimea) a wrangle of this kind substantially delayed the safe disposal of major equipment assets (the surplus part of the Black Sea Fleet) as well.[47] 'Privatization' of conversion work, even if attractive in principle, has its own complexities because of concerns about safety and expertise to deal with the dangerous materials involved, questions of liability if people are hurt in the process, and so on.[48]

For obvious reasons, the main waves of base closures (and associated foreign troop withdrawals) fell within the 1990s, and any mistakes made have been absorbed as part of history. However, the process cannot yet be regarded as anything like complete: first, because of a sometimes significant backlog of conversion in the countries with the greatest resource problems;[49] and second, because military restructuring, both at national and region-wide level, to exploit the relaxation of older tensions and to address newer challenges is still very much a work in progress. One current ripple of modernization is spreading from west to east as seven further Central European states prepare for entry to NATO, as the Balkan states face up to the implications of the (longer-term) perspective of EU/NATO entry they have been granted, and as the EU and NATO themselves focus more seriously on promoting security reforms in the post-Soviet states outside their new eastern borders. A separate force for change is the USA's reassessment of its own basing needs, which is expected to produce a clearer break than ever before with the post-World War II deployment tradition and to result generally in the positioning of residual US forces in Europe further east and south, poised for rapid deployment to non-European regions of crisis or 'new threat'. Third comes the radical cut in collective command structures which NATO announced in 2002 and finished planning in the first half of 2003, and which will mean the removal of the NATO flag from a number of European bases if not necessarily their closure. The execution of all these plans in Europe should not suffer from any lack of experience, but it could run into difficulty as a result of 'conversion fatigue', that is, the exhaustion of support funds created after the cold war and the unwillingness of European actors to help in others' conversion problems except for the very hardest (i.e., Balkan, or eastern-most) cases. For example, the EU-supported KONVER programme for base closure and conversion in Germany has drawn to an end just as the latest wave of changes and the planned Belgian withdrawal are starting to take effect.[50]

[47] See the section on 'Dividing the inheritance' in chapter 2.

[48] Anthony, I., *Reducing Threats at the Source: A European Perspective on Cooperative Threat Reduction*, SIPRI Research Report no. 19 (Oxford University Press: Oxford, forthcoming), ch. 3.

[49] See the section on 'Military infrastructure and base conversion' in chapter 2.

[50] For the latest German plans see URL <http://www.bundeswehr.de/service/bund_wirtschaft/liegenschaften041002.php>. KONVER was an EU programme effective up to 2001, following the earlier PERIFRA. See Brömmelhörster, J., *KONVER II: Konversionsförderung durch die Europäische Union* [KONVER II: Fostering of conversion by the European Union], BICC Report 9 (BICC: Bonn, Mar. 1997).

Industrial, R&D and scientific capacities

During the cold war an extremely large defence science and technology base as well as an enormous production capacity was developed to support the needs of the military establishment. While this defence science, technology and industrial base has changed radically after the end of the cold war, the changes have not primarily reflected the influence of international agreements.[51] Since 1990 there have been substantial reductions in the numbers of people employed in these parts of the economy in all of the major centres of arms production.[52] These changes have reflected national choices about resource allocation and force planning as well as the extremely rapid pace of technology development.

It has become more difficult to identify a coherent defence science, technology and industrial base (as distinct from the rest of industry) and therefore it is difficult to measure trends. However, the manner in which the overall military sector of the economy has changed appears to be very different in different places. During the cold war the pattern of ownership, cooperation between government and industry, and the procedures for defence industrial policy planning were also very different in different countries. Industries in centrally planned command economies, and their counterparts in market economies, where military production took place partly in the private sector and partly in the state sector, could react very differently to essentially parallel challenges.

In North America and Western Europe the combination of concentration, internationalization and diversification have allowed industry to adapt (albeit with much complaining) to new conditions. The prediction made by British Aerospace chief Raymond Lygo that the 'big dogs' would eat the 'little dogs', spit out the bones and leave a smaller number of companies with a very strong financial and technology base have largely been validated.[53] A viable industrial base still exists which could respond to various government requirements—including a demand for further downsizing. However, most governments are still unsure what their bottom-line requirements are, and this has led them *inter alia* to place contracts partly for the sake of preserving scientific and industrial capacities against the possibility of as yet unspecified future needs.

In future the equipment used by armed forces in industrial states will increasingly draw on technologies that were not designed and developed for specific military use. Nevertheless, the cold war tendency to see the defence industry as a separate and isolated sector within the overall economy has not changed to the same

[51] From 1991 to 2000 the European Organisation for Economic Co-operation and Development (OECD) members cut their defence R&D spending by 30% overall. See OECD, *Main Science and Technology Indicators* (OECD: Paris, 2002). Russian military R&D spending dropped 23% over the same period. BICC, *Conversion Survey 2002: Global Disarmament, Demilitarization and Demobilization* (Nomos Verlagsgesellschaft: Baden-Baden, 2002), p. 47.

[52] The total number of persons directly or indirectly employed in arms production is estimated by BICC to have fallen from 7.26 million persons in 1991 to 4.84 million in 2002. BICC, *Conversion Survey 2003* (note 25), p. 163.

[53] Anthony, I. *et al*., 'Arms production', *SIPRI Yearbook 1990: World Armaments and Disarmament* (Oxford University Press: Oxford, 1991), p. 338.

degree as its overall scale and the structure of its ownership. The development of new manufacturing technologies permits the same facilities and even the same production lines to serve both military and non-military customers. These changes in approach to the organization of production have had more impact on suppliers of components and subsystems to prime contractors than on the prime contractors themselves, who make use of commercial off-the-shelf technology but nevertheless retain dedicated production facilities for military equipment.[54]

In Eastern Europe both the response to post-cold war changes and the prospects for the military industry are very different. An industrial base that had been pumped up to colossal size to meet the needs of the military without any need to consider efficient use of resources suffered a series of shocks during the collapse, first of the WTO and then the Soviet Union.[55] The post-cold war years were a time of fragmentation and collapse as the decline in resources was accompanied by the destruction of the framework for planning and industrial cooperation. Important decisions about the ownership of the industry, and the procedures by which the armed forces and other power ministries will procure the equipment they need, still remain to be taken in Russia.

Questions surrounding the reduction and restructuring of inherited scientific and industrial capacities have not been subject to any systematic international discussions. Although the monitoring of industry was evaluated at one time as a form of conventional arms control verification, this idea was never pursued. The requirement to notify future procurement activities is one European confidence- and security-building measure (CSBM) that has contributed indirectly to greater transparency in regard to certain current industrial activities. After the end of the cold war the NATO Economics Directorate facilitated discussions of industrial conversion with countries in Eastern Europe but did not develop any operational activities. Occasional proposals to discuss restrictions on military R&D within the United Nations have never been acted on, and it remains the case that arms control has always addressed forces and equipment in being, rather than productive potential or future plans and programmes.

As the level of resources allocated to defence fell in Central Europe after the end of the cold war, the national responses with respect to military science, technology and industry were extremely diverse. While some countries moved to liquidate and close down their capacities for dedicated military production, others saw these capacities as a national asset to be preserved and attempted to support industries, often by seeking increased revenue from foreign sales or by trying to attract foreign investment.

The net effect of these developments is that across North America and Europe the scientific and industrial capacities that have been retained are not optimized to

[54] See, e.g., Brzoska, M., 'Conversion of the defense industry', eds Gleditsch, N. P. *et al*., International Peace Research Institute, Oslo (PRIO), *Making Peace Pay: A Bibliography on Disarmament & Conversion* (Regina Books: Claremont, Calif., 2000), pp. 133–56.

[55] Kiss, J., SIPRI, *The Defence Industry in East–Central Europe: Restructuring and Conversion* (Oxford University Press: Oxford, 1997). On Russia see Gonchar, K., *Russia's Defence Industry at the Turn of the Century*, BICC Brief 17 (BICC: Bonn, Nov. 2000).

meet the legitimate needs of armed forces at affordable cost. As pointed out above, designers and producers have felt and still feel pressures to seek new sales markets for commercial reasons that may not be compatible with their own countries', let alone the global community's, security policy objectives.

The invisible legacy?

All aspects of the post-cold war heritage discussed thus far have received more than adequate analytical attention and have been, at the least, adequately understood by relevant policy makers. Matching the question of destroying 'bad' old defence capacities is, however, the question of shaping and maintaining 'good' new ones notably for out-of-area deployment, and Europeans have not consistently understood and treated this as an integral part of the same challenge. Vis-à-vis the post-Communist states of Central and Eastern Europe, and now the Balkans, NATO (and to a minor extent the EU) have actively promoted models of defence reform and modernization designed *simultaneously* to eliminate unnecessary capacities and bad practice and to create efficient forces capable of collaborating in new missions. Within Western Europe, however, NATO did not in practice manage to exercise similar discipline and guidance over the non-obligatory reductions taken by its own members—and it had, of course, no jurisdiction over the Western non-allies. What happened was that, inevitably, some states took a less cautious and coherent approach to reduction than others; some grasped the nettle of reform earlier and some later, which could mean either that they did not reduce or change their force and deployment structures *enough* or that they changed in a way which worsened the conditions for rational modernization. A further consequence of this lack of coordination was that no opportunity arose even to consider the merits of trimming European neighbours' capacities differentially so as to create a pattern of role-sharing and complementarity.

Drawing up a balance of the state of affairs created by more than 10 years of such non-coordinated evolution would be an important research exercise, but it is difficult for several reasons. First, the Western institutions themselves have largely dodged the challenge: from 1999 onwards the EU, NATO and the Western European Union (WEU) have produced several evaluations of the gaps between their constituent states' capacities and those needed for new operational challenges, but always on a *collective* or *aggregate* basis. Furthermore, after a failed attempt in the direction of greater comprehensiveness with the 1999 Defence Capabilities Initiative (DCI), NATO has opted to focus its pressure for defence improvements on a narrower range of points related to 'expeditionary' capacities, just as the EU did in its Headline Goal for conflict management capabilities adopted in December 1999.[56] These choices have not only created but tacitly acknowledged the likelihood that member states will heed collective pressures as regards the

[56] For further details and references see (on NATO) Anthony *et al*. (note 10), pp. 47–85, and (on the EU) Dwan, R. and Lachowski, Z., 'The military and security dimensions of the European Union', *SIPRI Yearbook 2003* (note 7), pp. 211–36.

'spearhead' elements in their capacities, while continuing to go their own way and probably fall below standard in other—notably territorial defence—dimensions. Studies of the effectiveness of guidance for defence reform in Central and Eastern Europe have drawn a rather similar picture.[57] Second, different nations' defence dispositions during the cold war were dictated by the latter's disciplines *to significantly differing degrees* depending on their specific history and geography. Global, maritime, neocolonial powers like France and the UK had many defence commitments and interests independent of the East–West confrontation; nations on the physical fringe of Europe, even if allied, did not have to force their territorial defence into a bloc mould to the extent that Germany did; and the neutrals could, of course, choose freely how far to acknowledge cold war realities (although as a matter of observation neither Finland nor Sweden had many defences on their western side). Consequently, the end of the cold war brought a much less clear discontinuity in some nations' defence history than others, and this makes it harder to determine both what adaptations a given state 'should' have made after 1990 and what national motives drove the choice of defence reforms implemented or neglected during the post-cold war decade.

The third difficulty is in finding indicators to compare countries' speed and scale of movement away from cold war models. The size of budget, manpower and even base cuts is an unsafe guide for the reasons discussed above. For example, taking pro rata ('salami') cuts in every department of defence was almost certainly a sub-optimal choice in the rapidly changing environment of the 1990s. Indicators related to structural change would be a better starting point, but caution is needed to avoid converting them into *norms*, since different structural choices may actually be rational for, for example, large multi-role and small specialized states, maritime and land-locked countries, and so on.[58] Nevertheless, it is interesting to contemplate the picture emerging from tables 1.2 and 1.3, which compare the change in ground force/navy/air force ratios (table 1.2) and the changing proportions of regular, conscript and reservist personnel (table 1.3) in 10 selected national defence profiles. With due caution, the first set of figures may be read as showing: (*a*) that post-Communist actors have indeed chosen or been guided into proportionally large structural adjustments; (*b*) that France, the UK and Spain have also made significant changes reflecting *inter alia* their release from concerns about the defence of continental territory, and (*c*) that a non-allied country, Sweden, has followed a reform model which would fit well within the best of the NATO mainstream. It is, at least, suggestive that the countries with the least dramatic changes—Germany and Norway—are ones whose pre-1990 defence profiles were particularly strongly shaped by cold war particularities including strong unidirectional threats; which

[57] See Caparini, M., 'Security sector reform and NATO and EU Enlargement', *SIPRI Yearbook 2003* (note 7), pp. 242–46.

[58] Many of these considerations are relevant also to the debate on defence 'convergence' as a putative goal for (especially EU) European defence endeavours. See, e.g., Bailes, A. J. K., 'European defence: what are the convergence criteria?', *RUSI Journal*, June 1999.

Table 1.2. Structural change in the national armed forces of 10 OSCE countries, 1989–2001, ground/naval/air force ratios[a]

Figures are in thousands of personnel. Those in italics are percentages.

	Army				Navy				Air force			
Country	1989	*%*	2001	*%*	1989	*%*	2001	*%*	1989	*%*	2001	*%*
France	292.5	*65*	150	*58*	65.5	*15*	45.6	*18*	94.1	*20*	63	*24*
Germany[b]	340.7	*70*	211.8	*68*	36	*8*	26	*9*	106	*22*	70.6	*23*
Hungary	68	*75*	13.2	*64*	–	–	–	–	23	*25*	7.5	*36*
Norway	19	*57*	14.7	*57*	5.3	*16*	6.1	*24*	9.1	*27*	5	*19*
Poland	217	*63*	120.3	*67*	25	*7*	16.7	*9*	105	*30*	43.7	*24*
Russia	1 596[c]	*64*	321	*48*	437	*18*	171.5	*25*	448	*18*	184.6	*27*
Spain	210	*74*	92	*64*	39	*14*	26.9	*19*	36	*12*	24.5	*17*
Sweden	44.5	*69*	19.1	*56*	12	*19*	7.1	*21*	8	*12*	7.7	*23*
UK	155.5	*50*	113.9	*54*	64.6	*21*	43.5	*21*	91.5	*29*	53.9	*25*
Ukraine	150[d]	. .	151.2	*58*	. .[e]	. .[e]	13	*5*	50	. .	96	*37*

– = Nil or a negligible figure; . . = Data not available

[a] The 1989 figures are for the USSR.

[b] 2001 figures from International Institute for Strategic Studies (IISS), *The Military Balance 2001–2002*; 1989 figures are from IISS, *The Military Balance 1989–1990*.

[b] Federal Republic of Germany for 1989 figures.

[c] 1989 figures for USSR.

[d] 1992 figures from IISS, *The Military Balance 1992–1993* (Brasseys: London, 1993).

[e] Not yet divided.

Sources: 1989 figures: International Institute for Strategic Studies (IISS), *The Military Balance 1989–1990* (IISS: London, 1989); and 2001 figures: IISS, *The Military Balance 2001–2002* (Oxford University Press: Oxford, 2002).

Table 1.3. Structural change in the national armed forces of 10 OSCE countries, 1989–2001, numbers of regular, conscript and reserve force personnel

	Regular		Conscript		Reserve	
Country	1989	2001	1989	2001	1989	2001
France	226 000	254 590	240 100	19 150	353 000	419 000
Germany	272 000	190 000	222 300	118 400	852 000	363 500
Hungary	43 000	10 910	48 000	22 900	168 000	90 300
Norway	12 300	11 500	21 800	15 200	285 000	222 000
Poland	181 000	114 407	231 000	91 638	505 000	406 000
Russia	1.56 million[a]	647 100	2.7 million	330 000	5.56 million	2.4 million
Spain	75 000	140 150	210 000	3 300	2.4 million	328 500
Sweden	15 500	18 000	49 000	15 900	709 000	262 000
UK	311 650	211 430	–	–	325 000	247 100
Ukraine	230 000[b]	. .	. .	. .	1 million	

– = Nil or a negligible figure; . . = Data not available

[a] The 1989 figures are for the USSR.

