



Empty ammunition crates litter the road leading to an ammunition factory at which an unplanned explosion took place, in Gorni Lom, Bulgaria, October 2014.

# Less 'Bang' for the Buck

## STOCKPILE MANAGEMENT IN SOUTH-EAST EUROPE

### INTRODUCTION

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Proper management of conventional ammunition and explosives stockpiles involves safe storage practices that ensure security while reducing the risk of illicit proliferation and enhancing military and police capabilities. Conversely, poor stockpile management can lead to the deterioration of stored ammunition and its accidental explosion.

Around the world, unplanned explosions at munitions sites (UEMS)<sup>1</sup> occur because too many states still view their ammunition stockpiles as assets, rather than as liabilities, regardless of their age and storage conditions. UEMS are widespread and increasingly common. The Small Arms Survey UEMS database shows that, from 1979 to 2014, 520 incidents of this nature were recorded in 103 countries and territories, indicating that UEMS affect more than half of all UN member states and every continent except Antarctica (Small Arms Survey, 2014b).

Most countries in South-east Europe (SEE) face the challenge of managing operational, excess, and ageing weapons and ammunition. In the case of ammunition particularly, tackling the issue comprehensively requires complex and often expensive measures relating to planning, procurement, storage, use, infrastructure, physical security, surveillance, and final disposal. Few SEE governments have the capacity to address each of these issues throughout their national stockpile's life cycle.

The Regional Approach to Stockpile Reduction (RASR) initiative aims at fostering regional solutions to South-east Europe's stockpile management problem. RASR participating states are Albania, Bosnia and Herzegovina (BiH), Bulgaria, Croatia, the former Yugoslav Republic of Macedonia (hereafter Macedonia), Montenegro, Romania, Serbia, and Slovenia.<sup>2</sup> Funded exclusively by the US government, the initiative seeks to address stockpile management challenges by sharing good practices and lessons learned, by building transparency and mutual confidence between RASR participating states, and by pooling transport and destruction capacities.

This chapter focuses on the issue of sustainable weapons and ammunition stockpile management in the nine RASR participating states, while placing a particular emphasis on *training*. The chapter also reviews the surplus stockpile situation in SEE at the end of 2014, more than five years after the launch of RASR in May 2009. The analysis is largely based on data obtained by the Small Arms Survey in its capacity as one of the five RASR Steering Committee members;<sup>3</sup> additional information was obtained in the framework of an ongoing research project on European Union Force (EUFOR) Mobile Training Team (MTT) 2.1.6.1, which was set up in 2011.

The main findings are:

- Poor ammunition stockpile management remains a serious problem in much of South-east Europe.
- While UEMS are a global problem, they have been especially prevalent in South-east Europe, at both state and non-state facilities.

- While most countries reported that surplus stockpile levels were decreasing, some registered little change between 2009 and 2014 as military reform, ageing ammunition, and new acquisitions provided a steady flow of surplus ordnance.
- Sales and donations remain the favoured disposal options. A RASR participating state will only opt to destroy its surplus stockpiles upon determining that its marketability is poor.
- Surplus weapons and ammunition destruction in South-east Europe remains largely donor-driven and donor-funded.
- A number of political, regulatory, and commercial constraints hinder regional cooperation with respect to transport and demilitarization.
- In collaboration with other stakeholders, RASR states are making a concerted effort to build, harmonize, and standardize the stockpile management knowledge base through regional technical training.
- In Bosnia and Herzegovina, a long-term, ongoing initiative that is potentially of wider application seeks to integrate technical training into a broader capacity building effort that promotes host-country ownership, organizational reform, and the integration of international standards into national legislation and policy.

This chapter begins by describing the rationale behind RASR. The second section reviews surplus stockpile, disposal, and storage data declared by RASR participating states between 2008 and 2014. The third section describes the main constraints on regional cooperation with reference to surplus ammunition transport and demilitarization. The final section examines the need, current programmes, and potential opportunities for sustained, comprehensive, and standardized stockpile management capacity building in SEE.

## RASR: A PRIMER

Two main developments brought the problem of SEE surplus weapon and ammunition stockpiles to the attention of international policy-makers and fostered the creation of RASR. The first was the downsizing of SEE military structures, coupled with the simultaneous increase in surplus weapons and ammunition stockpiles in the wake of the cold war. The second was a spate of UEMS in the region. The following sections examine each of these issues in turn.

### A legacy of surplus

Excess weapons and ammunition in SEE are a legacy of political systems and defence strategies that relied on stockpiling to establish and safeguard national regimes. Prior to 1991, the Socialist Federal Republic of Yugoslavia had one of Europe's best-equipped military forces. The Yugoslav People's Army comprised 195,000 active-duty soldiers, and the country's Territorial Defence Force an estimated 510,000 reservists, with weapons and ammunition depots decentralized throughout the six Yugoslav republics (Bromley, 2007, pp. 3–4). When the wars in Bosnia and Croatia broke out, some weapons and ammunition stockpiles were placed under Army—and thus Serbian—control,<sup>4</sup> while others went to other local governments. Similarly, the communist regime of Enver Hoxha in Albania revolved around a strong and well-equipped military (Arsovska and Kostakos, 2008, p. 362).

After the disintegration of Yugoslavia and the fall of communism in Albania, large stockpiles of weapons and ammunition—some of which were already obsolete—became redundant. For example, after the Montenegrin parliament declared independence from Serbia and Montenegro, on 3 June 2006, the two successor states retained or—in the case of Montenegro, inherited—significant surplus weapons and ammunition stockpiles. Montenegro's ministry

of defence (MoD) identified 74,000 different weapons and more than 12,000 tonnes of ammunition in its national stockpiles. It declared more than 9,500 tonnes of the ammunition stores surplus (Montenegro, 2011c, p. 2).<sup>5</sup> Serbia's resulting stockpile figures, thought to be significant, remained largely guesswork due to 'ongoing poor transparency within the MoD' (SEESAC, 2006, p. 91). In April 2007, six months after an accidental explosion at a military depot near Paraćin on 19 October 2006 and after international assistance with the explosive clearance, Serbia declared that its surplus ammunition stockpiles amounted to 23,859 tonnes (GICHD, 2008, p. 10).

Successive military modernization programmes, which mandated force reduction and changes to national military doctrine, also played—and continue to play—a role in the accumulation of surpluses in the region. One process that inevitably added to Serbia's already significant surplus stockpile burden was the trimming of its army from 14 brigades to four under the provisions of the Strategic Defence Review completed in July 2006 (Saferworld, 2007, n. 24). Modernization had a similar effect in Romania, where the military strength of the armed forces declined from 180,000 in the mid-1990s to 71,745 active forces in 2011 (Faltas and Chrobok, 2004, p. 87; IISS, 2011, p. 138). This 60 per cent force reduction generated large surpluses of stockpiled weapons and ammunition. Romania was invited to begin NATO accession negotiations at the Prague Summit in November 2002 and joined the organization on 29 March 2004. The adoption of NATO standards and the subsequent redundancy of some Warsaw Pact weapons led to a further increase in Romania's surplus stockpile (Faltas, 2008, p. 82).

In little time, the surplus weapons and ammunition stockpiles throughout SEE became a financial burden, as well as a safety and security liability. Countries lacked the funds needed to maintain and modernize the high number of ageing military depots and installations, and to invest in associated personnel, training, and equipment requirements. A shortage of appropriate storage facilities meant that ammunition was often stacked in the open air for several years. Derelict explosive storage houses were overloaded with ageing, unstable ammunition for which there were often no technical or historical records. Ultimately, these stockpiles posed two serious threats: accidental explosion during storage or transportation, and diversion to unauthorized end users. UEMS, in particular, brought increasing attention to the SEE surplus problem.

