

A NATO soldier destroys a weapon seized in Kosovo,  
December 2006. © Hazir Reka/Reuters



# A Semi-automatic Process?

## IDENTIFYING AND DESTROYING MILITARY SURPLUS

# 3

### INTRODUCTION

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Although precise comparisons are impossible, the world seems to be witnessing the largest systematic destruction of excess small arms and light weapons since the end of the Second World War. Dozens of internationally sponsored destruction or security enhancement projects are currently under way: from the destruction of a few dozen light weapons, more than a million small arms, or thousands of tons of ammunition to the construction of better fences around stockpiles. They may destroy corroded rifles from the First World War or state-of-the-art anti-aircraft missiles.

Although surplus destruction is well established in the international security-building repertoire of donor governments, it remains in many respects experimental. This chapter reviews the successes and failures of small arms and ammunition destruction projects. What barriers must be overcome? When are they most likely to succeed? Among the major findings are the following:

- Definitional issues are the sine qua non of surplus military small arms, light weapons, and ammunition destruction.
- Destruction of surplus military small arms averages about 430,000 units annually. This probably is less than new military production.
- Out of some 200 million military firearms worldwide, at least 76 million are surplus.
- The world harbours approximately 100 to 140 million tons of military ammunition, of which some 20 to 30 million tons are for military small arms.
- Although the UN *Programme of Action* and other international instruments create a predisposition to eliminate surpluses through destruction, in practice exports are often preferred.
- The most systematic progress in surplus destruction involves man-portable air defence systems (MANPADS), where the United States has secured extensive cooperation.
- Two mechanisms that greatly increase short-term willingness to destroy surpluses are the promise of membership in regional organizations and security sector reform.
- Donors can facilitate surplus destruction beyond providing financial and technical help by taking steps to enhance international legitimacy.

Surplus arsenals can be vast, as illustrated below. Experiences with conflicts as diverse as Iraq, Liberia, and Somalia show that the loss of control over government arms depots can be catastrophic. Destroying surplus weapons and ammunition is the only fully reliable way of guaranteeing control. It ensures that excess equipment will not end up where it should not be. It reduces the scale of small arms and light weapons management problems, risks of environmental contamination, and the constant danger of ammunition depot explosions. There are other ways to reduce surplus weapons dangers, especially secure storage (Greene, Holt, and Wilkinson, 2005, pp. 19–20), but destruction alone ensures certainty and finality.

## DESTRUCTION, NOT DISARMAMENT

Small arms are certainly not the only weapons being routinely destroyed today. Better known processes include Start I and the Moscow Treaty for the destruction of nuclear delivery systems. Signatories of the 1993 Chemical Weapons Convention continue working to eliminate those weapons, and destruction of anti-personnel landmines continues under the 1997 Ottawa Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction.

Destruction of surplus small arms, light weapons, and ammunition is not unique, but, unlike other disarmament processes, it is not guided by a binding treaty obligation. It builds on principles codified in several international agreements, but relies on unilateral decisions by governments or their armed services. They are often encouraged and supported by donor countries, usually working with multilateral organizations. Four major groups have dedicated offices to facilitate small arms and ammunition destruction: the European Union (EU, Brussels), NATO (through the NATO Supply and Maintenance Agency in Luxembourg), the Organization for Security and Co-operation in Europe (OSCE, Vienna), and the United Nations Development Programme (UNDP, Geneva and New York). The mere existence of these offices helps ensure that internationally sponsored small arms and ammunition destruction will continue for years to come (Halperin and Clapp, 2006, pp. 25–61).

The clearest sign of distinctiveness is the phenomenon's very name. Surplus *destruction* is not the same as *disarmament*. In small arms parlance, disarmament is a term typically reserved for the collection of weapons from ex-combatants—usually non-state ex-combatants—in disarmament, demobilization, and reintegration (DDR) programmes. Only exceptionally does it refer to the collection of civilian guns. It is one of the ironies of this field that disarmament often emphasizes only collection; in some cases the weapons may be retained for later redistribution.

**Surplus destruction is not the same as disarmament.**

This chapter does not examine small arms disarmament through DDR or the collection of unwanted or illegal civilian guns. Both topics have been treated extensively elsewhere (Faltas, McDonald, and Waszink, 2001; Karp, 2003). Although excluded here, such programmes are neither exceptional nor small. Some of the largest undertakings—in Australia, Brazil, and the United Kingdom—eliminated hundreds of thousands of unwanted or illegal civilian guns. The destruction of tens of thousands of weapons in the Democratic Republic of the Congo, Liberia, and Sierra Leone is more controversial. Some observers see these as instrumental, directly inhibiting resumption of warfare; others maintain they are more symbolic.<sup>1</sup>

The focus of this chapter, therefore, is on the conditions that lead to the destruction of government-owned—especially military—small arms, light weapons, and ammunition. Surplus destruction is fully established on the international agenda. Here to stay, it has made major contributions to alleviating small arms and light weapons problems. But it is far from automatic or comprehensive.

## SURPLUS CHOICES: STORAGE, DESTRUCTION, OR TRANSFER?

What to do with unneeded guns and ammunition? Several international documents codify a presumption in favour of destroying such weapons, but there are other ways to deal with surpluses. These can be understood as a hierarchy of aggressiveness, from the least to most absolute:

- **Secure storage** requires investments in rigorously guarded facilities and enhanced procedures, including routine accounting to ensure that weapons and ammunition stay where they are and only leave when properly authorized.
- **Surplus disposal** involves measures that end a state's responsibility for ensuring the security of surplus weapons (and prevent their diversion). Disposal methods include domestic or international transfer, as well as destruction.
- **Surplus destruction** is the specific form of disposal preferred for surplus management, since it precludes questionable transfer or future misuse.

**Table 3.1 Stockpiled small arms and light weapons transferred to Afghanistan and Iraq, 2004–07**

Supplier	Year	Quantity
Bosnia and Herzegovina	2004-06	290,000
Czech Rep.	2007	30,650
Montenegro	2007	1,600
Poland	2005	47,000
Slovenia	2006	10,000
<b>Total</b>		<b>379,250</b>

Note: This list does not include shipments of newly manufactured weapons.

Sources: Bosnia and Herz.: Christian Science Monitor (2006); Czech Republic: Dickerson (2007); Slovenia: The New York Times (2007); Montenegro: South East European Times (2007); Poland: Poland (2006, p. 3)

### Box 3.1 Belarus, Kaliningrad, and the riddle of political ripeness

The political difficulties of weapons destruction can be seen in the cases of Belarus and Kaliningrad in the Russian Federation. Surplus small arms destruction is overwhelmingly affected by shifting attitudes and opportunities. Seemingly identical plans may be acceptable one moment and impossible the next, as moments of political ripeness mature and dissipate (Haass, 1990). Two unsuccessful destruction projects illustrate this problem of timing.

In 2000–04 Belarusian officials showed enthusiasm for multilateral cooperation to reduce excess inventories. In July 2002 the Ministry of Defence was ordered by President Lukashenko to implement the *OSCE Document on Small Arms and Light Weapons* (Belarus, 2002). This led to a series of small arms initiatives, culminating in a formal request in July 2003 for OSCE-sponsored assistance to destroy and secure excess equipment. The initial plan called for the destruction of 316,000 small arms, mostly Second World War vintage. In 2004–05, Belarus invited the OSCE to undertake major surveys of the country's munitions depots, the largest small arms-related assessments it has ever undertaken.<sup>3</sup>

The destruction project began with enthusiastic support. But once preparatory work was complete, momentum dissipated. Whether weak high-level commitment by political leaders or lack of concomitant military restructuring and downsizing was more important is hard to say. Although symbolic projects continued—notably, destruction of 29 MANPADS—Belarusian officials became less responsive.<sup>4</sup> In November 2005 the Foreign Ministry formally withdrew its request for destruction assistance, a reversal that still remains unexplained. The OSCE concluded: 'SALW [small arms and light weapons] destruction is not a priority at the moment for the MoD' (OSCE, 2007a). It would appear that the Belarusian Ministry of Defence decided that the weapons, old as they are, still contribute to national goals. The stockpile security project survives and began in August 2007 to improve management and security of 16 sites, although actual progress has been slow (OSCE, 2007b).<sup>5</sup>

Although there is less information on its premature end, a similar OSCE project to destroy 100,000 tons of ammunition in the Russian Federation's Kaliningrad *oblast* (administrative unit) ceased in much the same way. Following an invitation from *oblast* officials, initial assessments were completed. This too ended abruptly when the request was withdrawn in March 2007 (OSCE, 2007b). In this case, differences between regional officials in Kaliningrad and national leaders in Moscow may have contributed to the premature ending of the project, reinforced by renewed Kremlin interest in restoring the Red Army presence in Kaliningrad (Itar-Tass, 2008).

### Box 3.2 Serbia and the choice between destruction and export

Defence reform often results in large weapons surpluses, but not necessarily their destruction. After massive cuts made possible by the end of the Serb-Croat and Serb-Bosnian conflicts in 1995, the Serbian armed forces began a gradual reduction in personnel numbers, a process that accelerated after their defeat in Kosovo in 1999 (*Vecernje Novosti*, 2007). By mid-2007, formal reorganization was scheduled to leave only 28,000 personnel. Conscription should end completely by 2010 (*Vecernje Novosti*, 2007). After years of decline, however, Serbian defence budgets are increasing. New funding reportedly is going not into new procurement, but overhaul of old equipment and especially salaries, with the goal of matching salaries of regional neighbours (VIP News Service, 2007a; 2007b). Serbia has a large weapons surplus on its hands, with no need for most of its 789,000 military firearms (as of 2004) and a MANPADS arsenal estimated at 30,000 to 80,000 missiles, of which at least 5,000 have been destroyed (see Table 3.10). But there are difficult choices to be made, choices that must be mediated through national politics.

Unwanted equipment has emerged as a major source of controversy in Belgrade. Under President Vojislav Koštunica, who replaced Slobodan Milošević in October 2000, military reform was minimal. Army Chief of Staff Nebojsa Pavkovic asserted the continuing importance of territorial defence and the need for the ability to mobilize large forces rapidly. Weapons in storage were not surplus (Griffiths, 2008a, p. 9). The situation began to change after the election victory of reformist Zoran Djindjic, prime minister from January 2001, who facilitated several foreign-sponsored destruction projects, including United States-sponsored MANPADS destruction, UNDP-sponsored destruction of 23,000 Ministry of Interior weapons, and NATO-sponsored elimination of 27,530 small arms (Griffiths, 2008a, p. 11; Woo, 2004, p. 6).

This was only a tentative beginning. Serbian uncertainty was clearest in the choice of weapons for the NATO project, which the Serbs described as 'useless' and 'obsolete', and not suitable for export (Griffiths, 2008a). After Djindjic was assassinated in March 2003, the willingness of the Ministry of Defence to cooperate with destruction projects declined rapidly. The government formed by Koštunica in 2004 expressed no direct interest in the issue. The exceptions are MANPADS, where persuasion and financial support from Washington have been instrumental. The Ministry of the Interior, which remained more cooperative, undertook smaller destruction projects on its own, eliminating some of its MANPADS (Griffiths, 2008a, pp. 12-16).