[b] 1992 figures from IISS, *The Military Balance 1992–1993* (Brasseys: London, 1993).

Sources: 1989 figures: International Institute for Strategic Studies (IISS), *The Military Balance 1989–1990* (IISS: London, 1989); and 2001 figures: IISS, *The Military Balance 2001–2002* (Oxford University Press: Oxford, 2002).

had no NATO-related force assignments outside their own territory; and which lacked national defence traditions (as autonomous unitary states) more than a century old to turn back to. In both countries there has been debate about the lagging pace of defence reform, but the obstructing forces (apart from finance) have most often been identified as popular feelings and political complexes ultimately linked with features of national history and identity lying outside the cold war as such (e.g., previous 'hot war' experiences). It would be interesting to revisit these cases (and others, e.g., Finland?) with the hypothesis that rigidities and 'deformations' of defence profile created specifically in the cold war period may have played at least an aggravating role.[59]

The interpretations just discussed would offer one instance, perhaps the most important one, in which invisible 'ghosts' from the cold war in the form of inherited security habits and assumptions could obstruct rational change even in the midst of great changes in the physical apparatus of defence. The same syndrome might, and probably can, be traced in other policy contexts. For instance, how many European defence procurement decisions (especially in the West) are still made in terms of a 'tank *replacement*' or ' combat helicopter *replacement*' without asking whether the previous piece of equipment (probably itself commissioned in the middle rather than the end of the cold war) actually needs to be replaced in the new conditions? How often in the development of security philosophies, and responses to specific crises, since 1990 have policy makers consciously or unconsciously sought to cram new phenomena into the familiar cold war moulds of 'threat', 'opposing bloc', 'strategic adversary', 'ideological challenge', and so forth? Conversely, how many concepts—like 'deterrence', or the necessity for formal arms control—have been cast aside on the highly unhistorical assumption that they arose in cold war conditions and only ever made sense within that framework? How much of the difficulty which some West Europeans seem to have in accepting the idea of equal and autonomous policy inputs by new Central European entrants to the EU and NATO flows from 50 years' experience of living with these states as *objects* of Soviet domination and strategic competition, rather than subjects of European security-building in their own right? All these questions would repay more serious investigation.[60]

[59] Table 1.3 reflects the broad trend in post-cold war Europe towards greater reliance on regular, and substantially less on conscript, forces—which generally speaking facilitates an operational shift towards rapid external deployments, and has often been linked with a proportionate increase in reserves. Hungary bucks this particular trend as well as Germany, but it is still worth noting that (among large EU members) France and Spain have both made far more radical changes than Germany, and Norway's transformation in this structural dimension has been much slower than Sweden's.

[60] The question whether international organizations like NATO and the OSCE should be regarded as 'relics' is also legitimate, but has been relatively well debated already. NATO has to some extent overtaken the question by adopting a pace and scale of self-transformation well ahead of even the greatest *national*-level changes.

Partners and proxies outside Europe

The Eastern and Western blocs in Europe did not engage in the build-up of armaments only on their own territory. Their ideological competition had a global character, and each side actively sought partner states in other regions: for their own sake, for the strategic assets (including base sites) and commodities they might offer, and to block the perceived risk that the other side might dominate the given region otherwise. While the status of non-European nations as being aligned with one camp or the other, or non-aligned by choice, was generally quite clear, this 'alignment' could, of course, cover a range of different relationships with greater or lesser degrees of dependence by the local state. Many countries were 'aligned' towards a particular Western player (e.g., the USA or a former colonial motherland) rather than NATO as such. There were different degrees of formality, ranging from local mutual defence alliances patterned on NATO (the Central Treaty Organization, CENTO, based on Turkey and Iran, and the Southeast Asia Treaty Organization, SEATO, in South-East Asia), through explicit bilateral defence agreements, to looser groupings of convenience which could be and were periodically reversed. Only rarely was the local balance of alignments as symmetrical as in Europe itself: not least because each bloc had a mixed bag of perceived non-European adversaries which were not by any means all satellites of the other side (*vide* South Africa, or the complications introduced by the Sino-Soviet split). It did quite often happen, however, that pairs or opposing groups of states in a given region were drawn into a strategic 'proxy' role where they acted out in direct fashion—and sometimes through the kind of open conflict effectively blocked in Europe—the same East–West contest as between the USA and the USSR or between NATO and the Warsaw Pact. (The same could, of course, happen with factions or breakaway provinces within a single state, as in the best-known cases of the Korean War and of Viet Nam.)

What all these different types of relationships had in common was the supply of arms and other defence-related assistance and advice from each bloc to the states or factions aligned with it. Such transfers could be made either free of charge, in the form of military aid, or on (preferential or normal) commercial terms. In the latter case, caution would be needed before interpreting a particular transfer as evidence of strategic alignment: it might have served the recipient's bona fide defence needs or been connected with independent local rivalries, or the seller might have stoked up demand for purely commercial reasons. Some regional states, not necessarily classed as non-aligned, made a regular practice of importing from both blocs. The clearest cases of strategically inspired and competitive arms build-ups, going well beyond any natural local needs, would probably be found in South-East Asia, in certain parts of the Arab world and in different regions of Africa. (Transfers to small states in a position directly to threaten a strategic adversary, like Cuba or Taiwan, should be seen as a special case and could not in practice be built up without limit, as the Cuban missile crisis showed.) A rather clear set of examples could be found in the Horn of Africa, where a dictatorial regime in Somalia was

supported by the Warsaw Pact up to 1977 *inter alia* as a challenge to Western-aligned Kenya, and received in 1975–76 alone 100 surface-to-air missiles (SAM), 55 towed guns and 50 mortars among other things from Soviet sources. The Soviet bloc's decision to back Ethiopia in the 1977–78 Ethiopia–Somalia War threw Somalia back into Western arms, and in the years from 1978 to 1982 it received a total of 300 portable SAMs from the USA, 1000 French MILAN anti-tank missiles, 30 Italian armoured cars, and 309 Italian and US armoured personnel carriers. Ethiopia, for its part, had received supplies from both blocs (including, e.g., 24 US tanks) up to 1976. Under Soviet patronage from 1978 to 1982, Ethiopia imported no fewer than 586 main battle tanks from the GDR and the USSR, as well as 125 MiG aircraft of various types, 500 armoured personnel carriers (APC), and over 2000 SAMs. To take an example from elsewhere in Africa, in the period 1977–84 the USSR exported 43 MiG aircraft, 250 main battle tanks, 390 SAMs and 136 APCs to Mozambique and 31 MiGs, 150 main battle tanks (under a 1975 contract), 1048 SAMs and 74 APCs to Angola.[61] Both of these countries were at the time carrying through Communist-style post-colonial revolutions and both could also be regarded as 'front-line states' against South Africa.

Although the aggregations of hardware produced by these proxy arms races may still have fallen well short of those in Europe, their security legacy has been and remains a particularly troublesome one for several reasons. One obvious point is that unlike Europe outside the Balkans, all the non-European regions most affected by such strategic competition have experienced actual conflict—interstate as well as internal—both before and after the end of the cold war. The presence of such high concentrations of modern weaponry (including large numbers of imported small arms, light weapons and landmines) may or may not have helped trigger these crises, but it certainly made the fighting more bloody than it would otherwise have been—and the task of eventual peacekeeping missions more difficult. The irony of the US and other Western forces suffering casualties during international peace operations from weapons they had themselves earlier supplied has become an all too frequent occurrence. Second, weapons supplied to proxies, and even those stockpiled outside Europe under the continued ownership of the NATO or Warsaw Pact countries supplying them, were never included in any of the East–West conventional disarmament agreements. The majority of the regions affected did not generate any multilateral arms control processes on their own initiative either, so that the only occasions for collecting and destroying weapons or introducing restraints have arisen in a post-crisis setting, after the worst damage was already done. (Such measures of demilitarization have in any case normally had an executive rather than treaty-based character and have been applied to one country at a time.) Third, the countries receiving the largest stocks of equipment have remained outside the various international groupings for strategic export control and typically do not have, or cannot enforce, effective state-of-the-art national controls on the ownership and export of weapons. Surplus stocks on their territory are

[61] All figures in this paragraph are from the SIPRI arms transfers database, URL <http://projects.sipri.se/armstrade/>; and the SIPRI Yearbooks for relevant years.

thus more likely than those anywhere in Europe to be re-exported to irresponsible users, or to fall into non-state hands including those of criminals and terrorists.

The fate of extra-European arsenals and stockpiles created at the height of the cold war is not, however, the whole story or arguably even the most immediate part of the problem. Some stocks have been destroyed in subsequent fighting, others are now too obsolescent and/or inappropriate for local needs to be kept in active inventories or bought by any but the most desperate customers. The difficulty is that the end of the cold war itself has brought opportunities and incentives for a fresh, non-ideologically motivated flow of exports from NATO, former Warsaw Pact and Balkan states. As pointed out above, post-Communist states which have been left with excess stocks of (and production capacities for) relatively low-tech weapons are most likely to be tempted to export them to developing countries, including those in crisis regions.[62] Western companies affected by shrinking domestic markets and operating in a setting of extreme competition and concentration are more likely to set their sights on large, rich buyers such as the Arab states, India and Thailand. Some of these sales can, of course, still be seen as strategically motivated—designed to build bulwarks against local 'rogue' states, to help combat terrorism, or to win influence over unpredictable regimes—but in virtually no case (except South Korea and arguably Taiwan) do they any longer reflect a simple West-versus-Communism dynamic. That does not, of course, make the potential for adverse impacts on security any less. It is easy to point out the dangers of transfers from the poorer suppliers to poorer customers (and uncertain end-users) in conflict regions; but—as the story of Iraq from the 1970s to the 2000s shows—sales by 'responsible' Western states to leading regional powers may also yield a bitter harvest when the latter experience regime changes and/or go through policy revolutions.

Remaining challenges and policy options

A wide range of approaches has been tried out on European territory, many of them breaking new ground in conceptual and operational terms, to tackle the range of problems set out above with the general aim of expediting and controlling disposal programmes and preventing dangerous 'leakage' to undesirable new users. Very broadly speaking they may be divided into two types, of which the first are *goal-setting* measures—notably the creation of formal agreements and obligations on what must be reduced/destroyed and how, but also normative 'codes of conduct' and initiatives of a more politically binding nature. The nature, or absence, of measures of this type for each category of inherited problems was noted above.

[62] See the section 'Surplus weapons, munitions and military equipment' in chapter 2 on some flagrant cases involving Ukraine. Additional examples are given in Bailes, A. J. K. *et al*., *Armament and Disarmament in the Caucasus and Central Asia*, SIPRI Policy Paper no. 3, SIPRI, July 2003, available at URL <http://editors.sipri.se/recpubs.html>. The general problem of exports of post-cold war surplus equipment was analysed in BICC, *Conversion Survey 1997* (note 12).

The provision of security remains the responsibility of national governments, and once collective goals have been established it is the responsibility of all countries that accept them to put in place implementing measures. Nevertheless, countries in the OSCE region and beyond have also developed a diverse range of *facilitating measures*, in bilateral, small group (e.g., sub-regional), and institutional contexts as well as some schemes led by the private sector. These measures depend on the willingness of countries to carry out self-diagnosis and to present identified problems to a body that might help identify a solution. They can include both voluntary arrangements to help other players carry out their established obligations, and the provision of resources (money, advice, technology) for cuts made at the possessors' own discretion.

Since it has been typical for countries bound by treaties to cut more than is required of them, these last two categories of action have very often been blended within a single assistance programme—the physical operations required are after all the same. However, the presence or absence of targets (and other elements of a framework) laid down in formal international agreements does make a difference in other respects, notably in terms of transparency. Experience has shown that where there is no internationally agreed definition of the problem and process for addressing it, voluntarily assisted reductions also become much harder to achieve, and a remarkable lack of transparency can persist in such sectors even more than a decade after the cold war's end. The obvious cases are the remaining non-strategic nuclear weapons, and Russia's BW heritage—both highly relevant to current proliferation- and terrorist-related concerns.[63]

In what follows, a summary review is offered of the main types of facilitating measures developed in this region so far, covering the different categories of 'legacy' problems addressed in the previous section. In all these fields there have been a number of efforts to help identify that which is no longer needed and which should therefore be reduced or eliminated. These things can be physical items such as facilities and equipment but also include the human resources that were engaged in servicing the needs of the cold war military establishment.

Officers and personnel trained to fight the cold war have played a role in post-cold war security building. In the 1990s services and agencies such the Defense Threat Reduction Agency (DTRA) in the United States and the Joint Arms Control Implementation Group (JACIG) in the United Kingdom were set up to support national arms control implementation. These assets have subsequently been made available to partners on a selective basis for use as a technical resource.[64]

A number of countries have opened up services that were previously available only to their own national officers, or to close friends and allies, to participation by other partners in the framework of the OSCE and NATO's Partnership for Peace. Individuals and teams may travel as lecturers or trainers or they can be embedded as advisors within the defence establishment of a country seeking technical expert

[63] Anthony (note 48), ch. 1.

[64] E.g., the British MOD has identified 140 individuals (including both civil and military staff) who can be employed in this kind of defence diplomacy.

advice. Within institutions, arrangements such as the PFP Trust Fund have been created to provide countries which have an identified problem with a mechanism through which they can seek remedial assistance.

A more proactive service to make a critical but constructive review of the provisions made by countries to enhance and preserve security has been offered by *private entities* such as the programme established in the early 1990s by George Soros and the US-based Nuclear Threat Initiative (NTI), through which individuals have been willing to use their own resources to finance measures to secure and eliminate surplus materials or equipment once identified.[65] However, no current processes exist that can allay international concerns about certain specific cold war military legacies—such as BW development capacities and nuclear weapons other than those subject to strategic arms control agreements.

Where it has been possible to identify *what needs to be addressed*, there have been collective efforts to ensure that the items are *safely and securely stored* pending elimination, or to prevent any risk of diversion to unauthorized end-users. In the framework of arms control agreements such as the CFE Treaty and START I these efforts have consisted of cooperation to apply agreed verification provisions. However, a number of measures that have been applied outside the framework of arms control do not follow the verification approach.

These measures include assistance to states to help them modernize and improve their national regulations and procedures so as to account better for the whereabouts of materials or human resources. This assistance has typically taken the form of financing meetings and projects which bring together experts from within the country seeking assistance, and which link these national experts, typically with counterparts from the country offering assistance. The effort to raise the standard of national legislation, regulations and procedures has also been pursued under the auspices of the EU and the International Atomic Energy Agency (IAEA), a specialized agency of the United Nations.

The consolidation and safe and secure storage of weapons that are not subject to arms control agreements have also been undertaken collectively. The USA as well as several European countries and Japan contributed large amounts of specialized equipment for use in consolidating on Russian territory Soviet nuclear warheads that had been stationed in Belarus, Kazakhstan and Ukraine although these warheads were not subject to any arms control agreement.[66] The process of warhead removal, transport and storage was, however, carried out by Russia itself in cooperation with the armed forces located in the newly independent states and was not overseen by the USA (or any other assistance donor). The high degree of common interest in warhead consolidation as well as the emergency conditions were considered to obviate the need to negotiate provisions for strict verification—which might not have been achievable in any case.

[65] The Soros programme is discussed in the section 'Retraining and reintegration programmes' in chapter 2. The Nuclear Threat Initiative and its activities are described at URL <http://www.nti.org>.

[66] The coverage of START I included warhead delivery systems rather than warheads; see above. For a detailed account of the Ukrainian experience see the section 'Nuclear weapons' in chapter 2.

The collection, consolidation and secure storage of small arms, light weapons and ammunition have been carried out under the auspices of bilateral projects, in which the USA has been particularly prominent as a donor, as well as under the auspices of the EU, NATO and the UN.[67] Three different approaches have been taken to collection and consolidation. First, voluntary amnesties have provided a time window in which individuals and groups can surrender weapons even if these are illegally held without fear of punishment. Second, incentive-based programmes have tried to encourage the surrender of weapons either through cash payment or by providing other tangible rewards. Third, national and international forces have been tasked with the location and seizure of illegal arms caches. The case studies that have been carried out in particular in south-eastern Europe suggest that a 'full-court press' combining all three in a single location is most likely to lead to success, and that international cooperation is often critical in implementing the second and third approaches.