**Military modernization programmes play a role in the accumulation of surpluses in the region.**

### **UEMS and stockpile management**

While UEMS are a global problem, they have been especially prevalent in SEE, which has witnessed nearly 10 per cent of all incidents worldwide. From 1980 until the end of 2014, 51 UEMS incidents occurred in the region, more than half of them after 2000. With the exception of Macedonia and Romania, every RASR participating state has been affected at least once. Although UEMS can occur for a number of reasons, in RASR participating states some of the main known causes include handling errors and inappropriate working practices, a failure to adjust to external environmental influences, and a lack of surveillance to monitor ammunition deterioration (Carapic and Gobinet, 2014).

Incidents have occurred during storage at both state-owned depots and private manufacturing and demilitarization facilities, suggesting deficiencies in the technical knowledge of staff and lax safety standards (Gobinet, 2013, p. 203). Modern demilitarization facilities—regardless of ownership—need to store large amounts of ammunition before processing it and must meet strict quantity–distance standards.<sup>6</sup> Yet the fact that about one-quarter of all recorded UEMS in SEE occurred at non-state facilities between 2006 and 2013 indicates that the region's private demilitarization industry needs government oversight, which is currently absent in many facilities (Carapic and Gobinet, 2014, p. 1). A case in point is the explosion that killed 15 workers at the Midzhur plant<sup>7</sup> in Bulgaria on 1 October 2014 (Tsolova and Nenov, 2014).

In addition to destroying ordnance and causing extensive damage to public and private infrastructure, UEMS have much broader consequences. The 51 UEMS in SEE resulted in more than 700 casualties (fatalities and injuries). The subsequent clean-up of scattered unexploded ordnance (UXO), provision of health care, and reconstruction efforts involved significant direct and indirect costs to the state and its population, as well as donor countries (Carapic and Gobinet, 2014, p. 1; Lazarevic, 2012). UXO can also have long-term effects on the environment and can pose continuing safety risks to the local population. Albania, for instance, has identified at least 19 ‘hot spots’ that are contaminated by UXO largely as a result of UEMS; between 1997 and 2014, an estimated 149 people lost their lives and 883 were injured by UXOs in the country (Albania, 2014a, slide 12).<sup>8</sup>

Stockpile management, also referred to as physical security and stockpile management (PSSM), aims to ensure safe storage, security, and a reduction in the risk of accidental explosions. The International Ammunition Technical Guidelines (IATG) define stockpile management as the ‘procedures and activities regarding safe and secure accounting, storage, transportation and handling of ammunition and explosives’; stockpile safety as ‘the result of measures taken to ensure minimal risk of accidents and hazards deriving from explosive ordnance to personnel working with arms and munitions as well as adjacent populations’; and stockpile security as ‘the result of measures taken to prevent the theft of explosive ordnance, entry by unauthorized persons into explosive storage areas, and acts of malfeasance, such as sabotage’ (UNODA, 2011a).

Developed in 2011 under the UN SaferGuard Programme, the IATG address conventional ammunition stockpile management—from transport to storage to destruction—and are based on the most comprehensive existing standards. Technical specialists generally regard NATO’s Allied Ammunition Storage and Transportation Publications 1 and 2 as among the most comprehensive documents covering the principles of safe storage and transportation of ammunition (NATO, 2005; 2010).<sup>9</sup> With respect to best practice at the regional level, experts consult the *Document on Stockpiles of Conventional Ammunition* and the *Best Practice Guide on National Procedures for Stockpile Management and Security*, both published by the Organization for Security and Co-operation in Europe (OSCE) (OSCE, 2003a; 2003b).

**The 51 UEMS incidents in SEE resulted in more than 700 casualties.**

## RASR

The US government created—and has continued to fund—the RASR initiative in order to address the problems of UEMS and stockpile diversion in SEE. The US Department of State’s Office of Weapons Removal and Abatement (WRA) launched the first RASR workshop in Zagreb, Croatia, in May 2009. During this event, PSSM stakeholders identified five areas in which regional cooperation could potentially benefit actors involved in conventional munitions reduction:

- policy;
- infrastructure;
- training and education;
- sharing of information and best practices; and
- standardization (in particular pertaining to ammunition classification and surveillance systems).

Six larger workshops followed: in Budva, Montenegro (2009); Sarajevo, BiH (2010); Ljubljana, Slovenia (2011); Durrës, Albania (2012); Bled, Slovenia (2013); and Sofia, Bulgaria (2014).<sup>10</sup> The events gathered—with varying levels of participation<sup>11</sup>—representatives of MoDs and general staffs of Albania, BiH, Bulgaria, Croatia, Macedonia, Montenegro, Romania, Serbia, and Slovenia; US government officials from the Departments of State and Defense; and representatives of international and regional organizations.<sup>12</sup>

WRA recognized that a core Steering Committee made up of organizations already active in various areas of stockpile management could, with relatively minor funding, coordinate the initiative. The Steering Committee organizes the workshops, which are designed to encourage international, regional, and national PSSM stakeholders to share best practices and lessons learned at the technical or practitioner level. In so doing, the initiative aims to foster transparency and confidence building between RASR participating states in relation to stockpile management.

RASR's website also serves as a clearinghouse for open-source SEE surplus stockpile data. Workshop material can be used to generate a snapshot of SEE's weapons and ammunition surplus stockpiles; it also provides an indication of the current state of stockpile reduction activities in the region.

## SURPLUS WEAPONS AND AMMUNITION IN THE NINE RASR COUNTRIES

This section reviews available surplus stockpile, disposal, and storage data for the period 2008–14 in SEE, highlighting relevant data gaps and limitations. The analysis relies on a wide range of open-source data obtained from the following sources:

- small arms and light weapons and ammunition assessments performed in the region by international ammunition specialists and explosive ordnance disposal (EOD) specialists;
- presentations given by the representatives of SEE MoDs and international organizations during various regional stockpile management conferences, including those hosted by RASR;
- working group discussions held during annual RASR workshops;
- Small Arms Survey questionnaires answered by eight MoDs during the first quarter of 2011; and
- updates, interviews, and email exchanges with representatives of SEE MoDs and regional organizations carried out in the second half of 2014.

The levels of surplus weapons and ammunition in SEE change frequently.

### Stockpiles

The levels of surplus weapons and ammunition in SEE change frequently because of the ongoing restructuring of SEE military organizations, the modernization of SEE armed forces, and, as a result, the continuously changing nature of national defence stockpiles, as discussed above.

While most countries reported decreasing surplus stockpile levels, some registered little change between 2009 and 2014 as military reform, ageing ammunition, and new acquisitions provided a steady flow of surplus ordnance (see Table 5.1). Over time, operational, reserve, and training stockpiles are recategorized as excess, obsolete, or unusable (Wilkinson, 2006, p. 231).