With defence reform on the Serbian agenda again, surplus material has become politically visible. Selling off military property for additional income remains extremely tempting. While weapons exports receive the most attention internationally, controversial efforts to dispose of real estate have provoked bigger scandals at home (VIP News Service, 2007a; 2007b). On top of such pressures, the effect of losing sovereignty over Kosovo must be considered. The fate of Serbia's surplus military small arms is unclear.



Weapons are destroyed in a furnace in Smederevo, Serbia, April 2003. © Mikica Petrovic/AP Photo

Improving the security of surplus weapons and ammunition is often the least controversial response. Even when they rule out destruction, governments are often willing to permit internationally sponsored improvement in storage safety and security (e.g. see Box 3.1).

The 2001 UN *Programme* and other international instruments create a presumption in favour of eliminating surpluses through destruction (UNGA, 2001, para. II.18). But other forms of disposal are often preferred in practice. Government agencies routinely maintain large surpluses for national security, especially emergency mobilization. Excess weapons also have economic value. Military weapons can be transferred domestically to other government agencies (other armed services or law enforcement) or private buyers. Small arms from storage are prominent on global markets, often in highly controversial deals. Circumventing the temptation to export to questionable destinations is the major rationale behind destruction programmes.<sup>2</sup>

While surplus destruction is supposed to be preferred, foreign transfer often is more appealing financially. This tension fuels widespread official ambivalence (see Box 3.2). The United States offers a prominent example of this. The US government has simultaneously encouraged governments to deal with their surpluses through both destruction and export (Waltz, 2007). One manifestation of US policy is destruction programmes, supported by the US State Department. In 2007 the State Department marked its destruction of one million surplus small arms and light weapons, including 21,000 MANPADS (USDoS, 2007a).

Across the Potomac River, the US Department of Defense encourages countries to manage their surpluses through export to other US clients. The Pentagon purchased or solicited donation of over 500,000 firearms for the indigenous security services of Iraq alone and more for Afghanistan (*New York Times*, 2006). At least 379,250 of these are identified here as surplus, mostly AK rifles purchased or donated from Eastern Europe (see Table 3.1). The purchases have had the unintended effect of fuelling regional expectations, making governments less willing to permit additional surplus destruction (Griffiths, 2008a). This policy may have changed. In late 2006 the Pentagon ordered 123,544 newly manufactured M16 rifles for Iraqi security services (Reuters, 2007). Whether this signals the end of Eastern European AK acquisitions is unclear.

The key to surplus destruction is the definition of 'surplus'.

## WHAT IS A SURPLUS? THE PROBLEM OF SURPLUS IDENTIFICATION

The key to surplus destruction is the definition of 'surplus'. How are required weapons distinguished from excess? What is a reasonable military requirement? The two most prominent documents on surplus management—the 2001 UN *Programme* (UNGA, 2001) and the 2003 *OSCE Handbook of Best Practices on Small Arms and Light Weapons*, commonly known as the *OSCE Best Practices Handbook* (OSCE, 2003a)—do not deal directly with surplus identification. Instead, they focus on the creation of a *predisposition to destroy* surplus military and law enforcement small arms and light weapons. The *Programme* established an international obligation to safeguard the security of surplus weapons and a preference to eliminate them through destruction, committing countries:

*To regularly review, as appropriate, subject to the respective constitutional and legal systems of States, the stocks of small arms and light weapons held by armed forces, police and other authorized bodies and to ensure that such stocks declared by competent national authorities to be surplus to requirements are clearly identified, that programmes for the responsible disposal, preferably through destruction, of such stocks are established and implemented and that such stocks are adequately safeguarded until disposal.* (UNGA, 2001, para. II.18)

The *Programme* does not, however, explain how a surplus is defined; that is left to national governments, free to apply criteria of their own. Similar approaches can be found in regional agreements, notably the *Bamako Declaration* of 2000 (sec. 3.A.iv), the *Southern African Development Community Protocol* of 2001 (art. 10), and the 2004 *Nairobi Protocol* (art. 8). The *OSCE Best Practices Handbook* deals with surplus management at greater length, but from the principle that 'It is for each State to assess its own security situation . . . to decide on the size and structure of *military and security forces* . . . [and] to decide how these forces are to be equipped' (OSCE, 2003a, p. 2; original emphasis). This leaves determination of when a surplus exists up to the home country government, as inferred in its definition:

. . . surplus is defined as the quantity of SALW exceeding the defence stockpile, i.e. the total number of (a) SALW assessed nationally as needed by active and reserve units of all military and security forces, plus (b) SALW in the reserve stock. (OSCE 2003a, pp. 3, 12; original emphasis)

Definitional issues are the sine qua non of surplus military weapons and ammunition destruction. A definition can close further action, or it might establish long-term destruction goals. Current international norms and definitions grant ownership or control over basic surplus policy questions entirely to home governments.

Alternative definitions would give more influence to donor groups. There are several ways to define the surplus component of a military small arms arsenal. Surplus identification can be based on any of several criteria:

- Definitional issues are the sine qua non of surplus military weapons and ammunition destruction.**
- **Declaratory:** This is the most common method, whereby a surplus is what the home government says it is. This grants the home government complete control of the issue. Donor governments and international organizations can request inclusion of additional weapons, but the home country decides.
  - **Technical:** Equipment becomes surplus when it is replaced by more desirable equipment. The difficulty here is that even ageing weaponry may retain potential functions, such as use in training or equipping secondary reserves.
  - **Economic:** Destroying unneeded surplus eliminates the expense and opportunity costs of maintaining and guarding inventories. A common sign is when a country tries to sell unwanted equipment.
  - **Strategic:** This applies when national leaders reduce military personnel, rendering weapons redundant. Strategic surpluses mean there are fewer personnel to arm.
  - **Doctrinal:** This applies when the armed forces alter armament policy to operate more effectively. Doctrinal surplus is created when fewer small arms and light weapons are needed for each person in uniform.

Estimates of surplus inventories have been calculated using all of these techniques. Virtually all previous internationally assisted destruction projects were based on declaratory methods, giving predominant voice to the host country alone. Alternative definitions permit outside actors to play greater roles in surplus decision-making by facilitating introduction of outside standards. In lieu of convincing reasons to the contrary, it usually can be assumed on technical criteria that ageing firearms—bolt-action rifles, military revolvers, and vintage submachine guns—are superfluous to current requirements. If a country lacks the economic ability to ensure the security of its military small arms, they probably weaken its security more than they help. And declining force levels or armament policies, whether strategically or doctrinally guided, will generate readily calculated excess equipment.

Often one surplus identification criterion is enough: most programmes rely on a host government's declaration alone. In Cambodia, various strategic criteria were applied. But even a priori, one would expect surplus destruction

to be most aggressive when several criteria militate in that direction simultaneously. For example, the convergence of technical, economic, strategic, and doctrinal factors seems to have been involved in the examples of Montenegro and Papua New Guinea (PNG) discussed here.

The way surpluses are identified has major implications for what happens next. Acceptance of declaratory criteria typically leads to programmes that are small or focused on less important weapons and ammunition. When negotiating with host countries for inclusion of one or more advanced weapons, donors often stress economic criteria, since the financing issue resonates with many host governments.<sup>6</sup> Technical criteria emphasize particular categories of equipment, such as the oldest or most lethal. Doctrinal or strategic change can be sweeping enough to mandate redundancy of even the most advanced equipment. Doctrinal criteria have enormous potential for accelerating surplus destruction because the armed forces are usually the actual owners of the stockpiles under consideration here.

Without a clear international definition, destruction processes tend to be dominated by home governments.

Without a clear international definition of surplus, destruction processes tend to be dominated by home governments. If definition is a unique national decision, home governments effectively control the process. Foreign donors mostly just fund their choices. This has some advantages. The home government can act with complete confidence that the process supports national interests, and domestic adversaries cannot criticize the decision as readily as a foreign recommendation. But it also permits home countries to truncate surplus management arbitrarily. Other definitions give donor governments a stronger role.

Without a standard, shared definition of surplus or criteria for distinguishing required from excess equipment, donors can only ask to broaden lists of items marked for destruction. In practice, as seen in the examples of Belarus (see Box 3.1) or Kazakhstan (see Box 3.5), donors can ask for more or more advanced equipment to be included. But such appeals tend to win only symbolic additions. The most important exception to this rule is MANPADS, as explored below.

## SURPLUS IDENTIFICATION UNCERTAINTIES

Since most countries do not make information on their small arms and light weapons inventories public, outsiders are compelled to rely on estimates of supply and need. Estimation procedures provide insights into military small arms requirements, inventories, and surplus shares. The results are approximate, based on rule of thumb rather than specific national conditions. As illustrated here by the example of South America, this method can be applied globally, albeit with varying reliability and reproducibility. Any estimating technique confronts limits. For surplus small arms estimation, the role of military reserves is especially troublesome.

### Estimating surplus

National surpluses of military firearms can be estimated by subtracting estimated national requirements from estimated inventories. Requirements can be readily calculated, based on armed forces personnel levels and doctrinal assumptions. Inventories are more elusive, since they develop over decades and are subject to many factors, such as rounds of modernization, imports and exports, breakage, deterioration, and loss.

Based on recent research by the Small Arms Survey, this technique is illustrated here by the example of South America. For the 12 independent countries of the region, current military requirements have been estimated generously, to favour the largest legitimate weapons inventories given the current number of military personnel.



This review bases requirements on the relatively high equipment levels associated with the Clausewitzian doctrine for state-to-state warfare (Small Arms Survey, 2006, ch. 2). Industrial warfare on this scale may not be the most deadly, but it undoubtedly consumes the most hardware. The assumption that the state requires forces able to defeat other states in a war to the finish is unrealistic for South America, where such wars are unusual.<sup>7</sup> The Clausewitzian level of 2.5 firearms per soldier is used here, not as an accurate description of need, but as the highest of all justifiable thresholds. Anything above is indisputably surplus. The legitimate firearms requirements of other armed services are estimated at lower rates: for the air force and navy, 0.5 firearms per uniformed personnel member; 1.2 for first-line ground forces reserves (reserves that regularly drill); and 0.5 for secondary or inactive reserves. These levels are calculated to reflect not the actual level of armaments, but the highest legitimately justifiable requirements.

Since no South American military actually is configured for Clausewitzian operations, a more accurate image of requirements would be generated by lower ratios. Most South American ground forces would be more appropriately armed at levels closer to constabulary forces, i.e. 1.8 firearms per soldier and marine (Small Arms Survey, 2006, ch. 2). This is especially true where state-to-state warfare is a distant possibility and operations are more likely to be peacekeeping or disaster assistance. Because they are based on maximum assumptions, the model used here establishes the *minimum* dimensions of each country's military firearms surplus, as shown in Table 3.2. The surplus weapons identified here serve no practical domestic military role: their only use is foreign or domestic sale, military assistance, or nostalgia.