Identifying, securing and safely storing dangerous materials not in weapon form—such as nuclear materials and other radioactive sources, including nuclear waste—have become an increasing focus of international cooperation as concern about the possible threat from mass impact terrorist acts has grown. A number of initiatives are currently in development that could combine measures to combat NBC weapon proliferation with measures undertaken for environmental protection.

Under the auspices of the Group of Eight (G8) industrially developed nations a Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (Global Partnership) has been formed,[68] and the G8 participating states have additionally developed an Action Plan to secure radioactive sources. The IAEA has increased its efforts to help states to identify locations where radioactive sources have inadequate protection. In northern Europe, sub-regional cooperation and, latterly, the Northern Dimension of the European Union's Common Foreign and Security Policy (CFSP) have been used to facilitate nuclear safety and nuclear environmental protection projects.[69]

Where surplus weapons, materials or other capacities have been located and secured, there have been collective efforts to *destroy, demilitarize or otherwise put them beyond military use*. The assistance of the USA through the 1991 Nunn–Lugar Cooperative Threat Reduction (CTR) programme was to implement START I, which led to the destruction of long-range nuclear weapon delivery vehicles and the infrastructure (missile and aircraft bases and silos) associated with their use. Moreover, in Ukraine the CTR programme also covered the costs of projects to return bases and facilities to civilian (usually agricultural) use and to

[67] On small arms collection, see Faltas, S. and Di Chiaro, J., *Managing the Remnants of War: Micro-disarmament as an Element of Peace-building* (Nomos Verlagsgesellschaft: Baden-Baden, 2001).

[68] The Global Partnership is discussed in Anthony, I., 'Arms control in the new security environment', *SIPRI Yearbook 2003* (note 7), pp. 567–70.

[69] Anthony (note 48), chapter 2.

meet some of the housing needs of servicemen and their families released from the former Soviet Strategic Rocket Forces.[70]

Assistance from the USA as well as from European countries and the EU has been instrumental in the construction of facilities at which Russia will destroy its massive stockpile of chemical weapons in the most environmentally sound manner.

While the progress made at the global level in the destruction of surplus small arms and light weapons, as well as landmines and ammunition, has been limited and somewhat disappointing, the situation in Europe is more encouraging. A comparatively large number of countries seem likely to miss their anti-personnel landmine destruction deadlines in the framework of the APM Convention. However, few of these countries are located in Europe, where arrangements such as the NATO PFP Trust Fund as well as bilateral assistance from Western donor countries will help countries like Albania, Moldova, Romania and Ukraine to meet these deadlines.

Less progress has been made in the area of SALW destruction partly because there are no destruction obligations and no timetable of the kind established by the arms control framework that applies to anti-personnel landmines. In a number of cases, European countries that have carried out programmes to identify and collect SALW caches have subsequently refused to designate them as surplus and earmark them for destruction. The EU has attempted to address this problem by making assistance conditional on the subsequent destruction of any weapons collected.

The human resources that were engaged in the research, development and production of weapons during the cold war have been the object of some programmes aimed at conversion and demilitarization—although these programmes have also been the least extensively developed and perhaps the most controversial. The International Science and Technology Center (ISTC) in Moscow and the Science & Technology Center in Ukraine (STCU) in Kyiv were both established to help fund non-military projects carried out by former weapon scientists. However, the oversight procedures for the ISTC and the STCU have never been able to fully reassure sponsors that the individuals participating in projects were central to former weapon programmes. Neither have the procedures in place provided full reassurance that projects have been undertaken as an alternative, rather than a supplement, to continued weapon-related activities by those scientists.

While there have been concerns that the ISTC in particular may have had the practical effect of subsidizing the military research establishment in difficult financial conditions, conversion assistance projects such as the Nuclear Cities Initiative (NCI) and the European Nuclear Cities Initiative (ENCI) have been even

[70] The Nunn–Lugar programme financed a joint project between the Bill Harbert International company of the United States and the Ukrainian Fregat enterprise. The Fregat plant, previously used for shipbuilding, assembled prefabricated kits to provide housing for retiring Ukrainian Strategic Rocket Forces officers from the Pervomaysk base. In all 866 flats were constructed in this way. US Department of Defense, 'US assists Ukraine with nuclear weapons dismantlement', News Release no. 164-95, 1 Apr. 1995, URL <http://www.defenselink.mil/news/Apr1995/b040395_bt164-95.html>.

more problematic.[71] Intended to stimulate civilian economic activity in closed administrative regions that formed the core of the Soviet nuclear weapons establishment, these programmes have shown few demonstrable results and it currently seems likely that the ENCI will be terminated.

Since the early 1990s, the USA and a number of mainly European countries have been engaged in cooperative R&D programmes with facilities and personnel that were previously involved in the Soviet BW programme. These activities have been carried out within the framework of the CTR programme, the G8 Global Partnership, the EU technical assistance programme (TACIS), the ISTC programme, and activities financed by the US Civilian Research & Development Foundation (CRDF). Such programmes have provided some increased transparency on former BW-related activities but have by no means addressed all of the outstanding issues and questions.

For these and other reasons, the reintegration of human resources into civil society seems to remain one of the most troublesome of 'legacy' problems. While the most demonstrably effective programmes have focused on limited categories of uniformed personnel,[72] the identity and whereabouts of many people who were directly engaged in fighting the cold war and developing its instruments are uncertain. The approaches to supporting those people that have been identified appear to have had mixed success. A number of programmes originally devised as temporary measures—such as the ISTC—have evolved into semi-permanent arrangements that can, over the next two decades, help to support individuals through the latter stages of their professional career and through their retirement rather than assisting them with a transition to civilian employment.

Residual problems in perspective

Even this short review underlines the formidable scale of the task still remaining to reverse the result of massive and sustained investment of financial, material and human resources in all parts of Europe (and beyond) during the cold war.

Recent decisions in the G8 and by international organizations, including the EU, NATO and the UN, indicate that there is still a determination to dedicate resources to dealing with the legacy of the cold war. These various measures, albeit not tightly coordinated or centrally controlled, appear to be sustainable at current levels and will, at least in certain cases, receive a significant increase in financial support over the next 10 years.

The most serious areas of concern and uncertainty that remain after all these good omens and initiatives are taken into account would seem to be:

[71] Wiener, S. K., 'Preventing nuclear entrepreneurship in Russia's nuclear cities', *International Security*, vol. 27, no. 2 (fall 2002), pp. 126–58.

[72] For an incomplete overview of this type of aid see Heinemann-Grüder (note 12). For sources of information on aid for base closure see Heinemann-Grüder (note 12) and the section 'Military infrastructure and base conversion' in chapter 2.

(*a*) the need to ensure that the sometimes very large funding available (notably under the Global Partnership) is properly targeted, controlled and used—to the extent possible—in a transparent as well as efficient manner;

(*b*) the lack (so far) of an overall framework of authority, or even of information gathering and coordination, which would provide an overview of the various tasks and permit a rational determination of the top priorities and best division of labour between national and private as well as multilateral efforts;

(*c*) the remaining gaps in the pattern of WMD control and conversion, notably short-range nuclear weapons but also lagging CW destruction, uncertainties on BW and limited efficiency in the 'capture' of the human element;

(*d*) the lack of a high profile, well-funded portmanteau initiative in the conventional arms field corresponding to the goals of the Global Partnership for WMD;

(*e*) the risk of 'conversion fatigue' in the less glamorous fields of conventional weapons and military installations, implying *inter alia* a possible 'hard landing' for countries with continuing problems whose international funding dries up;

(*f*) the relative lack of treaty-type constraints in these same areas, either because formal constraints are absent as for SALW or because the reduction process has outstripped them as for CFE-related items, and as a result of the relatively divergent policy approaches of European states (with non-allied states not involved in CFE and Turkey and Finland not in the Ottawa process);

(*g*) the lack of a strong multilateral policy process combining residual conversion tasks with positive defence reform and modernization in the West, which also carries the risk that the 'pincers' of this policy connection will grip less strongly on Central European states when they achieve full membership rights after EU and NATO enlargement; and

(*h*) the lack of any framework which would be comprehensive, Europe-backed and prophylactic rather than post-conflict in nature for addressing 'legacy'-type problems in former NATO and Warsaw Pact 'proxy' countries outside Europe.

In all these fields there is plainly a need for more thorough research and documentation, directed especially towards combining the different (functional and regional) parts of the picture and to breaking down the compartment walls between the current conceptual/operational treatment of 'legacy' issues and the world of security policy in general. Whatever its costs and difficulties, such a comprehensive approach could be invaluable in defining more clearly the black holes and black spots to which resources should be devoted as a matter of urgency and priority. They will not necessarily lie in the same places where most policy attention and prestige are invested today.

Without waiting for such analytical refinements, however, it seems justified to conclude on the basis of this short survey that the *European institutions* need to devote much greater and much more collected attention to the legacy issue precisely at the historic turning point of enlargement. Global frameworks are often important for norm setting but cannot be expected to generate or transfer resources

for what is correctly regarded as the world's richest and most fortunate continent.[73] It is not surprising but reasonable and logical that the USA (including its private donors) should be much less interested in the conventional than the non-conventional parts of the problem. In terms of political realism as well as competence therefore, the right places to look for a new institutional initiative would be:

(*a*) NATO, as part of the development of the PFP, the EAPC and the regional sub-frameworks for cooperation after enlargement;
(*b*) the OSCE, as the obvious place to pull together the remaining conflict challenges with the related legacy issues and also with the transition to democracy agenda; and
(*c*) perhaps above all the *European Union* as an institution which is building a wider Europe policy for its new neighbours post-enlargement; which proposes (in its new constitution) to bring disarmament, arms control and security sector reform tasks within the ambit of its common security and defence policy; which has its own policy instruments (notably in the field of export controls, SALW and APM) well adapted as models to be spread beyond as well as within its new borders; and which has uniquely wide competence—industrial, economic, health and safety, and so on—well attuned to the manifold dimensions of the legacy problem.

With the big-bang double enlargement of 2004, the new NATO–Russia and EU–Russia relationships, sand the start of transfer of Balkan crisis management operations to the EU, Europe is increasingly taking its active security agenda into its own hands (within a wider and still relevant Atlantic framework). It is time that it took a bigger broom to the task of sweeping up the debris of its own divided past.

[73] Europe's own financing institutions, the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD), could legitimately be expected to help.

Sources: 'The history of the Armed Forces of Ukraine', Ministry of Defence of Ukraine Internet site URL <http://www.mil.gov.ua/eng/index.php?cid=history>; Jackson, P., 'Ukraine unveiled', *Air Forces Monthly*, Mar. 1994, pp. 19–25; and Olynyk, S. D., 'Ukraine as a post-cold war military power', *Joint Force Quarterly*, spring 1997, pp. 87–94, available at URL <http://www.ndu.edu/inss/jfq/Subject_index.htm>.

2. Ukraine's cold war legacy 12 years on: a burden from the past, a problem for the future

OLEKSIY MELNYK

Introduction

For Ukraine the concurrent end of the cold war and the collapse of the Soviet Union are the two most remarkable events of the 20th century. Even before the dust had settled from the August 1991 Moscow *coup d'état*—which became a *coup de grâce* for the 'indissoluble' Union—the process of building the state structures of an independent Ukraine had begun. Efforts by coup leaders in Moscow to exert psychological pressure on the leaders of Ukraine by military means[74] made clear the threat posed to the country's aspirations for independence by the almost 1 million troops on Ukrainian territory remaining under Moscow's command. Therefore, on 24 August 1991, Ukraine's parliament, the Verkhovna Rada, by an overwhelming majority passed a resolution that nationalized all military formations stationed on its territory. That act marked the beginning of the process of building armed forces to protect the newly independent nation.

By the end of 1991 the process of building independent state institutions was moving ahead on multiple fronts, including the construction of a national legislative base, the establishment of state institutions (including the armed forces), the implementation of economic reforms and the development of a democratic civil society. On its own, each of these tasks would have been challenging for any country. For the newly independent Ukraine—facing the need to tackle these challenges simultaneously and against the background of the intertwined legacies of the Soviet Union and the cold war—the task was even more complicated and problematic.

From the beginning, the process of building a new nation strove to be future-oriented. Nevertheless, the construction of the institutions of the new Ukrainian state, including the armed forces, was strongly influenced by the Soviet legacy. This not only included the many inherited structures that were, of necessity, co-opted or adapted to form pieces of the new state; it also extended to the principles and methodology which guided the formation of the new Ukraine. The Soviet legacy also survives in the many parts of the system that were left aside in the process of building the new state. These continued to exist, unreformed and unused, and continued to deteriorate. Only now, with over a decade of independence behind it, is Ukraine beginning to see more clearly how deeply the Soviet

[74] Morozov, K., *Above and Beyond: From Soviet General to Ukrainian State Builder* (Harvard University Press: Cambridge, Mass., 2001).

legacy has impacted upon the 'successor' nations. Only now can it attempt a hard-headed assessment of how far the remaining 'assets' of this legacy are in reality liabilities, demanding reform or removal.

This chapter seeks to contribute to that ongoing assessment process by evaluating the main features of the Soviet legacy in the defence area, analysing the achievements and mistakes Ukraine has made in dealing with this legacy and suggesting possible solutions for the remaining problems.

The Soviet inheritance at independence

With the 24 August 1991 decision of the Verkhovna Rada Ukraine inherited a 'first-class force package' from the second strategic echelon of the Warsaw Pact's western theatre of operation: five ground armies, one army corps, four air armies, one air defence army, the Black Sea Fleet, one rocket army, 21 divisions (infantry, tank and artillery), three airborne brigades, and many support units with over 780 000 troops in total.[75] In addition, Ukraine inherited the command, control and support structures of three former Soviet military districts (MDs)—Kyiv MD, Odessa MD and Carpathian MD—as well as a substantial portion of the Soviet military educational system: 34 military educational establishments and 78 faculties at civilian universities providing military education and training.[76]

The Verkhovna Rada's decision also meant that the new state took ownership of all armaments and military stocks on its territory. This included the world's third-largest nuclear arsenal, with 220 strategic weapon carriers, including 176 land-based ICBMs (130 SS-19 and 46 SS-24 missiles)[77] and 44 strategic bombers (19 Tu-160s[78] and 25 Tu-95s). Based on figures from the SALT I Treaty,[79] the total potential of this strategic force was estimated at 1944 nuclear warheads, including multiple independently targetable re-entry vehicles (MIRVs) and long-range air-

[75] In addition to the armed forces Ukraine had 130 000 troops under the Ministry of Internal Affairs, border troops, etc. 12 000 officers and NCOs of non-Ukrainian origin left Ukraine, while 33 000 came back to the country from other former Soviet republics. Heinemann-Grüder (note 12), p. 18.

[76] More than 100 000 military personnel and 100 000 civilians were occupied in providing military education. Grytsenko, A., *Civil–Military Relations in Ukraine: A System Emerging from Chaos*, Harmonie Paper no. 1 (Centre for European Security Studies: Groningen, The Netherlands, 1997), p. 19. The current system includes 3 senior level academies, 5 military institutes, 4 military faculties and 30 reserve officer training departments at civilian universities. Ukraine, MOD official Internet site URL <http://www.mil.gov.ua/ukr/osvita.phtml?list#college>.

[77] Pervomaysk and Khmelnytskyi missile sites reportedly had the world's most hardened underground missile silos with administration buildings; standby power, refrigeration, security installations; fuel and underground water storage tanks; security fences; connecting tunnels, and a variety of buried utility components. Each missile silo was housed in an area of about 1 sq. km. See the Nuclear Threat Initiative Internet site, URL <http://www.nti.org/db/nisprofs/ukraine/weapons/mslsilo.htm>.

[78] The Russian-made supersonic Tu-160 Blackjack was the most modern and powerful combat aircraft in the Soviet Air Force. 19 out of a total of 25 deployed Blackjacks were located in Ukraine.

[79] The text of the US–Soviet Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms is reproduced at the Federation of American Scientists Internet site, URL <http://www.fas.org/nuke/control/salt1/text/salt1.htm>.

launched cruise missiles. In addition, Ukraine inherited approximately 2500 tactical nuclear weapons, designed for delivery by tactical aircraft, artillery and surface-to-surface missiles.