Some MoDs have even signalled an *increase* in their surpluses. In 2010, Bulgaria issued its Armed Forces Development Plan, which reviewed the structures, roles, missions, and tasks of its armed forces and implied a 'restructuring of [the] Bulgarian Army's operational stockpile and [increased] surplus stockpiles' (Bulgaria, 2011, p. 2). Despite an 'action plan for future demilitarization of surplus munitions 2012–2015', the Bulgarian MoD projected that its surplus ammunition stockpile would increase to 24,000 tonnes in 2013 and 2014 (Bulgaria, 2012, slide 4/7). Figures provided by Bulgaria in 2014 mention a 6,395-tonne surplus, indicating that the 'new' surplus was not yet accounted for (see Table 5.1). Similarly, Croatia's Strategic Defence Review and Long-Term Development Plan for the period 2011–20

**Table 5.1 Surplus conventional ammunition and small arms and light weapons stockpiles declared by RASR participating states, 2008-14**

Country		2008	2009	2010	2011	2012	2013	2014
Albania	Ammunition	100,000-120,000	86,421-92,651	67,423-72,170	40,141-69,715	18,902-40,318	8,391-12,845	2,860-4,246
	Small arms and light weapons	n/a	n/a	n/a	258,992	n/a	n/a	100,000-190,000
	Evolution of storage	In 2009, at the start of the demilitarization effort, Albania reported having 34 active ammunition storage sites (ASSs) and weapons storage sites (WSSs). As of 30 September 2014, 24 depots had been closed and certified, eight remained to be closed, and 2 were to be retained for permanent storage.						
Bosnia and Herzegovina	Ammunition	67,000	25,000	22,500	21,389-21,700	18,378	n/a	16,305-16,546
	Small arms and light weapons	n/a	100,000	65,878-99,882	53,000	n/a	n/a	28,231-40,052
	Evolution of storage	In 2011, Bosnia and Herzegovina reported having 20 ASSs, including 5 or 6 'prospective' ASSs, and 30 WSSs, including 2 prospective WSSs. In September 2014, the ASS number had dropped to 17—of which 6 are prospective, <sup>13</sup> 1 is temporary, 6 are non-prospective, and 4 are non-prospective pending closure—and the WSS number remained unchanged.						
Bulgaria	Ammunition	153,000	n/a	n/a	15,000	11,000	7,075	6,395
	Small arms and light weapons	46,577	n/a	n/a	n/a	n/a	10,380	11,590
	Evolution of storage	n/a						
Croatia	Ammunition	35,000	21,000	n/a	20,000	18,000	18,000	17,000-20,000
	Small arms and light weapons	190,000	n/a	n/a	0	2,028 (pistols)	2,028 (pistols)	2,028 (pistols)
	Evolution of storage	In 1995, Croatia reported 68 ASSs. By 2013 that number had dropped to 16 and in 2014 it stood at 10.						
Macedonia	Ammunition	n/a	n/a	n/a	No tonnage provided, but more than 360,000 items	915	n/a	n/a
	Small arms and light weapons	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Evolution of storage	n/a						

Table 5.1 Continued

Country		2008	2009	2010	2011	2012	2013	2014
Montenegro	Ammunition	9,751-12,000	7,241	4,692-5,611	4,500-5,155	4,045-4,384	3,674	3,188-3,852
	Small arms and light weapons	59,538-76,000	17,212	13,685-16,969	13,000-16,203	16,203	16,134	16,094
	Evolution of storage	In 2010, Montenegro reported having 10 ASSs; in 2011, there were 9 ASSs and 2 WSSs in Kapino Polje and Lepetani; by 2014, the ASS number had dropped to 8. The MoD's stated goal is to down-size to three ASSs.						
Serbia	Ammunition	24,000	19,000	14,000	8,712-9,000	n/a	n/a	6,000-7,000
	Small arms and light weapons	n/a	n/a	n/a	>90,000	n/a	n/a	n/a
	Evolution of storage	n/a						

Notes: n/a = not available. Ammunition volumes are listed in metric tonnes all-up weight (AUW), unless stated otherwise; ranges reflect the lowest to the highest documented tonnage. One tonne AUW is equivalent to 1 cubic metre, or one unit of space for storage and transportation planning (for approximately 50,000 rounds of small arms ammunition, such as 7.62 x 39 mm cartridges). For small arms and light weapons, the table lists the number of documented weapons. At the time of writing, no open-source surplus stockpile data was available for Romania or Slovenia.

Source: Small Arms Survey (2014a)

earmarked increased levels of surplus ammunition for open burning and open detonation (OB/OD) and industrial demilitarization (Croatia, 2013, slide 14).

Although useful for external observers, the surplus stockpile estimates provided by the MoDs are often limited on several counts:

- They do not take ministry of interior (MoI) stockpiles into account. In all RASR countries, MoIs also hold small arms, light weapons, and ammunition.<sup>14</sup>
- They provide much more information on surplus ammunition than on surplus small arms and light weapons. The risks and consequences of UEMS, coupled with increased donor pressure to address the unsafe management of large conventional ammunition, have prompted RASR countries to generate surplus ammunition data as a priority.
- They do not indicate the physical condition of the depots in which the ammunition is stored. Significant quantities of ordnance are sometimes stored in the open.<sup>15</sup> Rain, dampness, high temperatures, and humidity speed up the degradation of ammunition and can cause it to become dangerous when stored, handled, and used.
- They make no qualitative assessment of the stability of surplus ammunition, nor do they indicate whether trained personnel have ever carried out periodic technical inspection or chemical analysis of stocks of particularly sensitive items, such as pyrotechnics and propellants,<sup>16</sup> to ensure safety and stability. As a result, there is little analysis of the public safety risks particular ammunition storage sites might pose.
- They offer no indication of the physical security measures<sup>17</sup> applied around the depots, nor whether surplus stockpiles benefit from the same security measures as operational stockpiles.



There is also significant variation in the level of detail of the data that MoDs provide, which complicates cross-country comparison. Countries rarely provide information on item type, location, net explosive weight, or number—details that are frequently considered classified. Generally, countries that host extensive donor-funded PSSM and demilitarization assistance programmes, sometimes involving intrusive stockpile assessments by international experts, furnish the most detailed surplus weapons and ammunition figures.

Most countries do not specify whether their figures reflect (US) tons, metric tonnes, or gross weight (also known as all-up weight, or AUW) when declaring their surplus. Logistics planning for storage and demilitarization, for example, traditionally uses gross weight as a reference, covering both ammunition and its packaging. In addition, there are differences between US and UK tons.<sup>18</sup> Few—if any—SEE countries reveal the actual number of items of surplus ammunition by specific type. Unless otherwise stated, this chapter provides ammunition figures for RASR countries in metric tonnes AUW. For small arms and light weapons, the numbers of weapons, rather than the total weight, is recorded.

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Some countries simply do not know the precise quantities of ammunition (whether surplus or operational) in their stockpiles, often because of poor stockpile accounting practices. In such cases, government bureaucracy or the reorganization of state agencies in charge of military logistics leads to poor accounting, inaccurate reporting, and stockpile opacity. In order to remedy such problems, the Armed Forces of Bosnia and Herzegovina (AF BiH) are carrying out an inventory of all of their stockpiles with five mobile inspection teams in the framework of a project called Explosive Ordnance and Remnants of War Destruction, or EXPLODE (OSCE, 2014, slide 32); they are also testing software for inventory record-keeping with European Union (EU) and OSCE support.<sup>19</sup>

## Disposal and storage

### Donor funding

Surplus weapons and ammunition disposal in SEE is largely donor-driven and donor-funded. Table 5.2 lists a selection of large, ongoing donor-funded projects implemented by international or regional organizations in RASR countries as of November 2014. The projects usually apply a mix of surplus destruction, infrastructure refurbishment, and capacity building measures. Recent and ongoing examples include the third Partnership for Peace Trust Fund project of the NATO Support Agency (NSPA) in Albania, a joint demilitarization programme of the OSCE and the UN Development Programme (UNDP) in Montenegro, a joint OSCE–UNDP capacity development programme for conventional ammunition stockpile management (CASM) in Serbia, and ITF Enhancing Human Security (ITF) projects in BiH, Croatia, and Montenegro.