Out of approximately 3.4 million modern military firearms in South America, the region's armed forces have legitimate requirements for as many as 2.25 million, summarized in Table 3.2. The other 1.15 million military firearms appear to be superfluous to any reasonable need. Not included in this conservative estimate of surplus are obsolescent

**Table 3.2 Estimated South American modern military firearms and surpluses, 2007**

	Est. modern firearms	Est. current requirement	Est. surplus firearms	% surplus
Argentina	550,000	127,000	425,000	77
Bolivia	67,000	66,000	1,000	1
Brazil	1,100,000	840,000	271,000	25
Chile	358,000	193,000	175,000	49
Colombia	600,000	535,000	66,000	11
Ecuador	134,000	68,000	66,000	49
Guyana	19,000	3,200	15,500	82
Paraguay	40,000	16,500	23,700	59
Peru	201,000	120,000	83,000	41
Suriname	7,000	3,700	3,300	47
Uruguay	60,800	46,500	14,000	23
Venezuela	233,000	233,000	0	0

Note: Country totals do not add up precisely due to rounding.

Source: Karp (2007, pp. 10-11)

weapons. The total number of older weapons acquired, like bolt-action rifles and revolvers, can be estimated, but decades of sell-offs, theft, and breakdown make it much harder to evaluate the number remaining.

These surpluses are the result of two opposite vectors: the growth of arsenals through sequential waves of modernization, combined with reduction in the number of military personnel. Guided by the long-established Latin American doctrine of the national security state, which calls for maximizing state power, South America's armed forces have almost always been unwilling to destroy weapons they replace or those made redundant by new procurement (Pion-Berlin, 1989).<sup>8</sup> As these armed forces are highly autonomous institutions, until recently facing little civilian pressure for reform, this resistance has not been expressed literally. Rather, it emerges implicitly, through the accumulation of weapons themselves.

About half of this surplus is located in Argentina, home to an estimated 552,000 unneeded military small arms. Argentina stands out partially because it has reduced its armed forces more than any other country in the region. But Argentina is also a prominent example because of its transparency. Unlike many of its neighbours, the country does not conceal its surpluses behind an inflated reserve system: it has no reserves whatsoever (IISS, 2007). If other countries were equally frank, the regional surpluses would be substantially larger and more equally distributed.

Brazil, Chile, and Peru also have exceptionally large surplus stockpiles in absolute terms, but they do not approach Argentina proportionately. While some 77 per cent of all Argentine military armaments appear to be surplus, massive force cuts have left Guyana unable to make reasonable use of roughly 83 per cent of the weapons in its arsenal, proportionately the largest surplus in South America (Karp, 2007, p. 4). Both pose serious risks of loss and diversion. But international small arms policy is ultimately about numbers—scale matters. Argentina has the ability to flood local, regional, and even international markets. The much smaller Guyanese military firearms surplus is a threat, but mostly to itself and its immediate neighbours.

**The easiest way for military institutions to justify retention of surpluses is to expand their reserve forces.**

### **Reserve exaggeration**

The easiest way for military institutions to justify retention of surpluses is to expand reserve components. Whether or not surplus justification is an explicit goal of reserve exaggeration, it has significant effect. Reserves can be mature organizations, with full-time officers, dedicated facilities, and equipment and personnel who drill routinely. Others are mobilization reserves, lists of discharged or retired personnel, or draft-age cadres legally eligible for mobilization. A prominent example is the Russian Federation, with a 20-million strong titular reserve (Weitz, 2007, pp. 109–20). Still others appear to be little more than expressions of resolve, proclaiming military potential in an era of cutbacks.

Keeping excess equipment even for titular reserves may be of great importance to national commanders. An exaggerated reserve system is, in effect, a weapons sink. There is no direct evidence of countries exaggerating their reserves specifically to justify large material requirements, but in many cases, as numbers of active personnel decrease, reserves increase, a trend illustrated in recent years by Ecuador and Paraguay (Aguirre and Orsini, 2007; Urrutia, 2007). Whether by design or effect, large reserves justify the retention of equipment that otherwise could be eliminated.

An extreme example is Venezuela, where President Hugo Chavez recently established a Territorial Guard with a goal of 1.5 million members, largely as an alternative to the armed forces he mistrusts (Nascimento, 2007, pp. 27–28). Even if never established, this force creates a permanently unfulfilled requirement for small arms, ensuring that Venezuela will never be compelled to define any of its official weapons as surplus. Venezuela is extreme, but Brazil,



A Venezuelan Special Forces instructor demonstrates combat methods to a Territorial Guard member at base outside Caracas, Venezuela, April 2006.  
© Fernando Llano/AP Photo

Ecuador, and Paraguay also have exceptionally large reserve systems, effectively absorbing any small arms or light weapons unneeded by active-duty forces. The same practice is common in the former Soviet Union (IISS, 2007, p. 195). So long as reserve exaggeration persists, surplus size will be very controversial.

## HOW MANY MILITARY SMALL ARMS ARE ENOUGH?

Evaluation of global surpluses would be much easier and more reliable with comprehensive data on each country's military requirements and inventories. Currently, such information is available only for a handful of countries, such as PNG, Peru, and the United States. For other countries, the scale of military surpluses can only be roughly estimated.

Surpluses are estimated here through a combination of *strategic* and *doctrinal* techniques, previously applied by the Small Arms Survey to estimate total inventories (Small Arms Survey, 2006, ch. 2). Two techniques are shown here. Global surpluses can be seen most readily by comparing troop levels over time. As a result of strategic adjustment since the end of the cold war, the number of soldiers, sailors, and airmen/-women has declined in most countries, dropping an average of 38 per cent, from peak year totals of almost 112 million military personnel (1987–91 for most countries) to fewer than 69 million today, including almost 20 million active and 49 million reservists (see Appendix 1).

Assuming no major changes in combat doctrine, small arms requirements should drop proportionately. Based on changes in military personnel, at least 76 million of the 200 million modern military small arms thought to be in existence today can no longer be used effectively by the armed services that own them (Small Arms Survey, 2006, ch. 2). They will stay in storage unless lost, transferred, or destroyed. A small proportion of weapons—which cannot

**Table 3.3 Ranking selected military small arms inventories**

Country	Year	Total military personnel	Total military small arms	Small arms/person
Peru	2006	268,000	200,889	0.8
PNG	2007	2,300	2,300	1.0
Finland	2003	462,000	531,000	1.1
United States	2002-05	2,673,300	3,054,553	1.1
Norway	2000	248,700	295,070	1.2
Central African Rep. (CAR)	2003	4,442	5,552	1.3
Malaysia	1987	156,600	255,000	1.6
Jamaica	2004	3,783	7,000	1.9
Switzerland	2004	175,000	324,484	1.9
Canada	2000	102,400	233,949	2.3
Serbia	2004	345,300	789,016	2.3
German Dem. Rep. (GDR)	1990	460,700	1,205,725	2.6
South Africa	2004	115,750	350,636	3.0
Estonia	2005	15,300	83,550	5.5
Ukraine	2007	1,187,600	7,000,000	5.9
Czech Republic	2003	49,450	500,000	10.0

Note: The data in this table, with varying base years, is not strictly comparable. It is intended, rather, to illustrate the range of known military stockpiling.

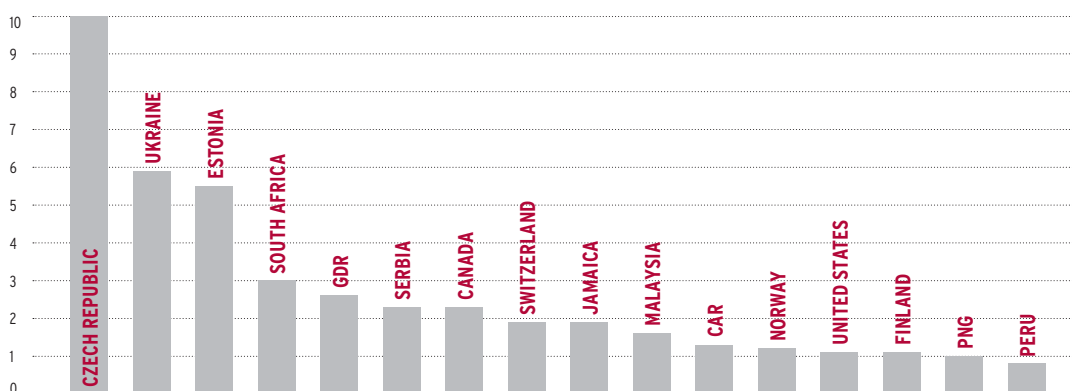
Sources: Small arms data from Small Arms Survey (2006, ch. 2), except: PNG: Alpers (2008); Ukraine: Griffiths (2008b) and ISS (2007); Peru: Obando (2007); personnel data: ISS, The Military Balance of the year(s) in question

be estimated—will be lost in storage. But the vast majority remain, although the reliability of ammunition will decline as it decomposes chemically.

This crude analysis leaves no doubt that global surpluses are substantial, but it may minimize their scale. A more nuanced picture emerges from evaluation of national requirements. The approximate number of military small arms and light weapons each country needs can be determined independently by comparing estimated stockpiles and requirements. How much is sufficient to meet requirements depends not only on personnel levels (national strategy), but also on the number of weapons required per person (military doctrine). As shown in Table 3.3, even among countries for which we have reliable reports, there is a broad spectrum of answers to the question: How many military small arms are enough? While many armed forces are content with roughly one firearm per person, others seem to prefer a thick cushion, with 2.5 to 4 or even more firearms per person in uniform.

The scale of global surpluses—and, correspondingly, those of any particular country—can be estimated at any of the levels shown here. If there are 20 million active duty soldiers, sailors, and airmen/-women worldwide and 49 million reservists, required and surplus proportions of the world's 200 million modern military firearms can be estimated.

Figure 3.1 Small arms per person, selected armed forces



Source: Table 3.3

The key is the level of required firearms per person. Applying the lowest levels from known military requirements, such as those found in Peru or the United States, Table 3.4 (high requirement) shows that about 60 per cent of all current military firearms worldwide are excess. Even at more generous levels, typified here by Switzerland or Canada, about 20 per cent are surplus.

Surplus identification is largely about requirement setting. If requirements are set high enough, everything is needed. At military inventories of three firearms per person or more, surpluses evaporate everywhere, as shown in Table 3.4 by the estimates in red. Misconceived surplus criteria can justify additional procurement instead of reduction. This demonstrates the vital importance of rigorous criteria to guide surplus estimation.

Reserve forces are especially important to surplus estimation, as shown in Table 3.4. Extrapolating from the firearms ratios here leads to a wide range of possible global requirements and surpluses. The highest levels, illustrated by the Czech Republic and Ukraine, are legacy phenomena, the result of arsenals inherited from the cold war era. These can be dismissed as statistical outliers, unsuitable for global extrapolation. The same is true of the lowest known national requirements, in Peru and PNG, respectively. At more typical requirement levels—1.2 to 1.9 firearms per person—the world's military arsenal of some 200 million firearms includes roughly 69 to 117 million surplus military firearms.

These are crude estimates, though, exaggerating requirements for reserve units, which is a major problem for requirement and surplus calculations. Reserve components are the most readily manipulated contributor to small arms surpluses. If all countries equipped their reserves at no more than 1.2 firearms per person, global requirements shrink and surpluses grow dramatically, as illustrated by the adjusted requirements and surplus columns on the right side of Table 3.4.