At independence, Ukraine also took possession of huge volumes of military hardware and stockpiles. According to the Ministry of Defence of Ukraine, this included 6500 battle tanks, more than 7000 armoured combat vehicles, 1500 combat aircraft, 270 attack helicopters, and 350 combat ships and support vessels.[80] In addition, there were huge stocks of small arms, light weapons and ammunition—some dating back to the world wars. The exact quantities of these weapons are hard to determine, since many records regarding Soviet stockpiles on Ukrainian territory are incomplete or unavailable. Large quantities of weapons and ammunition were also dumped in Ukraine with minimal accountability by first-echelon Soviet units as these withdrew to Russia from their cold war stations in other Warsaw Pact countries.

Ukraine also inherited approximately one-third of the Soviet military–industrial complex—1840 enterprises and research centres employing 2.7 million people and providing 17 per cent of the total Soviet military–industrial output. Many facilities had unique technological capabilities: for example, the shipbuilding facility at Mykolayiv was the principal construction point for Soviet aircraft carriers, and more than 100 facilities participated in the design and production of missiles and missile components.

Thus, on the one hand, Ukraine instantly became the world's third largest armed power—at least on paper—taking into account all inherited conventional and nuclear assets. As such, it possessed a great variety of weapons (figure 2.1), military equipment, installations, defence enterprises and military personnel that could form the building blocks of the new Ukrainian defence complex. On the other hand, it soon become clear that this legacy came with an extremely high inheritance tax. The parts inherited were in reality disjointed fragments of the Soviet armed forces, lacking central structures for command, control or planning on a national level. Despite the capabilities and size of the inherited military–industrial sector—20–30 per cent of Ukraine's Soviet-era GDP—Ukraine did not inherit a viable military–industrial complex, since individual factories within the Soviet production system were highly specialized, frequently subordinated directly to Moscow, and dependent on specialized inputs from factories scattered throughout other former Soviet republics. Ukraine also inherited the formidable problems of the Soviet defence system: the heavy burden of a bloated force structure, a proliferation of military installations, an organizational culture based on strict hierarchy and rigid control, a totalitarian system of political control designed to ensure

[80] Ukraine, MOD Internet site (note 76). As of 18 Nov. 1990 and 2003 (the latter figures in brackets), the CFE figures were 6204 (3784) battle tanks, 6394 (4740) ACVs, 3043 (3692) artillery, 1431 (801) combat aircraft, and 285 (191) attack helicopters. Joint Consultative Group, Group on Treaty Operation and Implementation, Joint Consultative Group document JCG.TOI/22/03, 23 June 2003.

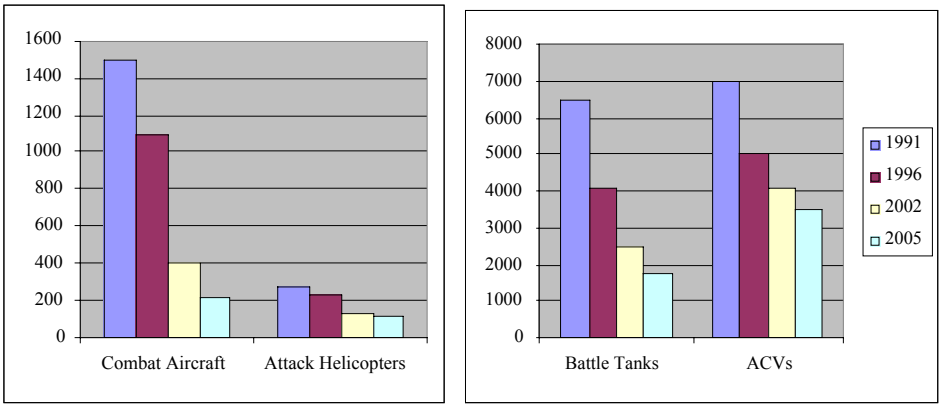

Figure 2.1. Total number of weapons possessed by the Armed Forces of Ukraine

loyalty to the Communist Party and incompatible with the emerging democratic system, endemic corruption, poor living conditions for servicemen and their families, and a plethora of festering environmental and safety problems.

Nevertheless, perhaps from necessity, the new Ukrainian state first focused its attention on consolidating its ownership and making use of the 'assets' of the Soviet inheritance. This involved the complex process of dividing the assets with other former Soviet republics—chiefly Russia—and of forming a national defence system from the scattered parts of the Soviet defence system that remained on Ukrainian territory. It is only more recently that Ukraine has begun to realize that the legacy brought with it more debts for future payment than resources for future prosperity.

Dividing the inheritance

Overall, the process of dividing the Soviet inheritance went rather smoothly, especially in comparison with events in the former Yugoslavia. For Ukraine, the main difficulties were with Russia. Moscow found it difficult to accept the fact that Ukraine was not going to be a 'younger sister' but rather an independent country. Russian politicians and generals did not want to acknowledge the reality that all the military assets on Ukraine's territory had become its property, particularly where they saw these assets as having strategic or financial value for Russia.

The most openly contentious issue between Russia and Ukraine was the division of the Black Sea Fleet. In 1991, the Black Sea Fleet was a large force in both size and strength. It contained 45 combat vessels, 246 support ships, 28 diesel-powered submarines, naval aviation assets (187 fixed-wing aircraft and 90 helicopters),[81]

[81] 'The history of the Armed Forces of Ukraine' (UAF) is presented at the MOD Internet site URL <http://www.mil.gov.ua/eng/index.php?cid=history>. Detailed listings which break down the personnel, organization and major equipment of the UAF are presented at URL <http://www.brama.com/ua-gov/armdfrce.txt>.

one naval infantry brigade, one motorized infantry division and more than 50 000 personnel. The initial arrangement, dual Russian and Ukrainian subordination, quickly broke down over two principal issues: the sale of fleet assets and the status of Sevastopol, the main naval base.

The first issue came to the fore in early 1992, when Ukrainian President Leonid Kravchuk charged the Russian authorities and Black Sea Fleet command with having sold vessels to India, including the $2.2 million *Zhdanov* cruiser, without Ukraine's approval. These sales had been organized by a Moscow-based company called Nevikon-Zuid and authorized by the then Commonwealth of Independent States (CIS) commander-in-chief, Marshal Evgenii Shaposhnikov. Even more disturbing, investigation into the list of 49 vessels prepared for sale showed that senior CIS/Russian military officers had been selling equipment to whomever was prepared to pay cash, without the authorization of either the Ukrainian or the Russian political authorities.[82]

The second issue also quickly rose to prominence in Russia as a hobby-horse of the nationalists, who viewed the Crimea as Russian territory and perceived the Sevastopol issue as a means to press their claims. This began in January 1992, when the Russian Parliament (Duma) and the Ministry of Foreign Affairs condemned the administrative transfer of the Crimea to Ukraine under President Nikita Khrushchev in 1954; and continued in April with a call by Russian Vice-President Aleksandr Rutskoi—during a visit to the Crimea—for its succession from Ukraine. Such calls were echoed in Russian political circles, and in 1993 and again in 1996 the Russian Duma passed a resolution claiming Sevastopol as a Russian city and as the headquarters of an indivisible Russian Black Sea Fleet.

In the face of these issues and pressures, talks on the Black Sea Fleet dragged on for four years before the first significant breakthrough. On 9 June 1995, Ukraine's President Leonid Kuchma and Russia's President Boris Yeltsin signed an agreement on the division of the fleet: 81.7 per cent of the ships were to be transferred to the Russian Federation, and 18.3 per cent to Ukraine. Russia was allowed to use Black Sea Fleet facilities in Sevastopol and other Crimean bases. Despite the agreement, talks dragged on, and it was not until 28 May 1997 that Ukraine and Russia signed the Agreement on the Status and Terms of Russia's Black Sea Fleet Stationing on Ukraine's Territory.[83] This conveyed permission for the Russian Black Sea Fleet to operate as a foreign military force[84] based in Ukraine. The issue of control over Sevastopol, the Crimea and the division of the Black Sea Fleet was

[82] Kuzio, T., 'Ukraine's arms exports', *Jane's Intelligence Review*, vol. 6, issue 2 (1 Feb. 1994), p. 65, available at URL <http://www.taraskuzio.net/media/arms_ukraine.pdf>.

[83] Agreements between Ukraine and the Russian Federation 'On Mutual Settlements Related to the Division of the Black Sea Fleet and Stationing of Russia's Black Sea Fleet on Ukraine's Territory'; 'On the Status and Terms of Russia's Black Sea Fleet Stationing on Ukraine's Territory'; and 'On the Parameters of Division of the Black Sea Fleet'. Under the terms of the second of these agreements Russia formally recognized Sevastopol as an integral part of Ukraine's territory and Ukraine agreed to the stationing of the Russian fleet in Sevastopol for 20 years until 2017.

[84] This force includes nearly 25 000 men and almost 300 vessels. The Black Sea Fleet infrastructure includes almost 300 military installations, more than 5000 service and residential buildings in 2 areas of stationing, Sevastopol and Feodosia, and 2 air force bases, Kacha and Hvardiyske.

finally resolved on 30 June 1997, with the signing of the Agreement on Friendship, Co-operation and Partnership between Ukraine and the Russian Federation. The signing of this comprehensive Ukrainian–Russian agreement and the agreements reached on the terms of the stationing of Russia's Black Sea Fleet in the Autonomous Republic of Crimea contributed to a certain stabilization of the political situation in the latter.

However, the legacy of the division of the Black Sea Fleet continues to impact on Ukrainian–Russian relations today. Despite numerous top-level declarations about fraternal relations between the Ukrainian and Russian peoples and the navies of the two countries, the time that has passed since the signing of the relevant agreements has revealed significant differences between the parties in their assessment of the implications of the Black Sea Fleet's stationing on Ukrainian territory. Russia consistently emphasizes its generally positive role as a factor of geopolitical stability in the region and as a bridgehead for Russia and the CIS on the southern flank. In addition, Russia has paid particular attention to strengthening its political ties with Sevastopol: for example, by funding housing construction and opening a branch campus of Moscow State University (the only such branch campus). Ukraine, while not openly contradicting Russia's arguments, emphasizes more concrete factors, such as the negative consequences for tourism, trade, the environment and investments in the Crimean economy. More recently, many Ukrainian officials and commentators have indicated a concern that, while the fleet treaty has helped to improve relations with Russia, it may create obstacles to Ukraine's integration with the West.

Russia's attention has also focused on other strategic assets located in Ukraine: nuclear weapons, strategic bombers, satellite communication centres, early-warning systems, and facilities for airspace control and management of outer space exploration. The issue of nuclear weapons was quickly resolved, with all tactical nuclear weapons inherited from the former Soviet Union being voluntarily removed to Russia by May 1992 and Ukraine voluntarily renouncing nuclear weapons in 1994, after which its strategic warheads were sent to Russia for destruction (compensated by reactor fuel sent from Russia). Strategic and tactical bombers were also a high-priority item and were even the subject of some 'heroic/criminal' episodes. On 14 February 1992, six Su-24 Fencer bombers took off from Starokonstantyniv Air Force Base in Ukraine, flew first to Belarus, and then continued to Russia. In addition to the aircraft, the pilots took their regimental banner. The Ukrainian Government demanded that the aircraft be sent back, but the requests were ignored and soon both sides 'forgot' the unpleasant incident. However, discussions on bomber sales continued for many years, and, in 1999, 11 Ukrainian strategic bombers (three Tu-95s and eight Tu-160s) were transferred to Russia as a part of a three-party deal, in exchange for $285 million in natural gas debt of the Ukrainian Joint Stock Company Naftogaz Ukrainy. Although Ukraine had wanted to sell the bombers for $75 million each, all 11 aircraft were ultimately

sold for $275 million plus $10 million for 600 air-launched cruise missiles (ALCMs).[85]

The final aspect worthy of note is the apportionment of former Soviet personnel. In this context, Ukraine received a disproportionately high percentage of the total Soviet forces, because of the policy it adopted whereby, in addition to all Soviet personnel serving on its territory, all ethnic Ukrainian servicemen serving outside Ukraine were also eligible to return and to be considered members of the Armed Forces of Ukraine (UAF). The resulting influx of servicemen, coming on the eve of a huge reduction in personnel, led to spiralling pension and rehousing liabilities that will burden Ukraine's state budget for decades to come.

Building the new army

As indicated above, as the nominally third largest armed power in the world, in 1991 Ukraine appeared to have its pick of forces, weapons, equipment, installations, defence enterprises and military personnel which could become the building blocks of a powerful Ukrainian defence complex. In reality, these were mere fragments of the Soviet Armed Forces, which required considerable effort before they could be transformed into the UAF. Furthermore, some key elements vital for building effective national armed forces were missing, which complicated the transformation process.

The most urgent requirement for bringing the UAF into being was the creation of national command and control structures. In Soviet times, the Ukrainian Soviet Socialist Republic did not have its own Ministry of Defence, since all defence and military control functions were centralized in Moscow. Thus there were neither generals, nor politicians, nor experts in Ukraine who had the experience needed to address defence-related issues at the state level. Out of necessity, what had been relatively low-level executive structures subordinated to Moscow were forced to become institutions for national command, control and planning. Figuratively speaking, the headquarters of the Kyiv MD became 'overnight' the Ukrainian Ministry of Defence and the General Staff; the headquarters of the Soviet 24th Air Army became the headquarters of the Ukrainian Air Force, and so on.

There were also considerable liabilities that went along with these apparently impressive combat forces. The Soviet-era senior officer corps had problems in coping with change. The Soviet Armed Forces had been designed and trained to fight a 'mass' war similar to World War II and to act under conditions of extraordinary secrecy, without any kind of civilian democratic control. Under the Soviet system, the Communist Party's 'total war' policy gave the military top priority on resources, and defence planning was almost completely the responsibility of the

[85] Kedrov, I., 'Ukraina otdayet dolgi bombardirovshchikami.' [Ukraine pays its debts with bombers], *Nezavisimaya Gazeta,* 22–28 Oct. 1999, p. 1. Experts assess the market value of one Tu-160 bomber at $300–400 million. Mukhin, V. *et al*., 'Rukhnul simvol voennogo mogushchestva Rossii' [Collapse of the symbol of Russian military power], *Nezavisimoe voennoe obozrenie*, no. 34 (2003), p. 4.

generals. After the collapse of this system the army (with its cold war mentality) was surprised to find that the government was no longer ready or able to support its mission with sufficient resources.

This rift between the armed forces and the government was a direct result of the lack of effective political–military structures. Within the Soviet totalitarian state structure, the Communist Party had directly (through political officers) and indirectly (via KGB military counter-intelligence sections) exercised strong political control over the armed forces. The break-up of the Soviet system meant the end of the Party's control, yet the culture of secrecy and monopolization of defence decision making by the military inhibited the creation of any system of democratic control as an alternative. Important elements of such a system either did not exist in Ukraine in the early 1990s or did not have sufficient expertise to be effective: state and parliamentary oversight structures, public organizations, non-governmental analytical centres and free mass media. Civil society itself was in its infancy. Soviet defence sector structures had been closed to society, and only in the late 1980s had the population received some carefully measured information about major incidents, hitherto unknown wars and environmental problems related to military activities. Another important element of the system—a cadre of defence civil servants holding responsible posts—also did not exist, which limited the government's ability to give guidance or oversight to the armed forces.

From the perspective of sustained development of the armed forces, perhaps the biggest liability of the Soviet inheritance was the lack of an effective system for budgeting or resource management. The Communist Party had ensured that the Soviet Armed Forces received priority in resource allocation, but it did not have a major say in resource use which was the prerogative of the generals. Neither the Party nor the military had felt a need for democratic instruments to establish whether society supported the Soviet total-war policy or the resource expenditures required. This led to inefficiency, complacency and a sense of automatic entitlement on the part of the armed forces. In the first two years of independence, the military sector remained among the main government priorities. However, the strong internal potential of Ukraine was soon dissipated due to the absence of effective economic reforms; in 1991–95, GDP dropped by almost 50 per cent. Whereas in 1991–92 national priorities had included ensuring control over military formations and establishing the formal indicators of national sovereignty, in the years that followed they shifted markedly to problems of economic survival. In the absence of a clear national threat, and with the generals unpractised in justifying their budget before parliament, this proved disastrous for the defence budget.