Donor-funding shortages often mean that disposal programmes are put on hold. For instance, the first phase of the Montenegro demilitarization (MONDEM) project destroyed 430 tonnes of ammunition out of a 1,300-tonne stockpile initially earmarked for destruction in two phases in 2010 (Montenegro, 2011d, slides 12–13). Yet the second MONDEM phase—during which the remaining 870 tonnes of ammunition were to be destroyed (Montenegro, 2011b)—was put on hold due to funding shortfalls that persisted throughout 2010 and 2011.<sup>20</sup>

National weapons and ammunition disposal figures are usually associated with donor-funded destruction campaigns. Yet the information is often incomplete and disposal timeframes frequently overlap, making comparison challenging. Figures seldom disaggregate the types of ammunition and the net explosive quantities that were destroyed. The following examples nevertheless provide a sense of magnitude. Albania disposed of more than 90,000 tonnes of ammunition in six years, from 2009 to 2014 (Albania, 2014a, slide 3; 2014b, slide 10; NSPA, 2014, slide 18). Croatia disposed of approximately 5,000 tonnes of ammunition in 2013 (Croatia, 2014, slide 6). Montenegro reportedly disposed of more than 7,000 tonnes of ammunition between 2006 and 2014 (Montenegro, 2014a, slide 11).

Donor-funded stockpile management and demilitarization projects often involve some in-kind or financial contribution from the host government. In some cases, host-country participation has been significant. Albania is a good example. Following the Gërdec explosion on 15 March 2008,<sup>21</sup> Albania's Plan of Action for the Elimination of the Excess Ammunition in the Armed Forces foresaw the identification and disposal of all old surplus ammunition and explosives from the Albanian Armed Forces (AAF) inventory by the end of 2013 (Albania, n.d., p. 4). In September 2009 the AAF declared more than 85,000 tonnes of ammunition surplus. The government subsequently allocated some EUR 3–4 million (USD 3.8–5 million) annually to cover the costs of destruction, *in addition to* the funds and demilitarization equipment received from various international donors, including Denmark and Germany (both via the OSCE) and the US State Department (via NSPA) (Albania, 2014b). Albania reportedly covered 83 per cent of the EUR 23 million required to dispose of more than 90,000 tonnes of surplus ammunition between 2009 and September 2013, while the NSPA covered the remaining 17 per cent with US funding (Albania, 2014b).

Another best practice example is Montenegro, where the MoD reinvested more than EUR 1.2 million (USD 1.8 million) obtained mostly from the sale of scrap metal—generated by the destruction and recycling of heavy weapons systems—into ammunition demilitarization (OSCE, 2014). Croatia<sup>22</sup> and Slovenia, among other SEE states, have also covered all or part of the costs of conventional ammunition destruction, infrastructure refurbishment, or depot construction.



Members of an explosive ordnance disposal team prepare a batch of high-explosive projectiles prior to open detonation at the Krivolak range near Mushanci, Macedonia, 2011. © Macedonian EOD team

**Table 5.2 Selected ongoing small arms and ammunition destruction and infrastructure refurbishment projects implemented by international or regional organizations in RASR countries, as of November 2014**

Country	Project	Period	Lead implementing agency	Cost
Albania	Third NATO Partnership for Peace project	October 2010-late 2014	NSPA	EUR 6,037,000 (USD 8,174,000) overall budget (including transportation, administrative costs, NSPA management team)
BiH	EXPLODE	2012-15	UNDP-BiH	EUR 4,604,830 (USD 5.2 million) over a period of 36 months
	SECUP	2013-16	OSCE	EUR 1,052,460 (USD 1.2 million)
Montenegro	MONDEM	2007-ongoing	UNDP-Montenegro	OSCE: EUR 870,706.13 (USD 1.1 million) + Government of Montenegro: EUR 1.2 million (USD 1.5 million) + UNDP: EUR 3.2 million (USD 4 million) = EUR 5.27 million (USD 6.6 million) total as of October 2014  The total includes USD 1.8 million for the reconstruction of Taraš and an estimated investment of USD 2.5 million for the reconstruction of Brezovik.
Serbia	CASM	February 2012 until 31 December 2015	UNDP-Serbia and SEESAC	USD 1,246,431, since the start of the project
	Serbia IV Trust Fund	Feasibility study, December 2012-June 2013 NATO Political and Partnerships Committee 15 July 2013 (Due to start mid-2015) Delay due to resolution of legal agreements	NSPA	EUR 3.7 million (USD 4.2 million)

Sources: OSCE (2014); author correspondence with David Towndrow, NSPA, 10 December 2014; with Jasmin Porobic, UNDP-BiH, 30 December 2014; and with Tamara Svircev, SEESAC, 25 February 2015

Table 5.2 Continued

## Activities

- Destruction of 12,069 tonnes of surplus ammunition;
  - destruction of 70,000 small arms and light weapons; and
  - development of an industrial demilitarization factory at ULP Mjekës, including: 120 mm mortar and large-calibre lines; 14.5 mm and anti-tank mine lines; and improvements to the explosive waste incinerator.
- Disposal of more than 11,000 tonnes of ammunition and 140,000 pieces of small arms and light weapons since 2006;
  - successful implementation of the High Hazardous Munitions Destruction project, which includes the destruction of all reported quantities of cluster bombs, rockets, and other cluster munitions;
  - infrastructure improvements of 50 storage facilities in four prospective storage sites: Krupa, Kula, Rabić, and Teufik Buza;
  - new technologies for ammunition disposal installed, doubling technological capacities for ammunition disposal; and
  - building capacities of senior officers and officials of the BiH MoD on ammunition stockpile management.
- Security Upgrade programme in 4 prospective storage sites—Krupa, Kula, Rabić, and Teufik Buza—including:
- partial replacement of fencing;
  - installation of vehicle beam barriers;
  - replacement of gates and installation of standardized signs at all four storage sites;
  - additional fencing around high-security buildings (small arms and light weapons);
  - technical documentation for intruder detection system packages, which include closed-circuit TV, touch sensors, alert lighting, and back-up power systems; and
  - the installation of intruder detection system packages.
- Disposal of 120 tonnes of toxic hazardous substances (mélange oxidizer, rocket fuel, and napalm thickener);
  - destruction and recycling of heavy weapons systems (some 3,300 tonnes, including 60 battle tanks, some 900 different field artillery pieces, and rocket launchers);
  - conventional ammunition demilitarization, with 430 tonnes of surplus ammunition destroyed in 2010; 715 tonnes destroyed in 2011 and 2012; and 1,350 tonnes earmarked for destruction before the end of 2015; and
  - the completed reconstruction of Taraš, an MoD ammunition storage site in Danilovgrad, which reopened in May 2011, and ongoing reconstruction of a larger ammunition storage site at Brezovik.

## Component 1

- Demilitarizing and destruction of 1,133.86 tonnes of surplus stocks of white phosphorus (WP), CS-filled, and napalm powder-based ammunition. This includes the disposal of: 162 tonnes of napalm powder-filled ammunition (completed in 2013); 550 tonnes of WP-filled ammunition shells (ongoing); and special CS ammunition (planning/preparatory activities ongoing).
- Infrastructure improvement to the existing demilitarization facilities at TRZ Kragujevac (the Serbian MoD's centre for demilitarization); including the provision of closed-circuit TV system (ongoing); sprinkler systems (ongoing); and the installation of antistatic floors (completed).

## Component 2

- Storage reconstruction in Mrsać and Mirnička Reka.