A related problem is exaggeration of reserve rolls, which push small arms requirements up as well. Just as many countries absorb surpluses through exaggerated reserve structures, others generate excess by chopping reserves. Millions of firearms lost their intended role when China cut its 16 million-personnel reserve of the 1970s and 1980s to just 800,000 personnel, when Romania went from 565,000 reservists to 45,000, or Argentina from 250,000 reservists to none (see Appendix 1). If legitimate reserve components number no more than active duty forces and are equipped at no more than 1.2 small arms and light weapons per person, total global military firearms requirements shrink further, to 40 to 70 million, and surpluses grow to 130 to 160 million out of a total of 200 million military guns.

Table 3.4 Hypothetical breakdown of global military firearms, required v. surplus

Column	A	B	C	D	E	F	G
Country	Firearms/ person	Equivalent global requirement	Equivalent global surplus	% surplus	Requirement after reserve adjustment	Surplus after reserve adjustment	% surplus
Peru	0.8	55,200,000	144,800,000	72	55,200,000	144,800,000	72
PNG	1.0	69,000,000	131,000,000	66	69,000,000	131,000,000	66
Finland	1.1	75,900,000	124,100,000	62	75,900,000	124,100,000	62
United States	1.1	75,900,000	124,100,000	62	75,900,000	124,100,000	62
Norway	1.2	82,800,000	117,200,000	59	82,740,000	117,260,000	59
CAR	1.3	89,700,000	110,300,000	55	84,725,000	115,275,000	58
Malaysia	1.6	110,400,000	89,600,000	45	90,680,000	109,320,000	55
Jamaica	1.9	131,100,000	68,900,000	34	96,635,000	103,365,000	52
Switzerland	1.9	131,100,000	68,900,000	34	96,635,000	103,365,000	52
Canada	2.3	158,700,000	41,300,000	21	104,575,000	95,425,000	48
Serbia	2.3	158,700,000	41,300,000	21	104,575,000	95,425,000	48
GDR	2.6	179,400,000	20,600,000	10	110,530,000	89,470,000	45
South Africa	3.0	207,000,000	-7,000,000	0	118,470,000	81,530,000	41
Estonia	5.5	379,500,000	-179,500,000	0	168,095,000	31,905,000	16
Ukraine	5.9	407,100,000	-207,100,000	0	176,035,000	23,965,000	12
Czech Republic	10.0	690,000,000	-490,000,000	0	257,420,000	-57,420,000	0

Note: Columns B and C assume active and reserve elements both arm at the rate shown in column A. Columns E and F are adjusted to show the effect of arming reserve elements at no more than 1.2 weapons per person.

## HOW MUCH IS ENOUGH? MILITARY AMMUNITION

While few countries are transparent in their reports on stockpile elements, more have made available the total scale of their ammunition stockpiles. Contested terms like ton create serious problems here (Box 3.3). But general comparison is feasible, although a more precise definition remains an important goal (see Table 3.6). One conclusion is that many countries do not have a formal sense of how much ammunition is enough. The amount of ammunition per uniformed military personnel shows the divergence of national procurement and strategic policy. Although ammunition logistics usually are based on tons—an imprecise term, as indicated above—these comparisons are still revealing.<sup>9</sup> Former Soviet and Warsaw Pact countries inherited massive legacy arsenals, unrelated to contemporary requirements. Force modernization has exaggerated these surpluses by further reducing personnel. Shaped more by happenstance and inertia than by design, their ammunition surpluses bear little resemblance to conventional military needs. These excesses have become the nexus of disarmament activity supported by NATO, the OSCE, and donor governments.<sup>10</sup>

### Box 3.3 How much is a ton?

Unlike weapons, which are procured and transferred as units, ammunition is often handled by the ton, especially for destruction. To discuss ammunition is to discuss tons, and therein lies a vital conundrum. Despite its importance as the basic unit of ammunition policy, the ton is an unpredictable term.

Tons can be metric or avoirdupois, long or short. While metric tons are used throughout this chapter unless otherwise specified, other problems are tougher to resolve. A ton can be calculated to include the number of pieces of ammunition, filled cases, pallets, or truckloads. A ton may include shells alone, or packaging and shipping containers too. Even within a single military service, rival definitions can prevail. This is illustrated by examples from Ukraine, the one case in which comprehensive descriptions of inventories are publicly available (see Table 3.5). These document both tonnage and number of units, but show differences as great as several orders of magnitude in the meaning of a ton of rifle bullets. Hand grenade and rocket-propelled grenade (RPG) rounds per ton differ by as much as 100 per cent.

In Ukraine, the differences are probably due to procedural eccentricities. The Ministry of Defence and the armed services demonstrated openness and goodwill. But the imprecision is a warning for policy-making in more antagonistic cases, illustrating the need for uniform criteria for quantifying national surpluses.

Crushing a Kalashnikov in Ukraine, January 2007.  
© Sergei Supinsky/AFP/Getty Images



Table 3.5 How much is a ton?<sup>1</sup>

Unit:		A1588	A2985	A3845	A3870	47158	55238
Location:		Rozsishky	Novobogdanivka	Slavuta	Briukhovychy	Bilen'ke	Ushomyr
Type		Units/ton	Units/ton	Units/ton	Units/ton	Units/ton	Units/ton
Rifle cartridges	5.45 mm	94,894	96,984	267,940	0	0	119,150
Rifle cartridges	7.62 mm	45,392	5,451	52,074	0	58,945	62,626
Pistol cartridges	9 mm	0	100,003	99,903	0	100,036	102,400
Hand grenades	Various	2,210	2,030	3,007	0	1,777	2,049
HMG <sup>2</sup> cartridges	12.7 mm	7,932	7,648	7,757	0	7,704	7,480
RPG rounds	RPG-7	600	552	429	529	0	477
RPG rounds	RPG-16	0	489	0	0	0	0
RPG rounds	RPG-18	710	385	0	0	0	0
Mortar rounds	BM-37 82 mm	0	0	310	209	0	286

<sup>1</sup> Based on stockpiles declared for destruction in Ukraine.

<sup>2</sup> Heavy machine gun.

Source: Figures calculated from data in OSCE (2003b)

**Table 3.6 Military ammunition stockpiles of selected countries, in metric tons**

Country	Year	Total tons	Total mil. personnel	Tons/person	Notes
US Army <sup>1</sup>	2003	540,000	1,199,500	0.5	600,000 short tons converted to metric
Iraq	2003	600,000+	1,000,000	0.6+	Personnel 1990
GDR	1990	295,430	460,700	0.6	Includes AT <sup>2</sup> and AP <sup>3</sup> landmines
Montenegro	2007	9,000	7,300	1.2	
Ukraine	2003	2,448,000	1,187,600	2.1	13.1 tons/person without reserves
Bosnia and Herzegovina	2005	33,500	11,865	2.8	
Kazakhstan	2007	200,000+	65,800	3.0	
Moldova	2007	40,000	6,750	5.9	
Albania	2002	180,000	27,000	6.7	
Transdnister	2007	21,500	1,400	15.4	22,000 tons previously moved to Russian Federation

<sup>1</sup> Whereas the data in Tables 3.3 and 3.4 is for the US armed forces as a whole, here it is only for the US Army.

<sup>2</sup> Anti-tank.

<sup>3</sup> Anti-personnel.

Note: The data in this table, with varying base years, is not strictly comparable. It is intended, rather, to illustrate the range of known military stockpiling.

Sources: Albania: Greene, Holt, and Wilkinson (2005, p. 14). Bosnia and Herz.: UNDP (2007); GDR: Nassauer (1995, p. 50); Iraq: CIA (2004, p. 35) and Klingelhoefter (2005, p. 2); Kazakhstan: Ashkenazi (2008, p. 7); Moldova: SEESAC (2005, p. 115); Montenegro: Vijesti (2007); Transdnister: Itar-Tass (2007); Ukraine: Griffiths (2008b); US Army: Erwin (2003); military personnel (active and reserve): IISS (2007); except GDR and Iraq: IISS (1990, pp. 49, 105); Albania: IISS (2002, p. 63); US Army: IISS (2002, pp. 16-17)

Countries that tailor procurement to strategy can maintain much smaller stockpile ratios, illustrated here by the US Army. The ammunition used to train each soldier leads to the question of annual training requirements. Prior to the 2003 invasion of Iraq, the US Army reportedly required 80,000 short tons of ammunition of all kinds for its annual qualification training, or 60 kilos per soldier (Farrell, 2002). Of course, few military commanders feel they have enough. An example is the US Navy, where small arms ammunition became a precious resource after the bombing of the destroyer USS *Cole* in October 2000, which led to much greater emphasis on the use of small arms and light weapons for ship security.<sup>11</sup>

A major source of doubt overshadows the comparability of each country's figures, not only because of the vague meaning of 'ton', but also due to problems regarding what gets included or excluded. The US Army's pre-Iraq stockpile of 540,000 metric tons of ammunition should be compared to the total US pre-war military stockpile of 1.65 million metric tons of deliverable munitions.<sup>12</sup> The latter total appears to be inflated by including air-dropped ordnance for the US Air Force and Navy, naval mines, and torpedoes, items not always regarded as ammunition.

As the examples in Table 3.6 show, size is not everything when it comes to stockpile problems. Iraq's arsenal was not huge compared to others. Its absolute size, at 0.6 tons per person, was hardly exceptional. Even if not excessive relatively, Iraq's arsenal was remarkably dispersed, with over 10,000 caches (CIA, 2004, pp. 33-35). This exacerbated complete loss of control after the 2003 invasion, creating an almost limitless reservoir for improvised explosive devices (more commonly known as IEDs) (Klingelhoefter, 2005).



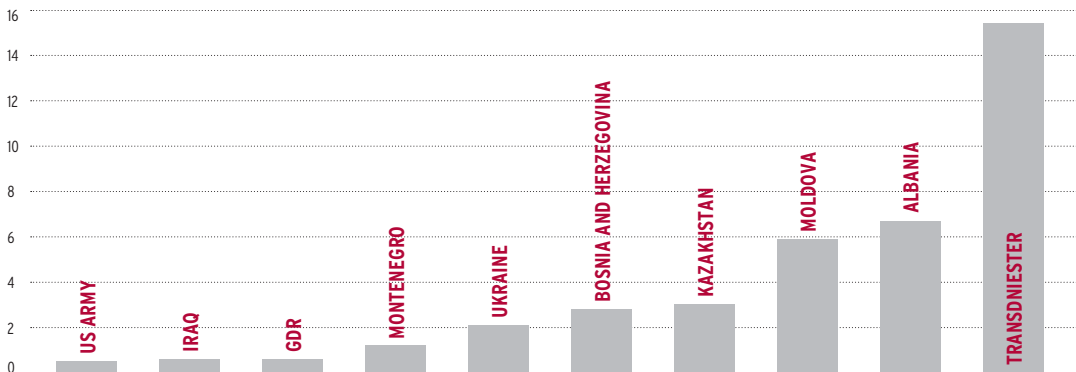


Sentry duty on the rebuilt USS Cole,  
April 2001. © Rogelio Solis/AP Photo

From the range of national inventories—illustrated as tons per person in Figure 3.2—one can speculate on recommendations for legitimate requirements. Going further with these examples, it is possible to envisage negotiations on international rules for ammunition stockpile dimensions. Emulating previous multilateral achievements, an agreement limiting ammunition possession could be modelled on the 1990 Treaty on Conventional Armed Forces in Europe (CFE), the agreement that established national limits for major weapons (Croft, 1994; Sharp, 2006). An ammunition agreement would be a natural counterpart to CFE, which regulates possession of the systems that consume a large proportion of all stockpiled ammunition.