In short, the Soviet forces inherited by Ukraine were not only fragmented, but ill-adapted to modern reality. For those raised in the Soviet system, however, it was a slow and difficult process to apprehend that a first-class Soviet cold war-type force package might in reality be a liability. Attempts were therefore made to rebuild Soviet-style forces and structures, modified to take into account Ukraine's non-

nuclear status and obligations as well as limitations based on compliance with the CFE Treaty and the 1992 Tashkent Agreement.[86]

Ukraine's Ministry of Defence claims that the process of developing the UAF can be divided into three main periods: the initial establishment (1991–96); further building and development (from 1997 to an unspecified end-date); and reform and development (beginning in 2001).[87] The MOD claims that the first period resulted in the development of the required legal basis, the reorganization of military structures, the establishment of the corresponding executive and supporting structures, and the creation of other elements that were necessary for the functioning of the UAF. During this period, there was also a considerable reduction in the size of military institutions and the number of personnel and armaments. The results of the second stage are less clear and included mainly continued downsizing and structural adjustments. The third stage has focused on continuing the latter process but has added the creation of rapid reaction forces as a model for the future UAF. While some steps have been taken towards achieving this last goal, it is still too early to fully evaluate their success.

The results

Over the past decade, Ukraine has made several attempts at military reform aimed at force reduction, reorganization and modernization, defence industrial conversion, and reducing manpower and equipment.[88] However, these first essays in reform have been hampered by an absence of experience in state building, an inadequate legislative base, vague political objectives, a lack of professional cadres at the state level and continued Soviet-style thinking. As a result, considerable effort has been expended to rebuild a Soviet-type defence structure on a smaller scale.

The first Military Doctrine, adopted in 1993, illustrates the flaws: it contained general tasks, a long list of good intentions, numerous priorities and no link to resource support. Soviet-style thinking was evident—the elements of 'gigantomania' and the irresponsible declarations reflected a deeply rooted cold war mentality as well as a Soviet-era euphoria about the prospect of unlimited resources for defence. Similar flaws doomed the first State Programme of Armed Forces Construction and Development, which was prepared in 1995–96.[89] Yet the funding

[86] The CFE Treaty (note 13) and the 1992 Tashkent Agreement set the following ceilings on TLE for Ukraine: battle tanks 4080 (3130 in regular units), ACVs 5050 (4350), artillery of at least 100-mm calibre 4040 (3240), attack helicopters 330, and combat aircraft 1080.

[87] 'The history of the Armed Forces of Ukraine' (note 81).

[88] For more details see Grytsenko (note 76).; and 'Military reform in Ukraine: the start or another false start?', UCEPS analytical report, *National Security & Defence*, no. 1 (2000), pp. 2–39, available at URL <http://www.uceps.com.ua>.

[89] Unrealistic deadlines were set in this programme and put off several times. The poor quality of the document caused recurring problems, yet less than 2 months were allotted for the final revision of the project. In the 'best' tradition of Soviet-style rush work, a team comprised of the General Staff generals and officers submitted a draft version of the programme. At first, it was severely criticized by the head of state, but 2 weeks later it was approved by the National Security and Defence Council, headed by the President of Ukraine. *National Security & Defence*, no. 1 (2000), p. 20, available at URL <http://www.uceps.com.ua/eng/all/journal/2000_1/html/20.shtml>.

of reforms was in no way adequately provided for in the budget: one could hardly expect real reforms in a situation where over 80 per cent of the MOD budget had to be spent on the maintenance of personnel.

In the words of First Deputy Chief of the General Staff of the UAF Lieutenant-General Mykola Palchuk, 'The armed forces' downsizing was carried out without structural reorganization. The expediency of closing down one military unit and keeping another was not properly demonstrated. As a result, many necessary units fell victim to reduction . . . Tremendous material and technical resources have been worn out. And the most important—we have wasted time'.[90] At the same time, budget limitations and the delay in reform gave the country a chance to avoid many possible mistakes. In 1996, for example, 'reformers' had proposed the establishment of operational–territorial commands (proposals were developed for five, seven and nine such commands, with full justification for each option). In retrospect it is hard to see what the positive benefit would have been if such an expensive undertaking had actually been carried out.

The failure of reform has carried a high cost for the residual forces as well. Faced with budget cuts, downsizing and operational fuel shortages under a deteriorating economic environment, commanders were forced to reduce training below minimum required levels. Force readiness suffered immediately but, in keeping with the Soviet tradition, the military leadership kept pronouncing that 'the country's Armed Forces are ready to defend the sovereignty and independence of our state',[91] and 'the Army keeps its military potential at the level necessary to prevent any aggression and to protect Ukraine and its people'.[92] The reality was that in 1996, despite a budget set at 1.9 per cent of the country's GDP, the MOD received only 8 per cent of what it needed to cover the army's minimal needs and 5 per cent of what was needed for combat training.[93] In a speech on 17 December 1996, President Kuchma revealed that none of the 191 mechanized infantry and tank battalions was rated 'ready' and only 3 out of 45 air force squadrons were combat-ready.[94]

The one bright point in the reform process has been the success of Ukraine's participation in international peacekeeping operations and international military cooperation. This has allowed thousands of servicemen to gain new ideas from working with other country's armed forces, to build interoperability with international partners, and to train in real-life operations which approximate low-intensity conflict. Peacekeeping also has the added advantage of being partially or fully funded by the United Nations or bilateral partners. Military cooperation in the

[90] Palchuk, M., 'Voennaya reforma . . .' [Military reform . . .], *Defense Express,* no. 4 (2003), p. 4.

[91] Speech by Defence Minister Valery Shmarov during VE Day ceremony in Kyiv, Kyiv Radio, Ukraine World Service, 9 May 1995.

[92] Colonel-General Oleksandr Kuzmuk, 'Destiny of the army is inseparable from the destiny of the state', *Uryadovyi Kuryer*, 5 Dec. 1996, p. 5 (in Ukrainian).

[93] Interview with Minister of Defence of Ukraine Oleksandr Kuzmuk, 'The minister hits the bull's eye', *Za Vilnu Ukrayinu,* 23 July 1996, p. 1 (in Ukrainian).

[94] Kuchma, L., 'Ukraine does not need funny armed forces', *Uryadovyi Kuryer,* 17 Dec. 1996, p. 3 (in Ukrainian).

Partnership for Peace and bilaterally with NATO nations also provides a means to learn from nations that have already conducted successful reforms in their security sectors. Unfortunately, however, Ukraine has not put in place a system for effectively gathering and exploiting the experience accumulated during the past 12 years. The failure to put such a system in place is a testimony to the lack of strong political direction and sufficient funding. In an environment where low budgets turn every goal—such as retaining experienced personnel, organizing military training or at least the symbolic modernization of weapons—into an insurmountable problem, bureaucratic inertia will fight the creation of any new system (however badly needed) that might compete for scarce resources.

Prospects for the future

If Ukraine is to be successful in creating truly modern, effective and affordable armed forces, the next stage of the reform process will need to address the lessons learned from its efforts to date:

(*a*) the need for sufficient administrative capacity, based on effective structures, resources and training of civilian and military experts;
(*b*) the need to adapt thinking to rapid changes in the geo-strategic environment and the emergence of new threats for national security;
(*c*) the need to address the country's economic problems in order to ensure internal stability and to build the economic base that will allow increases in the defence budget;
(*d*) the need rapidly to reduce the burden of maintaining an extremely high concentration of troops, military objects, weapons and ammunition on Ukraine's territory; and
(*e*) the need to address the low standard of living for servicemen and their families and the social impact of the armed forces' downsizing.

However, despite the experience gained by both military leaders and politicians, it seems that many of the lessons of the past have not been fully learned. Currently, military reform is conducted in accordance with the State Programme of Reformation and Development of the Armed Forces of Ukraine Through 2005 (adopted in 2000); the Concept for the Structure of the Armed Forces—2010 (adopted in 2001); and the State Programme of Transition of the Armed Forces of Ukraine to Manning with Contracted Servicemen (adopted in 2002). However, even should the most optimistic scenario for the development of Ukraine's economy materialize, it will not be possible to ensure a high level of combat-readiness and to develop professional armed forces with a strength of 240 000 personnel (as stipulated by the relevant Concept for the Armed Forces—2010), or even with 180 000–200 000 (as in the latest declarations of the MOD). The reasons for this conclusion are obvious: technological advance means that the cost of military equipment doubles in price every 7–10 years, while the early stages of personnel reductions require considerable additional financial resources. These and other

factors have for many years been ignored in allocating funds to the national defence budget. Under these circumstances the creation of professional rapid reaction forces (about 40 000 strong) looks a realistic goal, but only on the assumption that a more radical reduction of the main defence forces takes place in the very near term.

At its most basic, reform can only succeed if it moves beyond step-by-step reductions of the armed forces and the ever-thinner stretching of scanty resources in the hope of maintaining as much of the cold war legacy as possible. What is needed is the concentration of resources and consistency in reform measures, founded on strong political will and a clear definition of priorities.[95]

Dealing with the liabilities of the cold war legacy

In the process of building the Ukrainian Armed Forces it has become clear that a great deal of what were first considered as assets have actually turned out to be liabilities. Increasingly, the political leadership of Ukraine is realizing that dealing with these liabilities is important for ensuring the safety and well-being of the population. In this sense, coping with these liabilities is an important part of the defence reform process.

Surplus weapons, munitions and military equipment

Since forces located on Ukraine's territory represented part of the second strategic echelon of the western theatre of operation of the Warsaw Pact, Ukraine was a base for large Soviet strategic reserves of arms and ammunition. In addition to regular stock, wartime reserves and out-of-date stocks that remained even from World War I and World War II, great quantities of weapons and ammunition were transferred to Ukraine when the Soviet Union withdrew its troops from Czechoslovakia, the GDR, Hungary and Poland.

These stocks were first viewed as a commercial asset. With such a variety and quantity of surplus weapons and ammunition in hand, Ukraine started to sell them almost immediately. As the Ukrainian export control system was far from perfect in the early years of independence, it is hard to say exactly what, where and how many munitions had been sold before a national system of arms export control was established. Official figures indicate that revenues from arms exports over the first decade totalled some $3 billion, but it is possible that the real number is many times that amount.[96] In the mid-1990s, Ukraine joined international export control

[95] 'Transition to professional armed forces in Ukraine: the problems and prospects, Razumkov Centre analytical report', *National Security & Defence*, no. 5 (2002), p. 21.

[96] A Ukrainian parliamentary inquiry concluded that, between 1992 and 1998, Ukraine lost $32 billion in military assets, in part through theft, discounted arms sales and lack of oversight. Specific examples of arguably unwise sales of Ukrainian second-hand equipment (selected from the SIPRI arms transfers data base, see URL <http://projects.sipri.se/armstrade/>) include transport aircraft, combat helicopters and armoured infantry fighting vehicles (AIFVs) to Sri Lanka in 1994–96, some of which were specifically designated for use against rebels: 4 ground attack fighter aircraft

regimes, created special structures, trained experts and brought its related programme and procedures back on track. Support by international partners was important in this process, including $14 million in aid provided by the USA for strengthening national export controls. Nevertheless, the accusations made against Ukraine of violating international arms trade regimes pointed to continuing shortcomings in export control, at least regarding proper information support and transparency.[97]

At the time of independence, many stockpiled weapons were of quite good quality and had valuable military potential. However, in the course of time they have become an ageing and excessive burden. Today, Ukraine faces the need to dispose of huge amounts of outdated weapons and ammunition inherited from the Soviet Union.

According to Vyachelau Taran, Director of the Spivdruzhnist corporation,[98] Ukraine holds 230 000–250 000 tonnes of outdated ammunition needing disposal, with the stockpile increasing by 10 000 to 15 000 tonnes every year owing to the downsizing of the army. Ukraine has a stockpile of 1.19 million shells containing cyclotrimethylenetrinitramine (RDX),[99] including 800 000–860 000 in western regions where facilities to dispose of them are non-existent.[100] Stockpile premises designed to store considerably less than that amount are overloaded. Most of them were built decades ago. Now many of them are in poor condition and present a source of serious threat to those working on site as well as to the local population and environment. In addition, a number of these sites are located in a close proximity to critical infrastructure such as nuclear power plants, and oil and gas pipelines.

At present, Ukraine is able to destroy 20 000 tonnes of munitions annually while it would need to destroy 45 000 every year just to keep up with the amount of munitions reaching the end of their service life. Ukraine also inherited 6.35 million

illegally sold to Yemen in 1995; and 6 helicopters to be used by mercenaries against rebels in the Congo in 1997.

[97] For more detail see Polyakov. L., 'Arms export control: touching the closed subject', *Zerkalo Nedeli*, 14 July 2001, URL <http://www.uceps.com.ua/eng/all/publications/publicat_1044_eng.shtml>.

[98] The corporation constitutes an association of the State Research and Engineering Institute of Chemical Products (Shostka, Sumy region); the Tasko corporation (Kyiv), the Research-and-Development Institute of Aviation Technology (Kyiv) and the Defense Ministry of Ukraine represented by military unit A-1352.

[99] The explosive hazard posed by RDX probably presents a more significant hazard than other risks to health from its handling. It can act as a human carcinogen and cause reproductive defects; is harmful if swallowed or inhaled and is readily absorbed through the skin. See 'Safety (MSDS) data for cyclotrimethylenetrinitramine', Physical & Theoretical Chemistry Laboratory, Oxford University Internet site URL <http://physchem.ox.ac.uk/MSDS/CY/cyclotrimethylenetrinitramine.html>; and Boston, D. W., 'Material safety data sheet (MSDS-RDX)', Owen Compliance Services, Inc., 15 Mar. 1993, revised 2 Nov. 2000, pp. 18-1–18-4, URL <http://www.ocsresponds.com/ref/msds/msds-rdx.pdf>.

[100] 'Project to eliminate small arms, ammunition could take 12 years to implement', *Defense-Express*, 14 May 2003, URL <http://www.defense-ua.com/eng/news/?id=8577>. Some expert estimates suggest that as many as 7 million SALW and 2 million tonnes of outdated ammunition may be stored in Ukraine.

anti-personnel mines that must be destroyed.[101] Based on estimated destruction costs of $350 per tonne for ammunition and $2 per mine, the estimated liability for destroying these items alone is approximately $100 million. Taking into account the country's current economic situation, it is obvious that Ukraine will not be able to solve these problems without international financial and technical assistance.

PFP Trust Fund demilitarization projects

In late June 2002, the Ukrainian Government presented a request to NATO for assistance in destroying up to 1.5 million small arms and light weapons and 200 000 tonnes of conventional munitions. In November 2002, a NATO team of experts met in Kyiv to develop a project for the safe destruction of 133 000 tonnes of munitions and 1.5 million SALW in Ukraine with financial support from the NATO Partnership for Peace Trust Fund.

According to the NAMSA assessment, the quantities to be destroyed made this the largest single demilitarization project ever. The associated cost of the project is €75million and it will last 15–20 years. The project will create capacities to destroy 25 000 additional tonnes per year. Ukraine's contribution to this project will include services in kind such as security and transportation.

This is the second NATO PFP Trust Fund Project in Ukraine. The first project to destroy 404 000 anti-personnel landmines was formally opened by the NATO Secretary General in Donetsk on 10 July 2002 and was completed on 27 May 2003. However, the surplus stocks declared to date for this and other weapons should be considered as only part of the picture.[102]

Another serious problem is military weapons and equipment. Military economists calculate that as many as 140 000 pieces of surplus military weapons and equipment remain. According to Lieutenant-General Valeriy Baykov, Deputy Chief for Armaments of the UAF, a further 40 000–45 000 pieces per year are to be decommissioned in the course of reform until 2005. That actually exceeds by a factor of 4 to 4.5 the existing capacities to manage such items (storage, export, domestic sales, reimbursement for services provided for the MOD and disposal).[103] In addition, there are already more than 100 000 surplus pieces at the military depots.

In order to study this problem and work out a solution, in 2002 the MOD set up a special working group with the participation of representatives from all concerned ministries and agencies. The main task of the working group was to develop a profit-making system of conversion. As a result of its activity, the government

[101] Ukraine signed the APM Convention on 24 Feb. 1999, but has not yet ratified it. The main obstacle is Ukraine's inability to eliminate its significant mine stockpile within the 4 years required by the convention.