### Making sense of 'disposal' figures

The term 'disposal' refers to the removal of ammunition and explosives from a stockpile through a variety of methods that do not necessarily involve destruction. Four traditional methods of disposal are used by armed forces around the world: increased use during training; sales; donations; and destruction via industrial demilitarization or OB/OD. The distinction between 'destruction' and 'disposal' is often lost in translation and in SEE the MoDs will often use the term 'demilitarization' erroneously, thus complicating data collection and comparability.

#### Destruction

**Most governments cannot afford to fund their demilitarization facilities continuously.** Small arms destruction is technically straightforward and largely donor-driven. Serbia destroyed 49,500 small arms between 2010 and 2013 (Serbia, 2014a, slide 8). The figure includes the EU-funded destruction, via SEESAC, of 28,285 items in 2010 and 17,000 items in 2012, undertaken with the support of the Serbian MoI. SEESAC and the EU also led destruction initiatives in Croatia, where 33,091 items were destroyed during 2011 and 2012 (SEESAC, n.d.). In Albania, 70,000 items were destroyed under a US-funded NSPA managed project at the Gramsh weapons factory from April to September 2014. The United States allocated funding for another 30,000 items, but the Albanian authorities blocked the plan, allegedly arguing that these weapons had significant commercial value. The funds were then reallocated (Cubic and USDTTA, 2014).<sup>23</sup>

OB/OD has been used to destroy conventional ammunition throughout most of SEE. OB/OD capacities vary across countries. Albania destroyed 31 per cent of its 90,000-tonne ammunition surplus using OB/OD between 2009 and 2014 (Albania, 2014a, slide 4; 2014b, slide 16; NSPA, 2014, slide 16). Croatia destroyed about 6,800 tonnes of various types of ammunition using OB/OD between 2001 and 2012 (Croatia, 2014, slide 4). OB/OD has, however, fallen out of favour with many demilitarization practitioners who consider it a source of uncontrolled soil, groundwater, and air pollution. Wherever environmental considerations are the decisive factor, OB/OD is controversial (Gobinet, 2013, p. 206). For the moment, however, OB/OD remains economically viable for countries with smaller (yet potentially unstable) stockpiles and suitably remote areas in which to carry it out. According to some practitioners and subcontractors, the advantages of OB/OD outweigh its drawbacks, making it a much easier—and thus preferred—solution whenever government or donor funds are scarce (King and Diaz, 2011, p. 40).

The industrial demilitarization of surplus ammunition is a more complex activity, as it uses assembly lines that apply industrial processes to disassemble the ammunition and separate the energetic from the inert materials through a combination of melting, cutting, and crushing, or by directly burning out the energetic materials (Gobinet, 2013, pp. 196–97). A well-functioning industrial demilitarization process can destroy large quantities of ammunition and recover commercially valuable materials for use in commercial applications. All US demilitarization facilities, for instance, can reportedly process up to 110,000 tonnes annually (NSPA, 2014, slide 18).

By mapping the SEE network of indigenous demilitarization facilities—many of which were previously unknown to the donor community—the Small Arms Survey showed that industrial demilitarization capacities vary across states in the region (Gobinet, 2012). Most governments cannot afford to fund their demilitarization facilities continuously. Destruction is thus carried out intermittently, in batches, whenever (donor) funding permits. In order to remain commercially viable in a competitive market, government-owned facilities and private contractors must combine their demilitarization operations with more lucrative activities, such as industrial explosive or ammunition production.

Generally, RASR countries that held large quantities of similar types of surplus items that needed to be destroyed were the ones that developed or upgraded industrial demilitarization processes, thereby making economies of scale

possible. In 2009, for instance, the AAF categorized its 90,000-tonne ammunition surplus into several generic types of ammunition, allowing for the development of targeted industrial processes with long production runs (Gobinet, 2011, pp. 32–35). Between 2009 and 2014, more than half of this surplus was destroyed using industrial demilitarization (Albania, 2014b, slide 16); some sources cite as many as 57,000 tonnes of ammunition demilitarized industrially at Gramsh, Mjekës, and Poliçan during this period (Albania, 2014a, slide 5).<sup>24</sup>

Large government-owned facilities tend to declare their capacity figures and approximate demilitarization costs. As these are context-specific, care must be taken when making comparisons between nations. Albania's main plant—ULP Mjekës—has a total capacity of more than 5,000 tonnes per year across a broad spectrum of ammunition types, at approximately EUR 500/tonne (USD 565/tonne) (NSPA, 2014, slide 23). The Serbian MoD's TRZ plant in Kragujevac reportedly dismantled approximately 4,000 tonnes of ammunition per year between 2006 and 2010 (Serbia, 2011a, slide 4; 2011b, slide 5). Serbia has repeatedly stated that the plant is underutilized and that it could increase its capacity to anywhere between 6,000 to 10,000 tonnes per year by opening additional demilitarization lines (Serbia, 2011b, slide 13; 2011d, p. 3). In 2011, the plant reported an average demilitarization cost of EUR 780 (USD 1,080) per tonne, but calculated that economies of scale linked to the potential capacity increases could bring the cost down to



Trained staff dismantle anti-personnel mines at TRZ technical overhauling facilities in Kragujevac, Serbia, April 2007. © TRZ Kragujevac

approximately EUR 500 (USD 640) per tonne (Serbia, 2011a, slide 13). The CASM programme, initiated in 2012, involves incremental infrastructure upgrades to improve the plant's safety and capacity (Serbia, 2014a, slide 5).

In other RASR countries, national (that is, government-owned) industrial demilitarization capacity is either structurally limited or underused. Demilitarization relies heavily on donor funding as well as private, civilian contractors. The annual destruction capacity of the AF BiH's main facility, the GOF-18/TROM Doboj plant, is estimated at approximately 1,200–1,300 tonnes (EWG, 2010a, slides 7, 9; NATO, 2011, slide 21).<sup>25</sup> In reality, however, the plant processes far less, despite facility upgrades carried out under the EXPLODE project (OSCE, 2014, slide 31). Since 2006, BiH has processed decreasing amounts of ammunition using OB/OD and industrial demilitarization; at the time of writing, the country was destroying less than 1,000 tonnes per year (AF BiH AWE, 2014). Croatia reportedly destroyed only around 600 tonnes of conventional ammunition using industrial demilitarization between 2011 and 2013, even though the civilian company contracted for this work, ISL Sprewerk, in Gospić, has a demilitarization capacity of approximately 3,000 tonnes per year, depending on the type of ammunition being processed (Croatia, 2014, slide 5).

### Sales and donations

Most countries test the marketability of their surplus stocks before deciding whether to destroy them. Likewise, RASR countries dispose of surplus weapons and ammunition through sales<sup>26</sup> and donations,<sup>27</sup> provided the items are in sufficiently good condition.

National export reports do not disaggregate sales of surplus from sales of new ordnance, yet RASR countries have provided some information. Bulgaria noted that it sold more than 5,000 tonnes of excessive ammunition in 2011, more than 8,775 tonnes in 2012, and 2,208 tonnes in 2013, with the latter figure representing about 31 per cent of its estimated 7,075 tonnes of surplus in 2013 (Bulgaria, 2012, slide 4; 2013, slide 5). The Croatian MoD reported sales



During Operation Impact, a Royal Canadian Air Force aircraft—photographed in the Czech Republic—transports pallets of military supplies donated by Albania and the Czech Republic to security forces in Iraq, September 2014. © Marc-Andre Gaudreault/Canadian Forces Combat Camera

of 6,035 tonnes of various types of ammunition, worth approximately EUR 15 million (USD 16.9 million), between 2001 and 2012 through its government-owned export company Agencije Alan, based in Zagreb (Croatia, 2013, slide 7). In 2014, Serbia earmarked 1,570 tonnes of mostly small arms ammunition for sale out of its 6,000-tonne ammunition surplus (Serbia, 2014b, slide 3).