Not enough countries furnish data on their total stockpiles and surplus to project an estimate of global ammunition surpluses. There are only four complete examples, all former Soviet or Yugoslav republics, notorious for huge munitions inventories. These examples may be relevant to other countries that inherited Soviet-style armed forces,

Figure 3.2 Ammunition tons per person, selected armed forces



Source: Table 3.6

but they do not speak to global estimation. Consequently, at the time of writing, we can estimate total global ammunition, but not the surplus share.

Multiplying each example to show its global equivalent generates an initial range of feasible totals. As shown in Table 3.7, the estimates vary widely, from 34.5 million to hundreds of millions of metric tons. Most examples cluster at approximately 1.5 to 2 metric tons per person in uniform. Multiplied by the 69 million active and reserve military personnel worldwide today (see Appendix 1), this suggests there are 100 to 140 million metric tons of ammunition of all kinds around the world.

Compared to these estimated totals, only 4.3 million tons of ammunition were documented in Table 3.6. Even allowing for smaller cases that have been overlooked and the fact that many of the munitions listed here already have been destroyed (especially in the GDR and Iraq), this is a small proportion of the estimated global total of 100

Table 3.7 Estimating the global ammunition inventory\*

Base country	Tons/person	Equivalent global tons
US Army	0.5	34,500,000
GDR	0.7	48,300,000
Montenegro	1.2	82,800,000
Iraq	0.6	41,400,000
Ukraine	2.1	144,900,000
Bosnia and Herzegovina	2.8	193,200,000
Kazakhstan	3.0	207,000,000
Moldova	5.9	407,100,000
Transdniester**	8.3	572,700,000
Albania	16.3	1,124,700,000

\* Based on projections from known countries.

\*\* Transdniesterian ammunition is for the Operational Group of Russian Federation forces.

Source: Tonnage from Table 3.6, multiplied by global troop numbers (active and reserve) from IISS (2007)

to 140 million tons. The distribution of the rest can only be surmised, but probably corresponds to the global distribution of military weapons among major regions, as reviewed in *Small Arms Survey* (2006, ch. 2).

Unfortunately, it is not possible to establish the proportion of the global ammunition stockpile made up specifically of small arms and light arms ammunition. The best-studied example is the former GDR (East Germany). Upon reunification in 1990, the German government inherited some 300,000 tons of GDR munitions, of which 22 per cent was small arms and light weapons ammunition (Nassauer, 1995, p. 50). Applied globally, this single example would suggest roughly 20 to 30 million metric tons of small arms ammunition.

This global total of approximately 100 to 140 million tons of ammunition of all kinds can be imagined by comparison to Iraq, where an inventory of some 650,000 tons was lost (CIA, 2004, pp. 33–35), which was less than 1 per cent of the world total. Ukrainian munitions dumps, widely regarded as extraordinary, total some 2.5 million tons (*New York Times*, 2005, p. A1).

**Small arms and  
ammunition  
destruction has  
roots in anti-  
personnel landmine  
destruction.**

By comparison, the total tonnage of bombs dropped by British and US air forces in the Second World War was roughly 3.3 million tons. In Vietnam, the US Air Force and US Navy dropped 7 million tons.<sup>13</sup> Neither figure includes artillery, other munitions, or deliverable ordnance used by other combatants. Similarly, the largest nuclear weapon ever detonated, the Soviet Tsar Bombe, or Big Ivan, tested on 30 October 1961, was equal to 50 million tons of TNT, or half to one-third of the world's current presumed conventional arsenal (Adamsky and Smirnov, 1994; Sakharov, 1990, pp. 215–25).

If the world harbours approximately 100 to 140 million tons of ammunition, of which some 20 to 30 million tons are for small arms, what proportion is surplus? This depends on how much is reasonably required. The examples above provide no reliable threshold for estimating global ammunition surpluses. If the training rates and stored equipment of the US Army are used for comparison, there is a requirement for roughly 34.5 million tons worldwide, leaving two-thirds to three-quarters of the global stockpile militarily superfluous. The world has substantial excess ammunition.

## ORIGINS OF SYSTEMATIC SMALL ARMS DESTRUCTION

Surplus small arms and ammunition destruction continues to be affected by its historical roots in anti-personnel landmine destruction. More explicitly than other areas of small arms policy, surplus small arms, light weapons, and ammunition destruction is an outgrowth of previous experience eliminating anti-personnel landmines (APLs). All major international organizations and many government agencies involved in international small arms destruction previously were heavily involved in implementation of the Ottawa Convention. For the EU, NATO, and the OSCE, lists of completed destruction projects are still dominated by landmine projects (EU, 2006; NAMSA, 2007, p. 1; OSCE, 2007b).

After rapid progress with APL destruction in the 1990s, resources gradually became available for other types of unwanted munitions in the early 2000s. The transition was logical, but required strong efforts by advocates to bring about. From the start, many NGOs and government agencies involved in APL destruction also destroyed small arms, light weapons, and ammunition when it was convenient as part of their other work.<sup>14</sup> Over time, as APLs have become less common, and more aggressive efforts were needed to ferret out the last of them, destruction activities moved closer to war zones, encountering more small arms, light weapons, and ammunition.<sup>15</sup> Among host countries, the government agencies and officials usually were the same, as were many destruction skills. Some of the mechanisms

established to eliminate landmines are heavily involved today in the disposal of toxic rocket fuel and the destruction of small arms, light weapons, and ammunition (Courtney-Greene, 2008; Kryvonos and Kytömäki, 2008).

Contrary to the biological metaphor, though, the ontogeny of small arms destruction no longer recapitulates its phylogeny.<sup>16</sup> Shifting to small arms and ammunition necessitated fundamental changes in doing destruction. The vital difference between landmines and small arms and light weapons is the attitude of host governments. As parties to the 1997 Ottawa Convention, most states are uninhibited in support of landmine eradication, and donors did not have to persuade hosts to cooperate. Small arms and light weapons do not arouse the same attitude. While international norms encourage surplus destruction, as discussed below, host governments routinely view small arms and light weapons stockpiles as a source of security or financial value.

Instead of declaring entire inventories for destruction, as was the case with landmines, host countries usually declare a portion of their total, often quite small. Or they offer only guns seized from criminals or rebels (e.g. Tajikistan). Or they present their oldest and least useful equipment (e.g. Belarus, Romania). Like Ukraine, they can sell large quantities as they destroy others (see Box 3.4). More salient weapons get added only with special pleading by donor government officials.<sup>17</sup>

This can achieve meaningful results, most strikingly through addition of MANPADS (see below). Often, though, the result of such appeals has been largely cosmetic, with host country officials agreeing to add a few hundred

#### Box 3.4 Scale v. comprehensiveness: surplus destruction lessons from Ukraine and Montenegro

While it is natural to focus disproportionate attention and resources on the largest destruction projects, smaller undertakings can be much more ambitious and no less important, especially for domestic security. The largest projects eliminate greater absolute numbers, but often leave extraordinary quantities behind. The remnants can be more than enough to perpetuate serious risks at home, where weapons can be put to deadly use or ammunition depots blow up, and abroad, where they can be transferred. Projects in smaller countries can more readily achieve comprehensiveness, guaranteeing permanent elimination of particular risks.

Designed to eliminate 133,000 tons of ammunition and 1,531,664 small arms, the Ukraine destruction programme is far larger than any international destruction project ever undertaken (Brown, 2005b, p. 4). Only Germany's unilateral programme is bigger, having eliminated 2,076,442 small arms and light weapons through 2006 (Germany, 2007, p. 21). Even so, the Ukraine project eliminates only 5 per cent of the country's total ammunition and 20 per cent of its military small arms out of an inventory of 2,448,000 tons of ammunition and roughly 7 million small arms (Griffiths, 2008b). Destruction has been limited partially by the slow pace of military reform, but even more by financial pressure (Ulrich, 2007, pp. 4-8, 17). This suggests that much more may be possible. If reforms continue and additional foreign funding becomes available, destruction of the Ukraine surplus could continue for decades. Meanwhile, massive diversion from Ukraine remains a risk, as does the possibility of unpredictable legal exports. In 2006, while destruction was under negotiation, Ukraine reportedly exported 320,000 military firearms (Defense and Security, 2007). It has the ability to flood markets with much more.

Although Ukraine has by far the largest surplus destruction programme, the most comprehensive example belongs to Montenegro. The small state (population 620,000) became independent from Serbia in 2006. Under President Filip Vujanović, military reform immediately rose to the top of the national agenda (Cagorovic, 2006). The country's armed forces, once over 50,000 men, numbered 7,300 at independence (Eger, 1996; IISS, 2007, p. 170). Conscripted ended, and military personnel fell to 2,400. Some commentators expect the troop total to fall below 1,000 (*South East European Times*, 2006).

The OSCE, UNDP, and donor governments came in to assist Montenegro with destruction of excess equipment. On the list were 47,747 small arms and light weapons. Of Montenegro's 9,000-ton munitions stockpile, 6,000 to 7,000 tons are scheduled for destruction. The remaining 2,000 to 3,000 tons are being consolidated for safe storage.<sup>18</sup> The destruction of 66 to 80 per cent (by mass) of Montenegro's ammunition and the securitization of the rest make this the most complete ammunition surplus destruction ever.

modern weapons. Examples of the latter include Kazakhstan, which added 464 modern firearms (341 AKMs and 123 RPK-74s) to its small arms listed for destruction (see Table 3.9). It is clear that even countries willing to engage in international destruction show considerable ambivalence towards it.

## DESTROYING SMALL ARMS: DO IT YOURSELF OR WITH HELP?

There are two major forms of small arms destruction: domestic and internationally sponsored. Both were fully established after the First World War, the first time that former parties to war engaged in massive destruction of wartime inventories. Much of this was done unilaterally, as countries cleared their own inventories. The former Allies also presided over destruction of the arsenals of defeated Austria and Germany. This practice continued after the Second World War and irregularly since: Vietnam, for example, did not destroy the 1.6 million US-made weapons it captured in 1975, but the allied coalition did get rid of most of the Iraqi equipment it took in 1991 (Towle, 1997, pp. 183–87).

Today, domestic destruction continues, having accelerated with the end of the cold war (see Table 3.8). Germany has done the most to eliminate excess inventories, certainly in terms of raw numbers and probably as a proportion of total military inventories (Beeck, 2008, p. 1). The Russian Federation, South Africa, Ukraine, and the United States have destroyed large stockpiles as well. Domestic military surplus destruction is largely autochthonous: military commands do this themselves—unprompted and often without outside recognition—for reasons of their own. But this quiet process eliminated most of the 7,292,000 military weapons recorded here, an average of about 430,000 annually for 17 years (this does not include the contribution of programmes that destroyed less than 15,000 firearms, quantities that still may be very significant locally). By comparison, the Small Arms Survey (2006, p. 7) estimates new production at 700,000 to 900,000 military firearms annually. Globally, destruction probably does not offset stockpile growth

from new production, although it does in specific countries.