[102] Even for the 2002 project, only 400 000 tonnes were declared by Ukrainian officials initially. 'NATO representatives study issue of utilizing surplus weapons and ammunition in Ukraine', *Defense-Express*, 26 Nov. 2002, URL < http://www.defense-ua.com>.

[103] 'Utylizatsiya viyskovoho mayna ne obitsyae lehkoyi roboty' [Utilization of military potential proves no easy task], *Narodna Armia*, 23 Mar. 2003, p 3.

adopted a resolution which established new procedures for the utilization/conversion of military equipment to facilitate the conversion process.[104] Previous procedures envisaged a process of conversion into metal scrap, which should make such equipment and its components unsuitable for direct use. However, since most of the equipment subject to scrapping had not reached the end of its service life, the new legislation permits the dismantling of weapons and equipment into components which can be refurbished, certified and reused as spare parts for the UAF's needs or for sale on internal or external markets. This type of conversion brings a hundredfold higher economic returns than the previous one.[105]

In order to implement this project, the government has licensed 12 enterprises for sales of military and dual-use products on the domestic market, 11 of which are under MOD jurisdiction. The MOD has created eight centres for storage, pre-sale service, sale and dismantling of military weapons and equipment—three for the land forces, four for the air force and air defence, and one for the navy—with overall coordination provided by the MOD's Main Financial and Economic Department.

Nuclear weapons

The cold war and the nuclear weapon emerged together and reinforced each other for more than 40 years. The end of the cold war offered the international community its greatest chance to put an end to this most dangerous, expensive and destructive of weapons. Ukraine was the first country in the world to seize this opportunity.

Ukraine's nuclear disarmament was presented as a necessary pre-condition for cooperation with the International Monetary Fund (IMF) and the World Bank and for the resulting flow of Western investment. In the early 1990s, representatives of the Ukrainian establishment often reiterated their adherence to Ukraine's nuclear-free status: pointing out, however, that the destruction of the silos, withdrawal of nuclear arms to Russia and retraining of Ukrainian servicemen would be costly and Ukraine would not be able to meet all the expenses on its own.[106] At the same time, the Ukrainian leadership—citing lack of expertise, money and experience—acknowledged that it would be easier for Ukraine to destroy such a huge nuclear arsenal than to maintain it and ensure safe storage. As a first step, by May 1992 Ukraine had voluntarily removed all tactical nuclear weapons inherited from the former Soviet Union to Russia.

In November 1993, the Ukrainian Parliament adopted a resolution 'On the Ratification of the Treaty Between the USSR and USA On the Reduction and Limitation of Strategic Offensive Arms of 1991 and the Protocol to the Treaty of 1992'. The next stage was the signing, on 14 January 1994, of the Trilateral Declaration

[104] Resolution of the Cabinet of Ministers of Ukraine 'On Approval of Utilization Procedures for Military Property of the Armed Forces', no. 705, 15 May 2003.

[105] 'Utylizatsiya viyskovoho mayna ne obitsyae lehkoyi roboty' (note 103).

[106] Zubar, M., 'Ukraine has met its nuclear commitments. And the West?', *The Day*, no. 31 (5 Nov. 2001), URL <http://day.kiev.ua/DIGEST/2001/31/issue.htm>.

Table 2.1. The rate of elimination of ICBMs in Ukraine, 1991–2001

Location and type	1991	1996[a]	1997	1998	1999	2000	2001
Pervomaysk							
SS-19							
Silos	40	40	19	–	–	–	–
ICBMs	40	40	–	–	–	–	–
SS-24							
Silos	46	46	46	46	44	13	–
ICBMs	46	46	46	46	44	4	–
Khmelnytskyi							
SS-19							
Silos	90	90	50	20	–	–	–
ICBMs	90	90	45	10	–	–	–
SS-11[b]							
Silos	3	3	3	–	–	–	–
ICBMs	3	–	–	–	–	–	–

[a] All nuclear warheads had been withdrawn to Russia for dismantlement as of 1 June 1996.

[b] Non-deployed.

Sources: MOD of Ukraine official Internet site, URL <http://www.mil.gov.ua/old/eng/index.htm>; and the Centre for Non-proliferation Studies, Monterey Institute of International Studies, URL <http://www.nti.org/db/nisprofs/ukraine/weapons/numbers_table2.htm>.

by the presidents of Ukraine, Russia and the USA under which Ukraine was to destroy all nuclear weapons on its territory, including strategic offensive weapons.[107]

[107] The START I Treaty established significantly reduced limits for ICBMs and their associated launchers and warheads; submarine-launched ballistic missile launchers and warheads; and heavy bombers and their armaments including long-range nuclear air launched cruise missiles. It was signed on 31 July 1991, and entered into force on 5 Dec. 1994. See Goldblat (note 30). The Protocol to the Treaty Between the USA and the USSR on the Reduction and Limitation of Strategic Offensive Arms (Lisbon START Protocol of 28 May 1992) enabled implementation of the START I Treaty in the new international situation following the dissolution of the Soviet Union. It amends and is an integral part of the treaty and provides for Belarus, Kazakhstan, Russia and Ukraine to succeed to the USSR's obligations. See the section on 'Nuclear issues' in chapter 1. Belarus, Kazakhstan and Ukraine also committed themselves to accede to the NPT as non-nuclear weapon states in the shortest possible time and to eliminate all nuclear weapons from their territory within 7 years. Belarus acceded to the NPT in July 1993, Kazakhstan in Feb. 1994, and Ukraine in Dec. 1994. The 1994 Trilateral Statement by the presidents of the US, Russia and Ukraine detailed procedures for transferring Ukrainian nuclear warheads to Russia and the associated assurances regarding compensation and security. It set out the simultaneous actions required to transfer SS-19 and SS-24 warheads from Ukraine to Russia for dismantling and to provide compensation to Ukraine in the form of fuel assemblies for nuclear power stations, as well as security assurances to Ukraine, when START I entered into force and

In November 1994, the Verkhovna Rada adopted the Act on the Signing by Ukraine of the Offensive Nuclear Arms Treaty which opened the way for mutual ratification and implementation of the START I Treaty. Ratification took place on 5 December 1994. In response to Ukraine's voluntary gesture, a memorandum providing security guarantees for Ukraine was signed at the OSCE summit in Budapest that month, with all the recognized nuclear states soon becoming parties to it. Although some Ukrainian experts consider these guarantees inadequate, the existence of this document is certainly far better than nothing.

The 1991 START I Treaty required Ukraine to eliminate each missile silo by destroying the technical equipment, filling the silos, cleaning the surrounding land and restoring the site to fit the contours of the pastoral countryside. However, Ukraine's limited budget could not afford the hundreds of millions of dollars needed for such a massive undertaking. In response to this situation, the USA contributed more than $600 million under the Cooperative Threat Reduction programme to help Ukraine meet its demilitarization obligations under the START Treaty. Germany also provided financial assistance (DM 6.6 million) and equipment for the destruction of missile silos in Ukraine. As a result of the clear political will of Ukraine's leadership and this support from international partners, all of the ICBMs in Ukraine were deactivated and their warheads were shipped to Russia before 1 June 1996.

Destruction of the silos occurred alongside the deactivation of missiles, but took longer to achieve. Deactivation of the first SS-19s had started before the ratification of the treaty by the Ukrainian Parliament, reportedly because some SS-19s were at the end of their service life and might have leaked toxic fuel if not dismantled without delay.[108] The last remaining SS-19 was removed from a silo near Khmelnytskyi on 5 June 1998. On 30 October 2001, the last Ukrainian ICBM SS-24 silo, located near Pervomaisk, was destroyed. The missiles removed from these silos had been dismantled and stored. At that point, Ukraine had fully met its commitments to the world community envisaged by the Lisbon Protocol to the START I Treaty.[109]

However, some issues still remain, such as the elimination of toxic fuel. On 30 October 2001, following the destruction of the last Ukrainian SS-24 silo, representatives of Ukraine's Ministry of Defence and the US Department of Defence signed an amendment extending the existing agreement on cooperation in liquidating the infrastructure of weapons of mass destruction in Ukraine. This

Ukraine became a non-nuclear weapon state party to the NPT. It was signed in Moscow on 14 Jan. 1994. URL <http://www.nato.int/docu/facts/kacta.htm>.

[108] Lockwood., D., 'Ukraine's position hardens despite some positive signs', *Arms Control Today*, Sep. 1993, pp. 25, 30, cited at 'Ukraine: missile deactivation and warhead withdrawal', Centre for Non-proliferation Studies at the Monterey Institute of International Studies, URL <http://www.nti.org/db/nisprofs/ukraine/weapons/mslwrhd.htm>.

[109] Lisbon Protocol (note 35).

programme will continue to render material and technical assistance and services along with the training of personnel until 31 December 2006.[110]

As part of this programme it was intended to complete the phased disposal of all SS-24 missile sections and components, principally a number of rocket engines stored at the Pavlograd Chemical Combine in newly constructed warehouses. However, some issues remain to be resolved before this agreement can be implemented. One such issue is the elimination of toxic rocket fuel from the engines, which was to take place in a new facility to be constructed at Pavlograd.

In April 2003 the United States decided to terminate this destruction project after agreement could not be reached on an acceptable method of disposal. The USA agreed to continue to pay the costs of storing the rocket engines until December 2004.[111]

Colonel-General (ret.) Volodymyr Mykhtiuk, the former Commander of the 43rd Rocket Army, has described Ukraine's choice to get rid of its nuclear weapons as a tough, but exemplary one. 'Ukraine was the first nation in the world to reject its nuclear potential demonstrating to the whole world its responsible attitude to nuclear safety and peace.'[112]

Under the START I Treaty Ukraine was obligated to dismantle all of its 44 Tu-160 Blackjack and Tu-95 Bear strategic bombers and 1068 cruise missiles (AS-15 'Kent' ALCMs). In addition, 38 Tu-22M Backfire bombers and 483 ALCMs were destroyed or transformed into conventional weapons at a cost of $13 million provided by the USA.[113] An additional 5 Russian Tu-95s were dismantled inside Ukraine. The last of Ukraine's strategic bombers was destroyed on 17 May 2001. Two Tu-95 bombers were transformed into environmental reconnaissance aircraft. Two bombers (1 Tu-95 and 1 Tu-160) were sent to a museum of aviation in Poltava. An additional 11 strategic bombers (3 Tu-95s and 8 Tu-160s) were transferred to Russia in 1999 in exchange for relief of $285 million of Ukraine's natural gas debt.

The elimination of 8 Tu-22M aircraft along with 2 training aircraft was accomplished between June 2001 and May 2002. In July 2002 a contract was awarded for the elimination and disposal of 31 remaining Tu-22M Backfire bombers and 225 Kh-22 air-to-surface missiles (ASMs). Twelve of these aircraft that were based at the Poltava Air Force Base had been eliminated by September 2003. The remaining 19 aircraft, based at a military airfield in Nikolayev, were scheduled to be eliminated by September 2004.[114]

[110] Lockwood (note 108).

[111] 'Ukraine calls on US to resume processing of SS-24 missile fuel', ITAR-TASS, 15 July 2003, in Foreign Broadcast Information Service, *Daily Report–Central Eurasia* (*FBIS-SOV*), FBIS-SOV-2003-0715, 16 July 2003; and Harahan, J. P., 'Cooperative Threat Reduction in Ukraine, 1992–2003, Defence Threat Reduction Agency, Unpublished paper, Sep. 2003.

[112] 'Ukraine lays to rest last nuclear missile silo', *Kyiv Post*, 25 Oct. 2002, URL <http://www.kyivpost.com>.

[113] 'Ukraina izbavilas ot sovetskogo naslediya' [Ukraine has rid itself of the Soviet legacy], *Kommersant,* 18 May 2001, p. 11.

[114] Matarykin, V., 'Last Tu-22 bomber to be scrapped in Poltava', ITAR-TASS, 29 Sep. 2003, FBIS-SOV-2003-0930, 1 Oct. 2003.

Military infrastructure and base conversion

Ukraine has sites belonging to the defence complex located throughout its territory. At the time of independence, in 1991, these included 4500 military settlements, and individual sites occupied 666 000 hectares. In the period between 1991 and 2003, about 140 000 hectares of territory, 147 military bases and 507 separate defence objects were transferred out of MOD jurisdiction. However, owing to continuing problems with the conversion of military objects the MOD still maintains 173 demilitarized cantonments and 6000 blocks of flats with 540 000 inhabitants.[115] Colonel Serhiy Yankovskiy, the commander of the Zherebkovo base,[116] described the problems associated with such closures in an interview with the *Narodna Armiya* newspaper. 'Suddenly, 250 out of 600 people working on the base found themselves thrown overboard without any funds for living. For civilian workers who constituted a lion's share of those discharged, this problem became especially severe . . . Not a penny was allocated for the military unit's closure and the local authorities demonstrated a total unwillingness to provide any assistance in resolving a chain of social, economic and ecological problems that had arisen.'[117]

However, the inhabitants of Zherebkovo base were the lucky ones. First, the Ministry of Emergency Situations expressed an interest in using this base, so the arrival of another military unit partly solved their problems. Second, the Zherebkovo base was selected as an example for a joint OSCE-led pilot project: Facilitating the Conversion Process of Former Military Bases in Ukraine. Zherebkovo thus gained a chance to become the 'Ukrainian model of base conversion'. There are few other military bases that could be regarded as even partly successful examples of conversion in Ukraine. Most of them belonged to strategic nuclear forces (Uzin, Novi Bilokorovychi, etc.) and received significant international financial support for their conversion because of the special attention given to this type of assets.

However, the vast majority of closed bases have not been so fortunate. The closure and conversion of military bases in any country is a very costly and disruptive process. Up to now, the main method of conversion in Ukraine has been the transfer of military sites from the MOD (or other security structures) to state executive bodies or local self-government authorities. Neither the national budget nor local budgets have funds allocated to meet such conversion needs, so transfer from one state body to another does not improve the situation. The problem is com-

[115] *Narodna Armiya,* 27 June 2003, p. 12.

[116] Zherebkovo, a former military unit of the 43rd Rocket Army, was established in 1954. It is located in the Odessa region, 392 km from Kyiv, 198 km from Odessa and 1 km from Zherebkovo village (3000 inhabitants). The total number of inhabitants of the base is 875 people including: 65 military, 234 civilian employees, 98 pensioners, 57 military retirees and 188 children. The size of the base is roughly 177 hectares plus another 1878 hectares of agricultural land and forest belonging to the base. The base consists of 22 residential buildings, 4 barracks, 12 social and administration buildings, and 56 workshops and storage facilities. OSCE Study, 'Facilitating the conversion process of former military bases in Ukraine: case study Zherebkovo', Conversion in Ukraine Internet site, URL <http://www.conversion.org.ua/eng/study_3.php>.

[117] Tkachuk, R., 'Konversiya Viyskovyh Baz v Ukraini: bezsystemna' [Conversion of military bases in Ukraine: has no systematic approach], *Narodna Armia,* 21 Feb. 2003, p. 3, available at URL <http://www.conversion.org.ua/eng/news_2.php>.

plicated by deficiencies in the existing legislative base and the absence of a unified legal document on conversion.

In 2003, the Cabinet of Ministers of Ukraine adopted the Programme of Conversion of Former Military Objects for the Period of Reforming the Armed Forces and Other Military Formations.[118] This programme aims to provide efficient utilization of former military objects as well as the resolution of social and economic problems for retired military personnel and their family members. It tasks the National Co-ordinating Centre (NCC),[119] based in Kyiv, to implement the programme together with state and local executive bodies. The NCC, together with these other participants, will prepare proposals on legislative support, develop annual action plans, submit relevant budget proposals and develop a database on former military objects—among other responsibilities. The main sources for programme financing will be the national and local budgets, funds from international and non-governmental organizations and voluntary contributions.[120]

In December 2002, the OSCE Project Co-ordinator's Office in Kyiv initiated a project on Facilitating the Conversion Process of Former Military Bases in Ukraine: The Example of Zherebkovo. The objectives of the project were to analyse the current situation of the conversion process in Ukraine (including social, economic and environmental issues) in general and to perform a case study on the former military base in Zherebkovo (Odessa region). The outcome of this analysis and its recommendations were presented at an international round table on 14 May 2003, in the Verkhovna Rada.[121]

The OSCE study provides general recommendations for the further elaboration of a transparent and efficient conversion process in Ukraine. The recommendations are based on the following assumptions and principles:

1. The design of the conversion process shall incorporate as much as possible of the best available international practice.
2. Consideration of country-specific circumstances is crucial for process design (e.g., historical background, economic situation, legal framework, social adaptation policy, environmental issues, and so on).
3. Coordination and cooperation among the participants on a national level and vertical cooperation between the national, local and regional levels are vital.