Some national laws prioritize the sale of surplus state-owned property, including arms and ammunition, over destruction (Montenegro, 2009, arts. 21–22). MoDs usually earmark more ammunition for sale than they are able to sell. International demand for surplus weapons and ammunition is quite volatile, and signed contracts do not necessarily translate into actual sales. MoDs then face the costs of storing and ultimately destroying the items.

Albania recently earmarked 14 per cent of the abovementioned 90,000-tonne surplus, representing 12,603 tonnes of ammunition, for export or donation (Albania, 2014a, slide 16; 2014b, slide 9). Of the 12,600 tonnes earmarked for sale, 7,088 tonnes of artillery, mortar, and small arms ammunition were effectively sold and exported via the Military Export–Import State Company (MEICO) between 2009 and 2013 (Albania, 2014a, slide 6).

Montenegro encountered a similar situation. In May 2011, the MoD declared that it had sold—but not delivered—1,400 tonnes of surplus ammunition. The Montenegrin MoD stated that it was likely to offer another 1,300 tonnes for sale during 2011 (Montenegro, 2011c, p. 3). Phase three of the MONDEM programme, which started in June 2013, aims to destroy a similar tonnage (that is, some 1,350 tonnes total) of unstable and obsolete ammunition before the end of 2015 (OSCE, 2014); this information suggests that a large portion of the 1,300 tonnes earmarked for sale by the Montenegrin MoD in 2011 has not been sold.

MoDs usually earmark more ammunition for sale than they are able to sell.

Donations to countries whose security forces use former Warsaw Pact firearms and ammunition are also frequent, although states do not report on them regularly. Albania, for instance, donated 10,000 AK-47 assault rifles to the Afghan National Police in 2010, and another 10,000 assault rifles in 2014 (Cubic and USDTTA, 2014; IBNA, 2014). In addition, in September 2014, the Albanian MoD announced that it was donating 785 tonnes of ammunition<sup>28</sup> and 10,000 Kalashnikov-pattern rifles to support Iraqi Kurds (Cubic and USDTTA, 2014). As the Canadian Armed Forces report, in August–September 2014 Albanian and Czech military supplies—including small arms and ammunition—were delivered to security forces working in Baghdad and Erbil, in the framework of a multinational coalition against the non-state armed group Islamic State (ND and CAF, n.d.).

### Depot reduction, refurbishment, and construction

Among RASR participating states, the overall tendency is to reduce the number of ammunition storage sites (ASSs) and weapons storage sites (WSSs) in order to lower storage and staffing costs. The ones that are to be retained as permanent storage sites after all surpluses are disposed of are dubbed ‘prospective’ sites and benefit from donor-funded refurbishment programmes to bring them up to international standards.

Technical ammunition depot assessments in SEE usually highlight one or more of the following security and safety risks:

- The buildings where ammunition is stored suffer from significant structural damage.
- Ammunition is not stored in accordance with principles relating to hazard division and compatibility group.
- The sites are overstocked far in excess of capacity.
- Large quantities of ammunition are left unpackaged, stored in the open, or in temporary facilities.
- Leaking containers of unidentified chemicals are stored alongside other explosives.
- Firefighting equipment is inadequate or out of date.



- Ammunition surveillance systems do not exist or, if they do exist, there are no records of inspections.
- Perimeter security at storage sites is cursory, with inadequate personnel, inactive intruder detection systems, and insufficient internal and external lighting (Gobinet, 2011, pp. 27–29).

Storage facility and infrastructure upgrades are meant to improve physical security through the renovation of disused buildings, the repair of existing equipment, and the installation of appropriate security systems. Examples include the SECUP programme in four BiH storage sites<sup>29</sup> (OSCE, 2014, slides 15–28); the infrastructure upgrade of Montenegro's Taraš and Brezovik ammunition depots under the MONDEM programme (Montenegro, 2014b, slide 24); and reconstruction and infrastructure upgrades of Serbia's Mrsac and Mirnička Reka storage sites under the CASM programme (SEESAC, 2014, slides 7–10). Storage facility and infrastructure upgrades are also meant to improve the management of stockpiles, including the safe storage of ammunition, for instance through ammunition accounting and management systems.

**Reducing the number of storage sites creates new challenges.** Reducing the number of storage sites creates new challenges. In most countries ammunition disposal rates cannot keep up with the reduction of storage capacity so that ammunition has to be transported and then crammed into 'prospective' depots that are often already full. Transporting ammunition always carries some risk, but without proper equipment and appropriately trained personnel, the risk is significantly higher. Non-existent or deteriorating packaging associated with poor ammunition management increases the likelihood of an incident considerably.

## STOCKPILE REDUCTION IN SEE: PRACTICAL CONSTRAINTS

It is difficult to quantify the impact of RASR—an expert discussion forum without dedicated staff or a permanent building—on SEE surplus stockpile levels. While the RASR Steering Committee has sought to increase regional ownership over stockpile management and reduction, to date the initiative has received very little attention from the region's high-level cooperative processes and frameworks. Among others, the South-Eastern Europe Defense Ministerial<sup>30</sup> and the Regional Cooperation Council,<sup>31</sup> which could provide much-needed political leverage, have yet to engage with RASR.

Individual participant interviews and testimonies have stressed the value of RASR workshops as informal forums through which donors and host countries can coordinate the implementation of PSSM and demilitarization projects in SEE. For instance, NSPA used the RASR forum to circulate and bench-test the idea of a joint pilot project, which eventually led to the destruction of 17 tonnes of Montenegrin 20 mm anti-aircraft cannon ammunition at ULP Mjekës in Albania between 25 November and 4 December 2014 (see Box 5.1).

RASR has also prompted most participating states to provide information on their levels of surplus, and to share their stockpile management challenges publicly and regularly. Yet despite the added transparency and networking opportunities provided by the forum, a number of practical constraints continue to hinder the more complete development of a regional approach to stockpile destruction.

### Challenges and impediments

#### Transport and ammunition categorization

A regional approach to stockpile reduction necessitates the cross-border transport of surplus munitions, usually by road or rail, from one country's depot to another country's demilitarization facility. Both modes of transport are

governed by comprehensive directives and regulations such as (1) the UN Recommendations on the Transport of Dangerous Goods: Model Regulations, also known as ‘The Orange Book’ (UN, 2013); (2) the European Agreement concerning the International Carriage of Dangerous Goods by Road (UNECE, 2009); and, in certain circumstances, (3) the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (UNEP, 1989).<sup>32</sup>

Yet arranging for import and export permits and associated documentation, developing emergency plans, and securing insurance for the transported items represent significant administrative and logistical hurdles that most SEE MoDs are reluctant to tackle. Surplus ammunition in SEE stockpiles is rarely marked with the hazard labels—such as a UN serial number, hazard division, and compatibility group<sup>33</sup>—that are required for transportation under international norms. A large quantity of surplus ammunition has been repackaged into non-original boxes. Moreover, box contents and quantities do not always match markings and labelling. Consequently, the ammunition cannot be moved easily. In addition to international transport regulations, national laws prevent the cross-border transportation of weapons and ammunition. Some national legislation, such as Bulgaria’s, prohibits the export of weapons and ammunition for demilitarization purposes, allowing only revenue-generating exports and imports (Bulgaria, 2011, p. 6).