Internationally sponsored destruction—illustrated in Table 3.8 by leading hosts like Albania, Bosnia and Herzegovina, Cambodia, and Romania—is very different. Previously associated with military conquest, international destruction was a synonym for military defeat. This changed radically in 1999–2000, when international actors began promoting destruction support. The breakthrough was Cambodia, where the Hun Sen government, consolidating stability after defeating other claimants to power, welcomed EU help to eliminate about half the country's small arms (Roberts, 2008; Wille, 2006). In 2001 Bulgaria and Romania accepted US support to reduce their cold war weapons inheri-



Cambodian and ASEAN officials observe small arms destruction in Cambodia's Kampong Thom province, May 2007. © Chor Sokunthea/Reuters

**Table 3.8 Selected military surplus small arms destruction programmes, 1991–2007**

Country	Source of weapons	Quantity destroyed	Programme sponsorship	Years	Sources
Germany	Military	2,076,442	Domestic	1990–2006	Germany (2007, p. 21)
Russian Federation	Military	1,110,000	Domestic	1994–2002	Faltas and Chrobok (2004, p. 115)
United States	Military	830,000	Domestic	1993–96	Small Arms Survey (2002, p. 85)
Ukraine	Military	700,000	Domestic	1990s	Griffiths (2008b, p. 17)
United Kingdom	Military	543,000	Domestic	1992–95	Faltas and Chrobok (2004, p. 37)
South Africa	Military	262,667	Domestic	1998–2001	Lamb (2004, p. 155)
Bosnia and Herz.	Military	250,000	International	2002–07	UK (2006, pp. 15, 32)
Albania	Military	222,918	International	1997–2005	Holtom (2005, p. 7)
Cambodia	Military	198,148	International	1999–2006	EU ASAC (2006)
Romania	Military	195,510	International	2002–03	Romania (2003, p. 10)
Netherlands	Military	143,632	Domestic	1994–96	Small Arms Survey (2004, p. 58)
France	Military	140,000	Domestic	1998–2000	France (2003, p. 10)
Serbia	Military	117,269	International	2001–03	Small Arms Survey (2004, p. 58)
Belarus	Military	126,407	Domestic	2003–04	Belarus (2005, p. 13)
Bulgaria	Military	97,751	International	2001–04	Faltas (2008, p. 104); USDoS (2003)
Panama	Military	77,553	International	1991	USDoS (2001)
Philippines	Military	57,826	International	2003?	USDoS (2003)
Uganda	Military	57,000	Domestic	2006	Monitor (2006)
Angola	Military	40,000	International	2003?	USDoS (2003)
Italy	Military	37,371	Domestic	2005	Italy (2006, p. 3)
Switzerland	Military	19,270	Domestic	2001	Faltas and Chrobok (2004, p. 63)
Croatia	Military	18,389	Domestic	1998–2005	Pietz (2006, p. 50)
Guinea	Military	15,000	International	2003?	USDoS (2003)

Notes: Bosnian weapons designated for surplus destruction may be among those subsequently transferred to Iraq. Albanian and Cambodian totals include an unknown proportion of civilian firearms. The possibility of civilian guns in the Belarusian, Cambodian, and Ugandan totals cannot be excluded. The UK figure is based on predictions.

tance. Similar, initially ad hoc, often bilateral projects became more organized and international in 2003, when NATO and the OSCE began to offer more systematic support (Courtney-Greene, 2008; Kryvonos and Kytömäki, 2008).

The roots of surplus destruction in victors' elimination of spoils of war help explain lingering sensitivity. As explained already, surplus destruction is not disarmament, yet even contemporary projects are vulnerable to politicization and nationalist criticism. As illustrated in this chapter by the example of Bolivia (Box 3.6), publicity can be bad for destruction.

A more practical difference between domestic and international destruction projects is the kinds of actors involved in decision-making. Domestic destruction appears to be handled most often as a routine, internal matter for military and law enforcement organizations. As seen in Germany and the United States in the 1990s, decision-making authority belonged to mid-level officials. Their decisions were reported to their immediate superiors, but often were otherwise unknown (Beeck, 2008). International destruction appears to work best, however, with direct involvement of the highest level decision-makers. Cambodian destruction appears to have occurred with the explicit approval of Prime Minister Hun Sen (Roberts, 2008). Without the active involvement of national leaders, especially in home governments, projects are vulnerable to loss of interest or the rise of unexpected opposition. They can stall prematurely, sometimes with little or nothing accomplished (see Boxes 3.1 and 3.5).

### Box 3.5 Kazakhstan: the triumph of domestic politics

The dominance of domestic over international politics in surplus small arms and light weapons destruction is illustrated by on and off destruction efforts in Kazakhstan. Although its high-level politics are notoriously opaque, the effects of bureaucratic tension also may be at work. Surplus destruction was emphasized initially by the Kazakh Foreign Ministry, which supplied information to the UN and hosted a prominent regional conference on this issue (IRIN, 2004; Kazykhanov, 2004). The Ministry of Defence was noticeably less forthcoming.<sup>19</sup> With the possible exception of the Foreign Ministry, the Government of Kazakhstan did not view military surpluses as a problem (Ashkenazi, 2008, p. 1). The gap between official government spokespersons and the agencies with actual control is a routine problem for international small arms and light weapons policy (Small Arms Survey, 2005). In this case, the difference may have misled foreign expectations.

Energized by UN processes and promised assistance from NATO, the OSCE, and donor governments, the Government of Kazakhstan became active on this issue in 2003, with a memorandum of understanding signed in Brussels on 1 July (Ashkenazi, 2008, p. 3). Feasibility studies were completed, and funds were made available by Washington. Other forms of weapons destruction occurred. According to Kazakhstan's Ministry of Foreign Affairs, 36,000 seized civilian weapons were destroyed unilaterally in 2001-04 (Heathershaw et al., 2004, p. 26). Other sources suggest that only 5,708 of these were actually destroyed (Ashkenazi, 2008, p. 4).

In contrast to the willingness to deal with civilian gun problems, destruction of military weapons was contingent on foreign assistance and domestic politics. A total of 19,472 small arms and light weapons were designated for NATO destruction, although these were mostly obsolescent (see Table 3.9). Even so, initial efforts led nowhere. As early as 2004, an assessment concluded: 'The absence of a weapons destruction programme creates the perception of a lack of political will to address the issue of stockpile management within Kazakhstan' (Heathershaw et al., 2004, p. 23). Despite reassurance, there was no action for over four years. In Kazakhstan's closed political system, nothing could be learned about why the project had stalled.<sup>20</sup> All that could be deduced was that surplus destruction held little intrinsic importance for the Government of Kazakhstan (Ashkenazi, 2008, p. 1).

Without warning, this changed in April-June 2007. Transformation began when President Nazarbaev appointed a new defence minister and pledged to modernize military power with new equipment and doctrine. One month later, the new defence minister, Daniyal Akhmetov, announced that additional spending would be invested in modernization, training, and professional development (RFE 2007a; 2007b). Modernization may not be a prerequisite for surplus elimination, but, as this example and other examples from the Balkans, Cambodia, and PNG show, it clearly helps.

Suddenly, the destruction deal was recalled. Parliament ratified the long-stalled NATO agreement. The importance of the vote was emphasized by the deputy defence minister (*Kazakhstan Today*, 2007; *Vremya*, 2007). Leaving no doubt that this was a major policy shift, a few days later parliament passed legislation tightening civilian gun ownership (Interfax, 2007). Given past experience, some scepticism is in order. But the shift creates the impression that President Nazarbaev is now personally committed.

**Table 3.9 Weapons designated by Kazakhstan for NATO destruction, 2005**

Weapon	Quantity
Handguns/pistols	468
RPG 73 mm	90
RPG 40 mm	153
Grenade launcher 30 mm	208
Machine guns 14.5 mm	399
Machine guns 12.7 mm	347
Machine guns 7.62 mm	2,231
Sub-machine guns 7.62 mm	3,553
Carbines 7.62 mm	551
AK-47 rifles 7.62 mm	479
AKM rifles 7.62 mm	341
RPK-74 light machine guns 5.45 mm	123
Miscellaneous rifles	10,529
<b>Total</b>	<b>19,472</b>

Source: NATO (2005)

## MANPADS IMPLICATIONS

The greatest exception to the problem of defining surpluses and stressing destruction is MANPADS. In this area, donors have been able to secure much more systematic cooperation. Whether this is because the budgets are larger, because host countries are more cognizant of the terrorist dangers, or because they are swayed by more intense donor pressure is hard to say.

Despite much greater unit costs, countries have permitted destruction of more of their MANPADS. Out of a global inventory estimated to be ‘well in excess of 500,000’ interceptor missiles (Small Arms Survey, 2004, p. 83), over 24,000 (about 5 per cent) have been eliminated since 2003, mostly through US-led projects (USDoS, 2008). Projects responsible for destruction of some 15,700 of these are detailed in Table 3.10. The national origins of the other 8,300 have not been made public. The largest documented cases are in Eastern Europe. By comparison, total firearms destruction through comparable international projects has eliminated roughly three million military firearms, no more than 1.5 per cent of the global total of at least 200 million military firearms (Small Arms Survey, 2006, ch. 2).

Not all MANPADS (LIGHT WEAPONS) are alike, though, and governments have varying attitudes toward their fate. Older MANPADS have been the first to go. But there has been greater willingness to destroy these than other small arms and light weapons. A unique confluence of considerations leaves armed services and governments willing to permit their destruction:



- Since older MANPADS have limited military uses—they usually cannot hit fast jets—it is hard to justify keeping them.
- There are limited opportunities for legitimate export, especially for older systems. Thus, home governments are not giving up economic opportunity either.
- Fear of loss is a factor, since MANPADS tempt pilferage by corrupt personnel and raiding by outsiders, including separatists and terrorists.
- The lesser quantities compared to firearms minimize logistical problems of destruction.
- There is greater pressure and financial incentives from donor governments, especially the United States.

Convincing governments to give up their older versions of weapons, like Soviet SA-7s and Chinese HN-5s, has been difficult enough. More advanced weapons, by comparison, remain highly capable for air defence. They are also much more costly. Fewer governments have been willing to part with them, except in token quantities. Instead, it has been much easier improving inventory control and security. When destruction is impossible, the US Department of Defense operates a parallel programme to enhance stockpile security (Johnson, 2007).

Although MANPADS destruction is somewhat easier, it is not immune to the typical problems of surplus destruction. While most MANPADS destruction stresses ageing weapons, more modern weapons may also be superfluous. Because of the greater media prominence of MANPADS compared to other light weapons, moreover, there is also a special danger of politicization. This is illustrated here by the case of Bolivia (Box 3.6). Much the same could be said of Nicaragua, where a bilateral project was brought to a halt and redesigned in response to similar forces (Schroeder, 2006).