[118] Resolution of the Cabinet of Ministers of Ukraine, ' On the Approval of the Programme . . .', no. 81, 18 Jan. 2003.

[119] The NCC is a central agency of the executive with special status, and is the main coordinating body for issues related to conversion and readaptation between Ukrainian state bodies as well as with international donors. Established in 1997, the NCC was reorganized in Sep. 2001 to become the National Co-ordinating Centre for the Resettlement of Military Servicemen and Conversion of Former Military Facilities. The NCC staff consists of 46 persons, including 19 regional officers.

[120] An unofficial translation of the programme is available at URL <http://www.conversion.org.ua/annexes/Annex_3_1_Eng.doc>.

[121] Complete information about this conference is available at the 'Conversion in Ukraine' Internet site at URL <http://conversion.org.ua/eng/conference.php>.

4. Conversion and closures are always expensive, thus the state budget and local budgets should be the main sources for funding conversion. However, owing to a lack of budget resources the process in Ukraine requires additional funds.

Against this background the study proposed a model for structuring the base conversion process in Ukraine. This model foresees a central role for the NCC, aided by the State Property Fund of Ukraine and the Ministry of Environment and Natural Resources. The NCC should be the central agency for base conversion, linking this with its current task of supporting the reintegration of former military servicemen into civilian society.

The MOD should be responsible for the pre-conversion preparation of bases, designated for conversion. This includes: scheduling, preparing information on the military personnel to be discharged, retraining servicemen from closed or converted bases, removing military equipment, preparing information on base assets, providing information on the base history to assist in assessing environmental status, and so on.

According to the proposed model, conversion in Ukraine could be co-financed by revenues from the sale of former military assets based on the principle of a 'revolving fund'. This would make the process partially self-financing, although additional funds will inevitably be needed. However, the sale of assets is not seen as the principal method of conversion but rather as a funding supplement. The future use of conversion objects should be determined by application of the principle of the 'highest and best use'. To ensure application of this principle, the model foresees the establishment of a Special Conversion Commission as an advisory board which would be responsible for monitoring this aspect of the conversion process.

The ultimate goal of the military base conversion process is not only to soften the impact of base closure on society and the local economy at and around a base, but also to use the closure, conversion and redevelopment of the site as a catalyst for a new local and regional development process.

A successful conversion requires accurate information about the sites in question as well as the free flow of this information to relevant authorities, affected stakeholders and potential investors. This in turn requires the establishment and maintenance of an electronic database, as outlined in the OSCE study. To ensure transparency, sustainability and accountability of the process, the drafting of a separate Law on Conversion would be desirable.

If implemented, the model will enhance Ukraine's institutional capacity to streamline the conversion process by applying a strategic management approach and increasing the transparency and accountability of work by the responsible agents, thus mitigating the social, environmental and economic risks of conversion and base closures.[122]

[122] OSCE Study (note 116), 'Executive summary', URL <http://www.conversion.org.ua/eng/study_summary.php>.

That Ukraine has scarce budget resources is obvious, and it is reasonable for Ukraine to seek international support. However, the Ukrainian side should understand that international donors will contribute their money only on the understanding that conversion is performed in accordance with generally accepted standards.[123]

Environmental pollution as a result of military activity

Most military sites of the Ukrainian Defence Complex were established in the 1940s, 1950s and 1960s. Operations on those sites were strictly confidential for reasons of national security, and in the absence of outside supervision or concern for environmental issues, bases caused significant environmental damage (particularly to water and soil resources) in the vicinity of sites such as nuclear-waste and rocket-propellant storage facilities, refuelling stations, firing ranges, air force and navy bases, repair and maintenance facilities, stocks of ammunition, military research centres, unmanned rocket silos, and the like. Abandoned sites of the nuclear-missile complex pose a specific environmental problem, as they are contaminated with toxic rocket fuel fragments as a result of spills and leakages.

Currently, the MOD has officially declared 220 military sites as 'ecologically dangerous'. That does not include sites abandoned by the Soviet Army; about 100 such deserted military towns and 55 rocket silos are located on Ukrainian territory.[124] However, the environmental situation at former military bases in Ukraine has never been studied in detail. No national survey of possible pollution at former military sites exists, and only limited data are available on the state of the environment at any given base.

Nonetheless, anecdotal evidence indicates that environmental pollution on and near military installations poses considerable health risks. In the summer of 2000, more than 420 residents of the villages of Boleslavchik, Michurino, Podgorye and Chausovo in the Pervomaisk district of Mykolaiv region were stricken by toxicodermis. A government commission has determined that the cause of the outbreak was environmental pollution from rocket fuel that had been stored in the Pervomaisk district since the early 1990s, when 23 rockets were dismantled. Under the influence of sunlight penetrating the soil, the fuel began to break down into toxic components. Those substances entered the ground water, polluting 98 per cent of the wells in the villages in question and 57 per cent of the springs feeding the water mains. The MOD denied that rocket fuel was buried in Mykolaiv region in the 1990s, claiming that the fuel buried there dated back to the 1970s.[125]

[123] Staudt, C., Team leader of the OSCE Project Co-ordinator's project on conversion, Speech at the conference on Conversion of Former Military Sites in Ukraine: A Challenge for the Future, Kyiv, 14 May 2003; and Staudt, C. interviewed by Tkachuk, R., 'Ukrayini potriben zakon pro konversiyu viyskovyh baz' [Ukraine needs a law on conversion of military bases], *Narodna Armiya,* 28 Mar. 2003.

[124] Briefing by Colonel Igor Mazor, Deputy Chief for Ecological Safety in the Radiological, Chemical and Biological Protection Forces of the UAF, *Interfax Ukraina*, Kyiv, 28 July 2003.

[125] Prima News Agency, 'Water polluted with rocket fuel', 4 Sep. 2000, URL <http://prima-news.ru/eng/news/news/2000/9/4/20557.html>.

In the spring of 2001, two inhabitants of Velykyi Dyvlyn village (Zhytomyr region) broke into the territory of an old military unit housing missile launchers which had been abandoned by the military in the late 1980s. Inside a launching silo they discovered aluminium tanks and sawed them up immediately. Shortly after, one of them unexpectedly died. His fellow villagers believed that poisoning by a toxic chemical contained in the tank had caused his death. The village is only a kilometre away from the abandoned military site. Local men dismantled what was left of the equipment and then sold it in a nearby town. No one ever checked the scrap metal for radioactivity.[126]

The environmental situation in the vicinity of air force and navy bases is also severe. Around Uzin Air Force Base 20-centimetre layers of jet fuel were discovered in local wells. Between 400 000 and 1.2 million tonnes of jet fuel are estimated to be present in subsoil waters, creating a serious health threat for the 15 000 inhabitants of the city of Uzin.[127] Dozens of similar air force bases are spread around Ukraine and their environmental condition is hardly better than that of Uzin.

The budgets of individual military bases contain funds earmarked for the assessment and correction of contamination at the sites. However, available resources are limited and considerably below what would be needed to solve the actual problems.[128]

Retraining and reintegration programmes

Dangerous elements of the cold war legacy, especially in its nuclear dimension, included not only weapons, the means of their delivery, missile bases, fissile materials and rocket fuel, but also thousands of people—officers, nuclear research scientists and workers. As former US Secretary of Defence William Perry emphasized, 'We do not want them . . . turning up in places like Iran and Iraq. So a small portion of the funds of the Nunn–Lugar [programme] were devoted to reorienting the people and the facilities to non-military work'.[129]

To support Ukrainian scientists and engineers formerly involved with the development of weapons of mass destruction and their means of delivery, and as part of the general process of conversion from a military to a civilian environment, the Science & Technology Center in Ukraine was established in 1994. The USA

[126] In Dec. 2000, the Internet site of the ProUA.com Internet publication quoted a local official of the Zhytomyr regional emergency administration, who suggested that there were a few more abandoned military missile sites, but that their locations were classified. URL <www.ProUA.com>.

[127] *Narodna Armia*, 23 May 2003, p.12.

[128] Stephanska, O., 'Ukraine: remediation of contaminated sites', *Environmental Technologies & Services,* 21 Aug. 2002, URL <http://www.bisnis.doc.gov/bisnis/country/030110UPContamEq.htm>.

[129] Perry, W., 'Defense by other means', Remarks to US/Russian Business Council, Washington, DC, 29 Mar. 1995, URL <http://www.defenselink.mil/speeches/1995/di1043.html>.

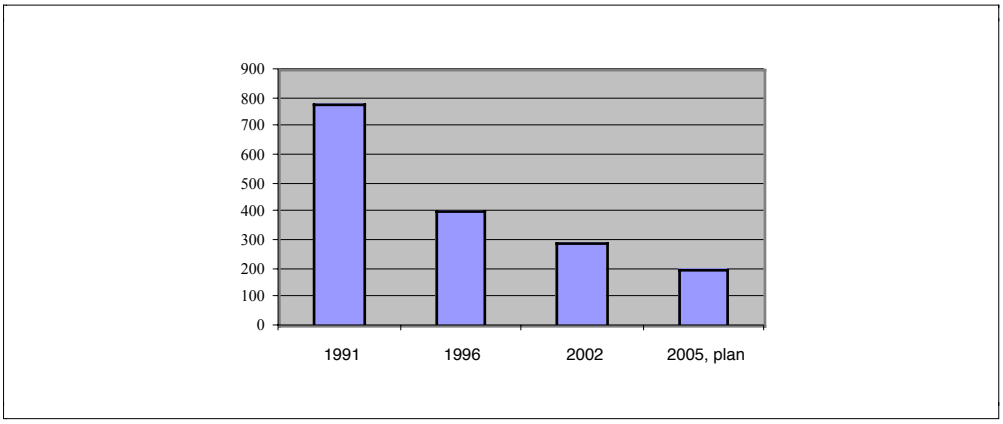

Figure 2.2. Troops of the Armed Forces of Ukraine, 1991–2005
Figures are thousands of troops.

committed $10 million, Canada committed $2 million and Sweden committed $1.5 million to get the centre started. The majority of funds went directly to the scientists.[130]

This illustrates one of the peculiarities of such programmes in Ukraine—to this day, retraining programmes for discharged military personnel have been financed mainly via international donors. Throughout the first wave of downsizing, the Ukrainian Government did not realize the real scale and urgency of the problems related to retraining and reintegration of former military personnel (see figure 2.2). A National Supervisory Board[131] for coordination of activities related to the reintegration was created only in August 1996, and a National Co-ordinating Centre on 17 October 1997. Yet state budget financing is foreseen only in 2004 by the Programme of Social and Professional Adaptation of Former Military Servicemen through 2005. The budget line for social and professional adaptation in the MOD annual budget amounts to some $1 million.[132] Thus the MOD has at most $10 to spend for each discharged officer or non-commissioned officer (NCO), as

[130] The STCU became fully active in Jan. 1995 and was the first intergovernmental organization based in Ukraine. It supports projects in diverse scientific fields, encouraging those with potential commercial applications. During the first 2 years of its operation the STCU approved 155 projects totalling $18.3 million. The EU acceded to the STCU agreement on 26 Nov. 1998 and in so doing replaced Sweden as a party to the STCU agreement. For more information see the STCU Internet site, URL <http://www.stcu.INT>.

[131] The Supervisory Board was formed by the heads of departments from several ministries (the MOD, the ministries of Labour and Social Policy, of Economy and European Integration, of Education, etc.) in order to provide the National Co-ordinating Centre with the necessary information and to assist in the implementation of the governmental Complex Programme for the Social Readaptation and Reemployment of Military Officers Laid Off or Transferred to the Reserve, and their Families via the regional Supervisory Boards.

[132] '2002 Defence Budget of Ukraine', *Defense-Express*, 14 Jan. 2002, available at URL <http://www.defense-ua.com>.

compared with the $550 per officer or NCO provided for in East European training programmes.

The reintegration of military servicemen in Ukraine has been mainly conducted within the framework of five major programmes: the German-financed reintegration programme for officers originally stationed in the former GDR; the EU TACIS programme; NATO's language training courses; the programme of the Renaissance Foundation and the International Foundation for Social Adaptation; and a resettlement programme funded by the British Ministry of Defence.

The Ukrainian share has mainly consisted of providing premises free of charge, paying for utility services, wages for personnel, and the like.[133]

The German-financed reintegration programme was the first programme designed for reintegration in Ukraine as a means to facilitate the return of officers originally stationed in the former GDR.[134] Between 1993 and 1995, three Interregional Training Centres (ITCs) were set up. The total amount offered by the German Government to Ukraine was approximately DM 22.98 million. The money provided was mainly used for the acquisition and equipping of teaching facilities as well as the establishment of administrative structures. Altogether, courses were made available for 16 different professions. Owing to non-transparent accounting procedure the overall number trained under this programme is not known, but it may be supposed that the programme's contribution to actual retraining was of a somewhat symbolic nature against the backdrop of the huge numbers of dismissed officers. The ITCs did not engage in job placement. On the other hand, their mere existence helped to sustain retraining capacities even after the programme came to an end in 1997, since the three centres then moved under the jurisdiction of the Ukrainian Ministry of Education. The shortcomings of the project were a reflection of the institutional set-up: the ITCs were subordinated exclusively to the Ministry of Education, excluding the MOD. By and large they acted independently, lacking exchange of information, coordination and monitoring.

The German project was followed by the *EU TACIS project entitled Retraining and Reemployment of Ex-Military Officers*,[135] which lasted from March 1995 to December 1998. The Ukrainian Government developed a Complex Programme for the Social Readaptation and Reemployment of Military Officers Laid Off or Transferred to the Reserve, and their Families, which became the basis for implementation of the TACIS project. The essential goal of this project was to support the process of civilian re-employment of officers laid off by the UAF through retraining and employment promotion.

As a result of this project, regional centres for job placement (RCJP) were created in 12 cities: Kyiv, Vinnytsia, Dnipropetrovsk, Donetsk, Zaporizhzhia, Yev-

[133] In addition, a small project to help military sailors find employment on commercial ships was carried out by the Government of Norway in Sevastopol. For more details see Heinemann-Grüder (note 12), pp. 18–27.

[134] Heinemann-Grüder (note 12), p.20.

[135] Heinemann-Grüder (note 12), p. 21; and TACIS project, 'Retraining and reemployment of ex-military officers', Delegation of the European Commission to Ukraine, Belarus and Moldova Internet site, URL <http://www.delukr.cec.eu.int/en/tass/programme/010002.htm#>.

patoria, Lviv, Mykolayiv, Odessa, Simferopol, Kharkiv and Khmelnytskyi. During 1996–98, $13.6 million was spent in total for reintegration in Ukraine, of which $10.6 million came from the EU.[136]

In July 2000 a second EU TACIS project for job placement support for former military service personnel began in Ukraine. The project had a budget of €2 million and lasted 24 months. One of the goals of the project was to create so-called directed groups with the goal of creating workplaces in such sectors as information technology, energy conservation technology and ecologically clean energy.[137] In the period 1997–2002 the NCC, in the framework of this TACIS project, retrained over 15 200 discharged officers and members of their families. Job placement was successful for 11 493 people.[138]

NATO's language training courses.[139] From November 1998 the NATO Economics Directorate, aiming to deepen collaboration between Ukraine and NATO in the framework of the 1997 Charter on a Distinctive Partnership,[140] began a programme of language training directed at giving assistance to former servicemen to improve their chances at finding a job in the civilian sector.

The goal of this initiative is to educate around 100 reserve officers per year. The first part involves 400 hours of intensive language courses and 100 hours of specialized courses on marketing, management, finance and other disciplines deemed necessary for the participants. Language education is conducted by leading language institutions: the British Council, the Goethe Institute, the French Cultural Centre and the Italian Cultural Centre. Courses in the English, German and French languages have been held in Kyiv, Odessa, Lviv, Sevastopol and Uzin for three years. In 2002 English language instruction began in Kharkiv and Italian language instruction began in Kyiv. Some 400 former military service personnel have gone through this programme.