This situation can only be remedied if existing ammunition management processes are brought in line with the principles contained in the IATG or in NATO’s Allied Ammunition Storage and Transportation Publications 1 and 2 (NATO, 2005; 2010). Among other things, this means classifying ammunition according to the UN Globally Harmonized System of Classification and Labelling of Chemicals and the UN Recommendations on the Transport of Dangerous Goods: Model Regulations.

### **The difficulty of establishing a regional demilitarization hub**

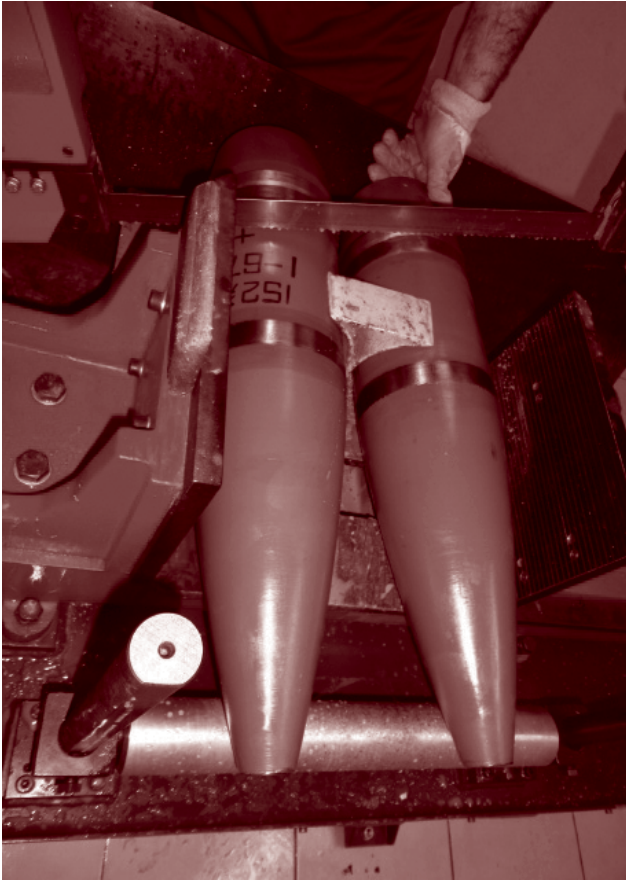
Although technically possible, the establishment of a regional demilitarization centre is difficult in practical terms and, moreover, does not have the support of all regional demilitarization practitioners (Gobinet, 2012).

Relatively well-developed capacity in some countries would suggest that bilateral cooperation could yield benefits through the disposal of surpluses, perhaps coordinated at the regional level. The Mjekës factory in Albania and Kragujevac’s TRZ plant in Serbia benefited from significant donor-funded upgrades that increased their ammunition processing capacities. In fact, both countries have offered to support the demilitarization efforts of other SEE states in relation to a broad spectrum of ammunition types (NSPA, 2014, slide 3; Serbia, 2014b, slide 14).

Yet despite ad hoc offers of help, closer cooperation is not yet a reality in much of the SEE region. First, the issue of surplus ammunition destruction is sensitive within and among RASR nations. In each state, it can be highly politicized, which means that most—if not all—decisions and directives that address surplus destruction are taken by high-level government officials, including from the ministries of economy and finance. In BiH, for instance, the lack of progress in disposing of surplus weapons and ammunition largely stems from a lack of political consensus among the entities regarding the application of the 2008 Dobo Agreement and the BiH Defence Law (BiH, 2005;<sup>34</sup> 2008; 2009). Consequently, the BiH MoD is not authorized to carry out surplus destruction without obtaining authorization from the BiH presidency.

Such stumbling blocks largely limit collaboration at the regional level with countries bearing certain historical and cultural affinities. For instance, the Montenegrin authorities collaborate with the Serbian facility in Kragujevac to test propellant stability. But the traditionally low levels of trust among many of the region’s governments do not facilitate burden sharing for the potential funding of a regional plant or the transfer of surplus ammunition across borders, even for demilitarization.

Surplus ammunition destruction—within and among RASR nations—can be highly politicized.



High-explosive projectiles are processed for demilitarization using an industrial bandsaw (top), and the resulting opened shells are transported away on forklifts, for the removal of energetics (bottom), ULP Mjekës, Albania, 2011. © NATO Support Agency (NSPA)

Secondly, it is unclear to what extent MoD-owned plants such as Mjekës and TRZ Kragujevac can become commercially viable and competitive in the open market. Such facilities often function as military units, featuring older technology and lower production volumes than their private, civilian competitors. In particular, they are not able to adapt to the constraints of regional or international demilitarization markets, where commercial considerations play an increasingly important role. The NSPA completed US-funded destruction activities at the ULP Mjekës and Gramsh plants at the end of December 2014. At the time of writing it was unclear how they would pursue their demilitarization activities without donor assistance.

Finally, while most countries claim to support the concept of a regional demilitarization facility, they actually have competing interests. Nations often have an economic interest in developing national demilitarization capability, rather than paying for such services in another nation. If states that have invested in national demilitarization infrastructure ship their ordnance to a neighbouring state, they lose a potential source of employment and income in the process. Practitioners who favour the regional destruction option face a tough sell at a time when work is scarce and unemployment is high.

One consequence of the factors cited above is that regional implementation organizations that compete for donor funds, and that face short project timescales and stringent delivery requirements, tend to opt for national disposal and storage refurbishment programmes, instead of using existing demilitarization facilities in neighbouring states. Another consequence is that some of these

facilities—despite significant donor investment—may eventually become idle. The NSPA's recent facilitation of a pilot project, involving a surplus munitions transfer from Montenegro to Albania, has, however, demonstrated the feasibility of transferring ammunition across state lines for demilitarization (see Box 5.1).

### Disparate knowledge bases

Another impediment to implementing a regional approach to stockpile management in SEE are the disparate levels of ammunition expertise in the region, which are partly the consequence of varying attention to training.

Generally, much of the donor-funded capacity building in the region has prioritized EOD skills. Specifically, donors provided support and training following UEMS in many of the countries. Such was the case in Albania in 2009, when the MoD reorganized and strengthened its military EOD capability in order to carry out OB/OD activities following the Gërdec explosion. The United States largely funded the training of AAF EOD personnel (Albania, 2011, p. 8). BiH,<sup>35</sup> Bulgaria, and Macedonia<sup>36</sup> benefited from similar EOD training programmes (Bulgaria, 2012, slide 4/6; SEESAC, 2009, slide 4). Yet EOD training does not address the full scope of challenges associated with the planning, management, and implementation of conventional ammunition storage.

Some RASR countries have an indigenous stockpile management training programme in place for personnel in field units and at headquarters. For instance, Croatia's Logistics Training and Doctrine Centre, headquartered in Požega, trains logistics personnel—officers and non-commissioned officers—among them ammunition specialists (Croatia, 2014). In Serbia, the Military Academy in Belgrade provides technical training programmes for demilitarization and stockpile security personnel of the Serbian Armed Forces and the TRZ Kragujevac Technical Repair Facility (Serbia, 2014b).

Some countries report having an indigenous stockpile management training curriculum in place within their respective training and doctrine command structures while relying heavily on donor-funded courses to train their personnel.

### Box 5.1 The complexities of cross-border demilitarization: the example of Albania and Montenegro

The Mjekës factory in Albania benefited from significant donor-funded upgrades that increased its ammunition processing capacities. During the fifth RASR workshop, held in Durrës, Albania, from 23 to 25 April 2012, NSPA officials and the Albanian authorities discussed the possibility of capitalizing on these investments by dedicating a portion of the plant's excess capacity to the demilitarization of surplus ammunition from neighbouring countries.