A US Army officer prepares surplus SA-7 missiles for detonation in Bosnia and Herzegovina, March 2004. © Amel Emeric/AP Photo



Table 3.10 International MANPADS missile destruction, 2003–present

Country	Year	Type	Total destroyed	Total planned destruction	Remaining	Support	Sources
Afghanistan	2005?	SA-7	101	0	n/a	USDoS	Pico (2006)
Albania	2006?	HN-5	79	n/a	n/a	USDoS	Porth (2006)
Belarus	2005	Strela-2M	15	29	n/a	OSCE	NTI (2005)
Bolivia	2005	HN-5	28	0	n/a	USDoS	Pagina (2005, p. 12)
Bosnia and Herzegovina	2003-04	n/a	6,000	n/a	n/a	NATO	Hillen (2006, p. 7)
Burundi	n/a	SA-7?	n/a	0	n/a	USDoS	USDoS (2008)
Cambodia	2004	SA-7?	233	0	0	USDoS	Hillen (2006, p. 7)
Chad	n/a	SA-7?	n/a	0	n/a	USDoS	USDoS (2008)
Czech Republic	n/a	n/a	n/a	1,359	n/a	USDoS	ČTK (2007)
Greece	2007	Redeye	573	0	n/a	Germany	Personal communication*
Guinea	n/a	SA-7?	n/a	0	n/a	US	USDoS (2008)
Hungary	2005	SA-7	1,540	0	n/a	NATO	USDoS (2005b)
Kazakhstan	2008	SA-7, SA-14, SA-16	0	400	n/a	NATO, US	Brown (2005a)
Liberia	2003	SA-7?	45	0	0	USDoS	USDoS (2005a)
Moldova	2003?	n/a	70	0	n/a	Russian Fed.	Wood (2006)
Nicaragua	2004-05	SA-7, SA-14	1,000	651	1,051	USDoS	<i>Seattle Times</i> (2007); AP (2007)
São Tomé and Príncipe	n/a	SA-7?	n/a	0	n/a	US	USDoS (2008)
Serbia	2004-07	Various	5,000	n/a	30,000	NATO	Griffiths (2007a)
Sudan	2005?	SA-7?	21	0	n/a	USDoS	Pico (2006)
Tajikistan	2006	SA-7	8	0	n/a	OSCE	Kryvonos (2007, p. 17)
Ukraine	2006	SA-7, SA-14, SA-16, SA-18	1,000	3,099	5,000	NATO	Brown (2005b); Griffiths (2007b)
<b>Total</b>			<b>15,713</b>	<b>5,538</b>			

\* Private communication to the author from government official, 6 April 2007.

Notes: Reported estimates in italics. Total refers to missiles only, not gripstocks (an aiming and triggering device attached to the missile storage and launch canister), but there may be confusion on this distinction, making some total figures less certain.

### Box 3.6 The politics of surplus destruction: Bolivia's MANPADS affair

Bolivia's MANPADS affair of 2005-06 illustrates the political risks that can be involved in surplus small arms and light weapons destruction. The US-sponsored disarmament project ignited an unanticipated political crisis, becoming one of the most notorious of recent years (Pagina, 2005). Only the dispute over Nicaraguan MANPADS is comparable (*Miami Herald*, 2005). The irony is that the Bolivian controversy came after the weapons ceased to exist.

The small missile arsenal was apparently acquired as part of a package negotiated with China in 1992-95 (IISS, 1994). The deal included some 28 HN-5 missiles and a number of gripstocks (launch units). No publicly available source recorded their existence until after their destruction ten years later.<sup>21</sup> The HN-5s (Hongying or Red Tassel) were militarily obsolescent when delivered to La Paz, with limited capability except in very specific circumstances (Small Arms Survey, 2004, p. 80). While military missions could be found, they would be much more dangerous in the hands of terrorists likely to aim them at more vulnerable civilian aircraft.

The anarchic atmosphere in La Paz in 2005 played a role as well. Political instability in May and June over a new hydrocarbons law (on ownership and sale of fossil fuels) led to mass demonstrations, often violent. President Carlos Mesa was forced from office. Public chaos raised unprecedented incentives to dispose of weapons posing special risks of theft and misuse. The impending presidential victory of populist-nationalist candidate Evo Morales and his party, Movimiento al Socialismo, may also have contributed (Karp, 2007, p. 21).

In this atmosphere, a bilateral agreement to eliminate the HN-5s was reportedly signed on 30 September 2005 by US officials and Bolivia's then-deputy defence minister. Exceptionally, the arrangement called for the missiles to be shipped to the United States for destruction (*Washington Post*, 2006). As reported in the press, this resembled cooperative operations previously used to remove fissile nuclear material from Eastern Europe and the former Soviet Union (Porth, 2006). A few days later, the missiles were loaded onto a US Air Force transport plane and removed for destruction (*Washington Post*, 2006).



Bolivian chief commander Admiral Marco Antonio Justiniano speaks to journalists at the presidential palace in La Paz, December 2005. © David Mercado/Reuters

As elections loomed, Morales charged the guardians of national security with treason, abandoning the country to foreign enemies and cooperating with the enemy of Latin America's underclass. In response to the pressure, President Rodriguez relieved the army commander of his duties (AP, 2006). Within days of being sworn in, President Morales, citing the deal, forced the retirement of 56 generals and admirals. Treason charges were filed against his immediate predecessor, former defence minister Gonzalo Mendez, and military commander Admiral Marco Antonio Justiniano (*Washington Post*, 2006). In response, the US State Department spokesman said: 'This was done at the request of the Bolivian Government and it was done in partnership and consistent, I would note, with an Organization of American States resolution on the matter' (McCormack, 2005; Gollust, 2005; Hillen, 2006).

The Bolivian HN-5s are a curious example of weapons more influential after their destruction than before. The destroyed missiles helped Morales strengthen his nationalist credentials and compel military subservience. But Morales' partisanship was not cost-free: it has inspired unprecedented Paraguayan interest in acquiring MANPADS of its own (Aguirre and Orsini, 2007).

## INCENTIVES FOR SURPLUS DESTRUCTION

Surplus management is largely about context. Some of the most important forces affecting surplus disposal decisions do not come from programmes directly designed to deal with these issues. Rather, they are an indirect result of broader political reform. Although the links are largely circumstantial, two sources of reform appear to have great effect in the short run on willingness to improve surplus management: the promise of membership in regional organizations and security sector reform. Donors have a role in facilitating surplus destruction as well. Beyond providing financial and technical help, they can specifically enhance the legitimacy of destruction.

### Membership expansion

Expansion of the EU and NATO compelled candidate countries to reform extraordinary swaths of public law, practice, and even official attitudes. While implementation of the 35 chapters of the EU *acquis communautaire* is the most demanding formal part of the process, the indirect and more intangible effects of membership are especially relevant to surplus weapons issues. Beginning with the *acquis* for the Former Yugoslav Republic of Macedonia, questions have been included about small arms and light weapons.<sup>22</sup> All potential members face pressure for across-the-board reform. With the overwhelming goal of EU membership guiding them, applicant countries found previously unimagined capability for reform. The ten countries that joined the EU in its ‘Big Bang’ of March 2004—Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia—felt enormous pressure to accommodate Western expectations by cleaning up backward government practices and corruption (Rehn, 2006, pp. 45–53).

The impetus was reinforced by pressure from NATO. Focusing almost exclusively on each country’s ministry of defence and armed forces, NATO has a more immediate effect on small arms requirements. Although membership requirements had few direct small arms and light weapons implications, the requirement for military modernization created widespread redundancy. Applicants modernized their forces to NATO standards, trading size for professionalization. In 1999

NATO admitted the Czech Republic, Hungary, and Poland. Seven more countries joined in March 2004: Estonia, Latvia, Lithuania, Slovenia, Slovakia, Bulgaria, and Romania. Most new NATO members ended or curtailed conscription, thus reducing personnel. In some cases, the response was wholesale security sector reform (Gallis, 2003). By rendering legacy arsenals largely superfluous, membership tends to inflate surpluses. NATO programmes also directly support surplus destruction.



European flags are prepared for the ceremony marking the expansion of EU membership from 15 to 25 countries in Dublin, 30 April 2004. © Yves Herman/Reuters

For both the EU and NATO, however, there have been limits to the achievements of expansion. Since 2004 fatigue has become evident. The admission of Bulgaria and Romania to the EU on 1 January 2007 is regarded by critics as premature, since the two countries were not fully ready to adapt to European practices (*Financial Times*, 2007). It has been widely observed that, once they joined, conditionality weakened and incentives for reform diminished and slowed dramatically (Rehn, 2006, pp. 55–63). It is no surprise that the interest of new members in surplus destruction has abated. Neither Bulgaria nor Romania currently has major destruction projects under way.

More countries may join the EU or NATO in the next few years, creating pressure to clean up surplus weapons and ammunition. Croatia is likely to be the next to join the EU (Dudrap and Freedman, 2007; EurActiv, 2007). The membership of other EU candidates—Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia, and Turkey—is more distant. NATO has membership dialogues with Albania, Croatia, Georgia, Macedonia, Montenegro, and Ukraine, but these countries' prospects are uncertain (Perepelytsia, 2007; IWPR, 2006).

### Security sector reform (SSR)

Restructuring armed forces is typically intended to improve political accountability, reduce costs, and enhance capability. While surplus management may not be explicitly emphasized, SSR often reaches this far, at least by implication. As armed forces are transformed from large conscript organizations into smaller, fully professional organizations, large legacy munitions stockpiles become unnecessary. This can create major opportunities and dangers for surplus

#### Box 3.7 Papua New Guinea: security sector reform first

In absolute terms, military small arms and ammunition destruction in PNG was small stuff, smaller than the purely symbolic efforts of countries like Belarus and Kazakhstan. But in relative terms, the accomplishment is extraordinary, made possible by a combination of foreign advocacy and domestic support, including sweeping military reforms. Both ingredients were essential.

The country faced a major problem from its loss of control over state arsenals. Of roughly 10,000 military firearms acquired since the early 1970s, only 5,700 remained under state control in 2004. Poverty, corruption, ethnic conflict, and a culture of sharing made it difficult to keep weapons under lock and key. Mounting violent crime, especially homicide, and increasingly fatal ethnic conflict left no doubt about the seriousness of the problem (Alpers, 2005). But, the scale of the problem alone was not sufficient to bring action.

Weapons security and destruction came instead through rationalization of the PNG Defence Force. A *Defence White Paper* in 1999 called for a significant reduction in personnel (Alpers, 2008, p. 9). Small arms were barely mentioned; efficiency was the essential theme. In early 2001 this was followed by the report of the Commonwealth Eminent Persons Group, calling specifically for slashing military personnel from 4,500 to 1,900 (Commonwealth Eminent Person's Group, 2000, p. 13). It also drew attention to lack of control over weapons (Brown, 2001). The report was vulnerable to attack as outside interference, but it had the support of a reform faction in the armed forces. When their leader, Commodore Peter Ilau, was appointed armed forces commander in October 2001, change could begin. His influence was enhanced in March 2002, when former soldiers ransacked a military installation of 128 firearms (Alpers, 2008, pp. 6, 10).