Programme of Social Adaptation of Retired Regular Servicemen sponsored by George Soros. This programme was carried out by the Renaissance Foundation from 1991 until December 1998. On 13 December 1998, the International Fund for Social Adaptation (IFSA) was formed on the basis of the previous Renaissance Foundation project. In its Annual Report for 2000 the IFSA indicated that 79 628 retired servicemen and their family members had been helped with their adjustment through the programme: 57 212 were retrained, 26 353 were employed, 2061 received medical aid, and 1445 enterprises were set up by former officers.[141]

[136] Heinemann-Grüder (note 12), p. 21.

[137] OSCE Study (note 116), 'Current situation and key issues', URL <http://www.conversion.org.ua/eng/study_2.php>.

[138] OSCE Study (note 137),

[139] Heinemann-Grüder (note 12), p. 27.

[140] It is reproduced at URL <http://www.nato.int/docu/basictxt/ukrchrt.htm>.

[141] International Fund for Social Adaptation, 'On the way to the civil society', *Annual Report: 2000*, p. 18, available at URL <http://www.ifsa.kiev.ua/eng/index_eng.htm>. However, some authors express serious doubts about the figures presented considering the financial resources of the fund, the possibilities of retraining and other controversial issues. See Heinemann-Grüder (note 12), p.26.

Resettlement programme funded by the MOD of Great Britain.[142] In December 2002 a pilot project funded by the MOD of the UK for retraining former military service personnel in Ukraine began at Khmelnytskyi. On 19 March 2003, the first class of 31 officers graduated, having studied market relations and computer technology for three months at Khmelnytskyi Technical University. This project will continue in other regions of Ukraine as well, offering courses in various technology specializations and business skills. All subjects for courses are chosen as a result of analysis of the local labour market, and involve about 500 hours' teaching over three months, with 30 per cent theoretical and 70 per cent practical work.

It is too early to assess the results of this programme in Ukraine but the first indications of employers' interest are very positive. The British programme is planned to last until 2010 to match the reform plans of the Ukrainian MOD. It could also encompass the provision of free courses designed to meet needs in the areas of environmental clean-up, base conversion and administration, creation of new commercial activities and other skills for Ukraine.

International experience shows that the retraining of servicemen needs to begin at least one year before retirement. Future dischargees should be legally allowed either a 4–6 month vacation or 50 per cent of their service time to spend on retraining over 8–12 months, while retaining 100 per cent of their salary.

Personnel and social issues

Ukraine inherited a considerable number of well-educated, well-trained and well-qualified military personnel along with numerous training facilities and a more than adequate number of military schools. Some 3000 officers and generals had combat experience in Afghanistan. All officers, however, were educated and trained as Soviet officers. They were accustomed to thinking of themselves as a part of the Soviet social elite, rather than as Ukrainians. Most of them knew little about Ukrainian military history and traditions. It is therefore ironic that the military leadership, who had served in the Soviet Army much longer than their subordinates, should have been made responsible for implementing the political and national re-education of the entire personnel. Even more ironically, most of the 'teachers' of Ukrainian history and military traditions were former Soviet political officers, who immediately became officers of the newly established Educational and Psychological Service.

By the beginning of 1992 all members of the UAF (except the 12 000 who then departed to Russia or other former Soviet republics) had sworn loyalty to Ukraine, but how many did so out of real loyalty as distinct from other motives is difficult to determine. As the first Minister of Defence of Ukraine, Konstantin Morozov, stated in a *Zerkalo Nedely* interview, 'there is a layer of highly professional patriotic

[142] OSCE Study (note 116), Annex 1, 'Map of conversion activities in Ukraine', URL <http://www.conversion.org.ua/annexes/Annex_1.jpg>.

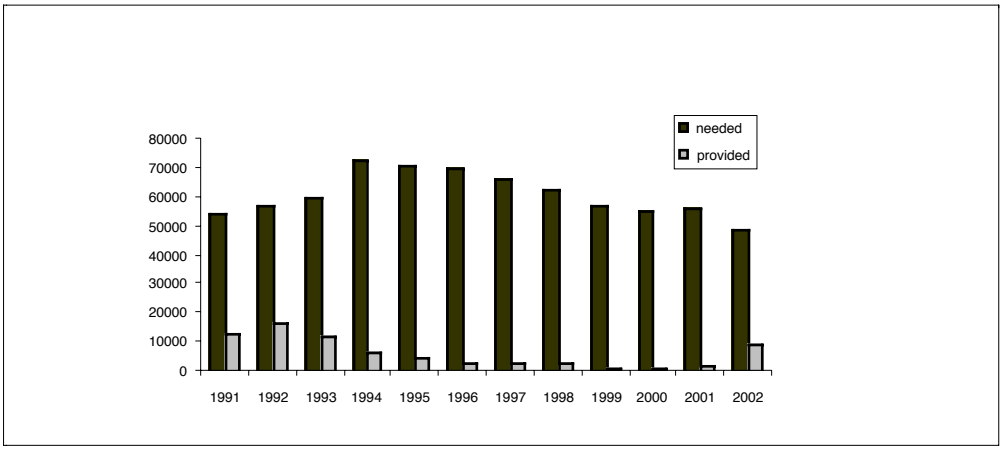

Figure 2.3. Housing for the Armed Forces of Ukraine, needed and provided

officers in [the] Ukrainian Armed Forces . . . But exactly these officers were prosecuted and put under various pressures in the period of formation of the Ukrainian Army'.[143]

A deliberate Soviet policy of intermixing officers of various nationalities, under which Russian officers—especially generals—were overwhelmingly assigned to non-Russian republics, caused a considerable ethnic imbalance in the troops located in Ukraine. In January 1992, ethnic Russians reportedly comprised 90 per cent of general officers, 60 per cent of field grade officers and 50 per cent of General Staff officers in the UAF.[144] The Russian language was the only language of command and communication in the Soviet Armed Forces. It is no wonder that the Ukrainian military has continued using Russian military and technical terminology for a significant length of time and that still today air force pilots, for instance, use the Russian language for communication in the air.

Ukraine inherited a disproportionately large number of military pensioners. In Soviet times Ukraine, for many reasons, was among the most attractive places for retired officers. Most officers in the Soviet Army were Russian, Ukrainian or Belorussian. In the early 1990s many who lived in other former Soviet republics were forced to leave their place of residence and move to their country of origin. As a result, Ukraine currently pays pensions for nearly 400 000 military pensioners.[145]

The active-duty Ukrainian military also inherited a wide range of Soviet problems such as corruption, violations of military discipline, drinking problems, hazing in barracks, draft evasion, poor living conditions for the military and their

[143] Matusevych, K., 'Morozov: Ya gotovyi sluzhyty svoemu narodu' [Morozov: I am ready to serve my nation], *Zerkalo Nedeli*, 1 Aug. 2003.

[144] Olynyk, S. D., 'Ukraine as a post-cold war military power', *Joint Force Quarterly*, spring 1997, p. 91, available at URL <http://www.ndu.edu/inss/jfq/Subject_index.htm>.

[145] Briefing by Ivan Bizhan, First Deputy State Secretary MOD of Ukraine, URL <http://www.mil.gov.ua/ukr/index.cgi?read_news.htm&Uk&1610>.

families, poor motivation, and so forth. In the early 1990s there was an increasing number of reported cases of theft of military equipment from Ukrainian bases. Poorly paid soldiers 'lost' their weapons, and some commanders were caught selling off entire military installations.

The housing of military personnel is perhaps the most serious social problem for all military and law-enforcement organizations. The 'worst-case scenario' is presented by the UAF, where the number of 'homeless' is about 50 000 (see figure 2.3).[146] Some 55 000 veterans of the war in Afghanistan and retired officers are still waiting to receive flats from the MOD. To provide for all of them—active military, retirees, Afghan war veterans and those who are to be resettled from closed military compounds—the MOD would need to build 145 000 flats, which would cost more than half of its annual budget.[147]

Half of the UAF's contract (i.e., professional) servicemen also have no housing. This problem will only get worse as the proportion of contract soldiers grows. Currently, there are 32 000 contracted servicemen; in 2005 that number will grow to some 50 000. Therefore, the forecast rate of the growth of the number of 'homeless' (estimated by the Ukrainian MOD to increase by 17 500 up to 2006)[148] exceeds even the most optimistic plans for the rate of housing construction in the UAF (1100 quarters a year[149]). At this pace, the last people in the queue could not expect to obtain quarters for up to another 50 years.

The military–industrial complex

After the collapse of the Soviet Union the total volume of state orders for military-related products and arms production dropped significantly—from 20–30 per cent of Ukraine's total industrial turnover to a mere 3.6 per cent in 1993.[150] Among the major inherited shortcomings of the Ukrainian military–industrial complex were a very small percentage of 'closed-cycle' production, problems caused by the break

[146] In the Internal Troops of the Ministry of Internal Affairs there are nearly 3000 'homeless'; in the State Penitentiary Committee over 4500; in Ukraine's Security Service 5500; in the State Committee of Border Control 6000; and in the Civil Defence Troops 1500. 'Homeless people in epaulets', *Defense-Express*, URL <http://www.defense-ua.com/eng/hotnews/?id=1391>.

[147] Chyzhevskyi, V., 'Hrybok na stinah nashoho zhytla' [Mould on the walls of our dwellings], *Narodna Armiya,* 4 June 2003, p. 4.

[148] Departmental Programme of Housing Provision for Military Servants and their Families within the Ministry of Defence of Ukraine through 2006, Ukraine MOD Internet site URL <http://www.mil.gov.ua/ukr/sostav.phtml?gurvkb>.

[149] The State Programme of Reform and Development of Ukraine's Armed Forces through 2005. The data cited take account of extrabudgetary sources. Given the above-mentioned volumes of budget funding alone, the rate of housing construction for the military will not exceed 360 quarters a year. See Ukraine MOD Internet site URL <http://www.mil.gov.ua/ukr/law.phtml?dpbr>. In 2001 Ukraine's MOD obtained 20.6 million hryvnias (UAH) for housing construction and some 2000 flats were built, 60% of them at the expense of extrabudgetary funds. In 2002, UAH 15.6 million were allocated for this purpose. See 'Construction is a concrete affair', *Narodna Armiya*, 25 Jan. 2002, p. 1. Ukraine, Ministry of Defence, Data obtained from the MOD Press Service.

[150] Nikolaev, K., 'Velyke vbachaetsya na vidstani' [Large objects are visible from a distance, Japanese experts' view on the problems of Ukrainian MIC conversion], *Narodna Armiya*, 27 June 2003, p. 12.

in cooperation and supply links, and the total lack of national arms export experience and legislation. As a result of deliberately created manufacturing interdependence in the former USSR, Ukraine remained extremely dependent on Russia for many components and assemblies.

The term 'conversion' entered Ukrainian vocabulary in the late 1980s. At that time some 80 per cent of Ukrainian industrial capacity was involved in military-related production including WMD, conventional weapons and munitions. Perestroika had cut the overall Soviet military budget by 14.2 per cent and defence industry output by 19.5 per cent in 1988.[151] The first steps in conversion demonstrated the lack of a methodical approach to this issue. The new kinds of products, such as washbasins and saucepans, which were produced by some enterprises, could hardly be considered as an appropriate substitute for high-tech military goods.

During the first decade after independence, the number of defence enterprises dropped fivefold and the number of employees sevenfold, and total production is now less than 5 per cent of the 1990 level.[152]

Conclusions

The collapse of the Soviet Union and the end of the cold war have brought unprecedented changes for Ukraine. In 1991 it entered upon an extremely difficult process of building an independent state from the shambles it inherited after more than 70 years of Soviet history and more than 40 years of the cold war. For the new state, these legacies also provided the building site, the building materials and the rubble to be carted away.

Ukraine faced a situation unprecedented in modern history. While some aspects of its experience are similar to the way other countries dealt with their cold war legacies, Ukraine has became the first and only country in the world to have to deal simultaneously with complete nuclear disarmament and an extraordinarily large-scale downsizing of the armed forces (with all the consequences of the latter)—all against the background of building an independent state and the transition from a command to a market economy.

One of the most difficult and costly tasks was to create national armed forces as the first prerequisite of an independent country and a military guarantor for national security. Over the past 12 years the UAF have made the transition from a fragment of the Soviet Army into a unified structure, which is, at least in part, ready to accomplish its assigned missions. Despite some positive interim results of the military reforms, the latter are still very far from a 'success story'. In retrospect, one of the most positive steps taken in this area was the decision to get rid of the nuclear weapons located on Ukraine's territory. Not only would the cost of maintaining a nuclear arsenal have been prohibitive, but it would also have inhibited the

[151] Nikolaev (note 150).

[152] 'Military reform in Ukraine: the start or another false start?', UCEPS analytical report, *National Security & Defence*, no. 1 (2000), p. 9, URL <http://www.uceps.com.ua>.

goodwill on which Ukraine's positive engagement with the USA and Western Europe has since been based. In the light of recent developments related to international security and WMD, the real significance of the decision to declare and implement the country's non-nuclear status becomes evident.

It is hard to overestimate the significance of the international assistance provided in the past decade to Ukraine in the fields of nuclear disarmament, destruction of surplus weapons and ammunition, base conversion, retraining and reintegration of discharged personnel, and so forth. The USA alone has spent a total of about $700 million on disarmament work in Ukraine. This is equal to the Ukrainian MOD's total budget, but still less than the cost of one B-2 bomber. As former US Ambassador to Ukraine Carlos Pascual has said: 'It is almost easier to predict where this country will be in 25 years than in three years . . . That is precisely why the United States must keep supporting Ukraine's efforts to eliminate its weapons of mass destruction. It is the best security money we have ever spent'.[153] At the same time, international assistance can only really be effective if matched by coherent government efforts to address these problems, backed by political will, responsible structures and sufficient resources.

What then are the *key lessons learned* from Ukraine's experience of dealing with its Soviet and cold war legacy? There are many, but the following four seem the most important. *First,* while the material problems are the most visible, the greatest legacy to overcome has been the deeply rooted Soviet and cold war mentality. *Second,* until this is overcome, it will be impossible for the military, government and society to understand what is really an asset and what is a liability. *Third,* abundant resources are needed to deal with the problem, but the very first step should be an intellectual effort to establish a common understanding and vision, which makes it possible to use the existing resources efficiently. *Last, but not least,* every nation spends large amounts of money, time, material, human and other resources to create a defence structure, and a fundamental question that needs to be asked at an early stage is how much it will cost to deal with the old parts of the system as they wear out.

Ukraine's experience and the lessons learned could be valuable for many other countries that are dealing with problems of totalitarian legacies, such as Iraq. It could also be valuable for countries such as China or North Korea, which may face such problems in either the near or not very distant future.

Most of all, Ukraine needs to learn the lessons of its own history. Current long-term liabilities of the remaining cold war legacy equal at least one year's national defence budget: $100 million for the destruction of ammunition, $50 million for retraining redundant personnel and $500 million for providing housing. The Ministry of Defence will add to those liabilities if it adopts current proposals to reduce the size of the army from the current 295 500 to 195 500 persons before the end of 2005—including 35 000 servicemen during 2003 alone. The MOD also plans to decommission about 2000 battle tanks, 400 aircraft, and 2000 other mili-

[153] Eisler, P., 'US helps ex-Soviet states scrap weapons', *USA Today*, 30 Jan. 2003, URL <http://www.usatoday.com/news/world/2003-01-30-ukraine-usat_x.htm>.

tary weapons and pieces of equipment, and to transfer 600 military compounds to local administrations. Unless the consequences of these moves are properly addressed, such a massive further downsizing will aggravate a number of existing social problems, encourage servicemen to undermine reform and negatively affect the ability to attract young people to national service. It is imperative, therefore, that the government leadership makes clear its commitment to address the needs of current and future servicemen, as a priority on the same level with conducting defence reform and establishing rapid reaction forces. Otherwise, continued downsizing will create considerable obstacles for military reform itself, and may become a heavy burden for the economy and a threat to national security.

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