Prior agreement within the Defence Ministry on defence reform further strengthened the case for surplus destruction. Australian assistance was essential to making reform possible, but the bilateral programme was a magnet for nationalist opposition. As the instigator of personnel reductions and weapons destruction, Ilau was excoriated by the parliamentary opposition, accused of undermining national security and independence by accepting Australian destruction aid. Citing previous ministerial commitments to defence reform, however, he was able to parry such objections (Alpers, 2008, pp. 15–17).

With Australian financing and technical assistance, secure armories were built and oversight procedures made routine. This apparently ended large-scale haemorrhaging of weapons and ammunition (*Post-Courier*, 2006a; 2006b). Small arms and light weapons inventories were reduced by 60 per cent, from 5,700 weapons in August 2004 to 2,300 in 2007. Ammunition inventories were cut proportionately (Alpers, 2008, p. 14).

management. Reform can exacerbate surplus problems by increasing unneeded equipment; it also can be part of the solution by facilitating greater willingness to take responsibility for institutional problems.

In former Soviet and Warsaw Pact countries, restructuring usually means dramatic cuts. Outdated strategies based on massed infantry operations are replaced with contemporary network-centric operational concepts. Restructuring leaves no obvious role for massive reserve components, which can be jettisoned outright. Active forces may be reduced exponentially (Keridis and Perry, 2004). Among the most immediate results are redundant people, facilities, and equipment. The same is true of reforms elsewhere in the world, in countries as diverse as PNG, Paraguay, and South Africa (Aguirre and Orsini, 2007; Alpers, 2008; Lamb, 2004).

Two recent examples with major implications for small arms surplus management are defence reform in PNG and Serbia. Both have involved foreign-sponsored surplus destruction. Both have engaged in negotiations for broader small arms, light weapons, and ammunition destruction, but progress has been uneven. In PNG, commitment to defence reform led directly to more rigorous stockpile management and surplus destruction (Alpers, 2008). In Serbia, reform only expanded the weapons surplus; whether it leads to destruction or increased exports has yet to be seen (Griffiths, 2008a).

### Enhancing donor legitimacy

Donor countries need to be no less concerned with enhancing the legitimacy of their support for surplus destruction. Some of the early international small arms, light weapons, and ammunition destruction projects were conducted bilaterally, with support from a single donor.<sup>23</sup> Practical considerations limited what could be achieved this way. Multinational collaboration emerged from necessity: donor governments lacked the personnel, expertise, or budgets to adapt to rising possibilities among host countries.<sup>24</sup>

Small arms destruction has been a shoestring operation. Even the best endowed programme, sponsored by the United States, had a total budget of no more than USD 8.7 million until October 2007, when the annual allocation rose to USD 44.7 million (see Table 3.11). Reflecting US counter-terrorism priorities, most of this has gone to MANPADS destruction alone. By comparison, US support for managing fissile materials in the former Soviet Union (through the Nunn–Lugar Cooperative Threat Reduction Program) averages USD 1 *billion* annually in recent years (Pomper, 2004).

**Table 3.11 US Department of State annual budgets for small arms and light weapons destruction (USD millions), 2004–08**

Fiscal year	Total	MANPADS	Small arms, light weapons, and ammunition
2004	4.0	2.0	2.0
2005	6.9	?	?
2006	8.7	7.3	1.4
2007	8.6	?	?
2008	44.7	36	8.7

Sources: USDoS (2005c, p. 162; 2006, p. 179; 2007b, p. 90); Johnson (2007)

**The stronger international support for destruction, the better it can be insulated from nationalist criticism.**

Donor coordination multiplies budget reach. But there are more profound effects of collaboration. While bilateral arrangements have the greatest celerity and flexibility, they tend to achieve less. The examples of Bulgaria and Romania show that bilateral projects lack the authority of their multilateral counterparts. Although the evidence is limited, bilateral projects seem less likely to permanently affect attitudes toward surplus destruction in host countries, and they are less likely to lead to follow-on projects. They can also more easily arouse nationalist resistance from critics who see destruction as foreign meddling, illustrated explicitly in Bolivia and PNG (Boxes 3.6 and 3.7, respectively). The stronger the international support for a specific destruction initiative, the better it can be insulated from nationalist criticism and domestic politics. Collaborative projects, such as the EU in Cambodia or NATO in Ukraine, have been almost immune to such criticism (Griffiths, 2008b; Roberts, 2008).

## **CONCLUSION: OVERCOMING BARRIERS TO SURPLUS IDENTIFICATION AND DESTRUCTION**

Almost 20 years since the end of the cold war, countries worldwide have reduced their armed forces personnel by almost 40 per cent (see Appendix 1). An unintended consequence is massive stockpiles of excess small arms and ammunition, as estimated here. Dealing with these mountains has become an enduring part of international security building. Surplus destruction is here to stay, but not only because excess inventories need to be kept secure, often at considerable expense. Equally important are principles in multilateral agreements, institutional commitments from multilateral organizations, and the non-proliferation aims of donor governments.

The process of surplus small arms, light weapons, and ammunition destruction has acquired an independent momentum, but the force behind it is not very strong. There may be at least 76 million surplus firearms sitting in the world's military arsenals, and possibly considerably more, but even after years of effort, destruction programmes are not reaching more than a small proportion. Destruction is organized, but not systematic. It is enduring, but it is not growing. It is highly legitimate, but not authoritative.

Although exact numbers are wanting, it appears that destruction of small arms is offset by new military production. As a result, despite the scale of destruction, surplus stockpiles are probably not shrinking; they actually still could be growing. Nor are surpluses always being carefully stewarded: it appears that many countries with surpluses are as likely to export their unwanted equipment as to destroy it. This is partly due to the ambivalence of outside actors, most prominently the United States, who simultaneously encourage cooperative host governments to both destroy and export their surpluses.

Lack of financing for destruction is a major problem. Compared to other areas of international disarmament, spending on small arms, light weapons, and ammunition is remarkably small. But lack of money is not the only barrier. As stressed here, vague definitions and weak standards are serious problems as well.

Surplus identification and destruction are heavily influenced by the broader international and domestic political contexts. Domestic military reform can be instrumental. Even ostensibly unrelated processes like EU and NATO expansion affect them fundamentally. International cooperation is an invaluable lubricant for surplus destruction, allowing donors to work more efficiently by enhancing legitimacy and insulating projects from political criticism. When it comes to dealing with surplus small arms and ammunition, bilateral action is good, but multilateral action is better.

In this field, definitions are tantamount to policy. As shown here, surplus identification and destruction are unlikely to accelerate or become more systematic until international organizations and donor governments gain more influence over definitions and standards. Above all, there is a profound need for a cooperative military requirement setting. Nothing will facilitate surplus identification as much as shared understandings of how much equipment is reasonable and what is excessive. Such understandings might be codified through formal negotiations like those that led to the CFE Treaty for major conventional weapons. They might emerge less formally through multilateral dialogue. But without wider agreement on how much is enough, surplus destruction seems likely to remain sporadic. ■

## LIST OF ABBREVIATIONS

APL	Anti-personnel landmine	OSCE	Organization for Security and Cooperation in Europe
CAR	Central African Republic		
CFE	Treaty on Conventional Armed Forces in Europe	PNG	Papua New Guinea
		RPG	Rocket-propelled grenade
DDR	Disarmament, demobilization, and reintegration	SALW	Small arms and light weapons
		SSR	Security sector reform
EU	European Union	UNDP	UN Development Programme
GDR	German Democratic Republic	USD	US dollar
MANPADS	Man-portable air defence system		

## ENDNOTES

- 1 The author wishes to thank Guy Lamb for this distinction.
- 2 Author interviews with Mark Adams, Washington, DC, 3 August 2006; Steve Brown, Arlington, Virginia, 22 February 2007; Peter Courtney-Greene, Geneva, 12–13 April 2007; and Richard Kidd, Washington, DC, May and October 2007.
- 3 Author interview with international official, Washington, DC, 22 February 2007.
- 4 Author interview with international official, Washington, DC, 22 February 2007.
- 5 Written comments to the author by Adrian Wilkinson, 2 January 2008.
- 6 Author interviews with Mark Adams, Washington, DC, 3 August 2006 and Peter Courtney-Greene, Geneva, 12–13 April 2007.
- 7 Since the resolution of its independence struggles in 1824, only four major inter-state wars have taken place in the region: the war of the Triple Alliance that found Paraguay simultaneously challenging Argentina, Brazil, and Uruguay (1864–70); the war of the Pacific, pitting Chile against Peru and Bolivia (1879–83); the Chaco War between Bolivia and Paraguay (1932–35); and the Falklands War between Argentina and the United Kingdom (1982). Regional intra-state war has been much more common.
- 8 The author would like to thank Pablo Dreyfus for emphasizing this point.
- 9 Ammunition is usually procured in rounds. Daily ammunition expenditure rate is calculated in the same way. Tonnage is used for logistic planning, including destruction (written comments to the author by Adrian Wilkinson, 2 January 2008).
- 10 For example, see NAMSA (2007) and USDoS (2008).
- 11 Author interview with the commander of the USS *Maban* (DDG 72), Norfolk, Virginia, 25 May 2007.
- 12 The 600,000 short ton figure for the US Army is from Erwin (2003). The 1.8 million ton US Department of Defense figure is from Scavetta (2004).
- 13 The figure of 3.3 tons (2 million tons, US Army Air Corps; 1.3 million tons, Royal Air Force) is from USAAF (1945) and USSBS (1947). The 7 million tons Vietnam figure is from *Vietnam War Timeline* (2008). Other sources estimate total aerial tonnage in Vietnam at between 8 and 15 million tons (Franklin, 1988).
- 14 Author interview with Steve Wilson of Mine Action Group, Washington, DC, 2–3 August 2006.



- 15 Author interview with Richard Kidd, Washington, DC, May and October 2007.
- 16 Following the theory formalized by zoologist Ernst Haeckel in 1866 of ontogeny (the development of an individual organism) recapitulating phylogeny (the development of a species or group of organisms), that the embryonic development of species passes through stages resembling the physical appearance of less evolved species (Haeckel, 1900).
- 17 Author interviews with Mark Adams, Washington, DC, 3 August 2006 and Richard Kidd, Washington, DC, May and October 2007.
- 18 Sources differ on the figures for Montenegrin ammunition. All agree that Montenegro inherited 9,000 tons, but sources differ on the amount to be destroyed (Garčević, 2007; Montenegrin Press Agency, 2007; *Vijesti*, 2007). For a list of items scheduled for destruction, see Perović (2007).
- 19 Author interview with Col Assylbek A. Mendygaliyev, Kazakhstan's defence, military, naval, and air attaché to the United States, Arlington, Virginia, 22 February 2007.
- 20 Author interviews with Steve Brown, Arlington, Virginia, 22 February 2007 and Col Assylbek A. Mendygaliyev, Kazakhstan's defence, military, naval, and air attaché to the United States, Arlington, Virginia, 22 February 2007.
- 21 Private communications from Pieter Wezeman, Stockholm International Peace Research Institute.
- 22 Written comments to the author by Adrian Wilkinson, 2 January 2008.
- 23 Author interview with Mark Adams, Washington, DC, 3 August 2006.
- 24 Author interview with Susan Pond, Arlington, Virginia, 22 February 2007.

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