In September 2012, the NSPA officially submitted the idea to the Albanian MoD. The goal was to demonstrate that procedures were in place that would allow the transfer of surplus munitions across borders to SEE demilitarization facilities with available capacity. Once the option was seen as viable, it would be up to SEE nations to pursue it further. The concept grew into a pilot project involving the movement of a relatively small (trial) quantity of surplus Montenegrin ammunition from an MoD storage site in Montenegro to ULP Mjekës (Albania), where it was to be destroyed in an incinerator under NSPA oversight. The Montenegrin MoD offered to cover the cost of transportation of the munitions. The NSPA (accessing WRA funds) offered to pay for the disposal at ULP (at a cost of less than EUR 20,000, or USD 22,600).

In August 2014, the Albanian and Montenegrin MoDs resolved the final details and signed a technical agreement for the pilot demilitarization of approximately 17 tonnes of Montenegrin anti-aircraft cannon ammunition (50,380 rounds of 20 mm API PZ ammunition) at ULP Mjekës. Although arrangements relating to transportation, import and export licences, and end-user certification took some time to complete, the greatest delay was Albanian political endorsement as a new government struggled to reconcile the importation of 'waste' with the opportunity to provide demilitarization services to neighbouring countries.

The cross-border transport and delivery at ULP Mjekës took place on 25 November 2014, with the Albanian agency MEICO arranging for the escort of the convoy from the Montenegrin border to the ULP Mjekës factory. Destruction of the rounds started on 1 December 2014 and finished on 4 December. The whole operation was overseen by the NSPA, which countersigned the certificate of disposal that ULP Mjekës provided to the Montenegrin government.

Macedonia's training command and the military academy have reportedly developed a specific training programme for ammunition and armament storage and destruction (Macedonia, 2011, p. 3). Yet research indicates a reliance on short, ad hoc technical seminars provided on a one-off basis to mid-level logistics officers by the US Defense Department (DTRA, 2011). Slovenia has no military school or civilian universities involved in stockpile management; ammunition handlers get 'on-the-job' training.<sup>37</sup>

Other countries rely *exclusively* on donor-funded training initiatives. In Montenegro, training is undertaken in the MONDEM framework, with additional training provided by NATO (Montenegro, 2011a, slide 19; 2011c, p. 8). Yet the Montenegrin MoD reported that its logistics staff was not sufficiently trained, particularly in NATO storage and maintenance standards (Montenegro, 2011a, slide 27). BiH had no indigenous stockpile management training capacity and largely relied on EUFOR training programmes until the Mobile Training Team 2.1.6.1 began to hand over courses to training and doctrine command in Travnik in mid-2014, as discussed below. The BiH MoD, in concert with international partners, has highlighted the recurring need to train personnel to take on different roles, including ammunition technicians and handlers (BiH, 2011, slides 34, 41, 45; EWG, 2010b, slide 13). At the time of writing, EUFOR was providing training at all technical levels, and the process was expected to take several years to complete.

**MoDs of SEE countries have highlighted the shortage of qualified technical staff.** The majority of SEE MoDs have repeatedly drawn attention to a shortage of qualified technical staff, including ammunition technical officers and handlers with experience in applying best international ammunition management and demilitarization practices, and who are familiar with sophisticated ammunition such as shaped charges, missiles, and other special ordnance.<sup>38</sup> MoDs also report problems with personnel retention and replacement. Technical knowledge and experience are often lost when the restructuring of national armed forces leads trained demilitarization, stockpile maintenance, and security personnel to find employment in the private sector.

## A REGIONAL APPROACH TO STOCKPILE MANAGEMENT CAPACITY BUILDING

As discussed above, it has proven difficult to operationalize a regional approach to ammunition demilitarization; however, SEE governments have expressed interest in—and have proven receptive to—a regional approach to stockpile management training. This section begins with a presentation of selected donor-funded training initiatives in SEE. It then focuses on a particular case to illustrate some of the difficulties, as well as important opportunities, associated with the building of sustainable capacity for stockpile management.

### Training

Several RASR Steering Committee members organize specialized—and regionally standardized—technical training sessions aimed at participants of SEE armed forces. The courses cover a wide array of issues, including the IATG, ammunition surveillance, handling, transport, and management, as well as demilitarization techniques and technologies.<sup>39</sup>

In 2012, for instance, ITF organized a course on the 'Physical Security and Stockpile Management of Arms, Ammunitions and Explosives' at TRZ Kragujevac, in Serbia. The two-week course, conducted in collaboration with Serbia's MoD, was primarily geared towards Serbian government representatives, but was also open to participants from BiH, Croatia, and Montenegro. In 2013 ITF organized a course entitled 'Ammunition Safety, Ammunition Stockpile Management and Ammunition Demilitarization Technology'. Also held at TRZ Kragujevac and open to representatives from the MoDs of BiH, Croatia, Macedonia, Serbia,<sup>40</sup> and Slovenia, the course focused on ammunition design, the safe storage and maintenance of ammunition, as well as dangers arising from inadequate stockpile management.

SEESAC supports and organizes a 'Regional Training Course on Stockpile Management', the last of which consisted of three five-day modules held in 2011 at the Faculty of Mechanical Engineering of the University of Sarajevo. The event gathered 58 members of the ministries of defence and interior from BiH, Croatia, Macedonia, Montenegro, and Serbia. Perhaps the most long-standing regional PSSM training course offered to representatives from RASR countries is the 'Physical Security and Stockpile Management Course' organized by RACVIAC. Since its launch in 2010, the course has been offered on an annual basis to about 125 representatives of RACVIAC member states, including employees of governmental organizations and agencies involved in the management of national stockpiles of small arms and conventional ammunition (RASR, n.d.b).

Donor-funded industrial demilitarization programmes also provide training. Project documents of the third NATO Partnership for Peace project in Albania, for instance, emphasize that NATO Maintenance and Supply Agency equipment supply contracts were to include the provision of training to Albanian equipment operators, including courses in business, logistics, technical supervision, management processes, and safety (NAMSA, 2009, p. 12; 2012).

Yet this form of training is limited in time and scope. In particular, such efforts address only specific aspects of stockpile management and surplus destruction. Personnel also tend to receive dedicated training on certain types of ammunition, leaving other (often more sophisticated) types of ammunition beyond their expertise.

**It can take years for trainees to become proficient in ammunition management and handling.**

### **Beyond training**

The impact of donor-funded stockpile management courses on the capacities and competencies of SEE armed forces is difficult to evaluate. After the courses, staff are often transferred or relocated to posts where their new skills are of little use. The courses, moreover, tend to be ad hoc, in the sense that they are held irregularly and infrequently. Ensuring that the most relevant people receive the training is a problem in some cases. Linguistic hurdles must also be overcome. Using full-time interpreters is expensive, yet knowledgeable staff often lack the necessary language skills. On the flip side, some individuals attend technical courses solely because of their language skills, rather than because their job requires the skills being taught.

Funding tends to limit the duration of the courses to a few weeks at most. Yet, as Priestley (2011, pp. 53–58) explains, it can take several months, and often years, for trainees to acquire a basic level of proficiency in many aspects of ammunition management and handling. Those who are familiar with or accustomed to handling munitions but acquired much of their professional knowledge 'in-house' may need to unlearn old practices before learning new ones that are consistent with regional and international standards.

There is also a tendency for donor-funded training to benefit mainly staff officers and high-level civilian ammunition experts and to overlook the basic training needs of personnel involved in depot management and physical security. Yet securing and transporting ammunition has considerable manpower requirements. Albania reported in 2011 that a total of 1,472 people, representing approximately 12.5 per cent of all AAF personnel, had been assigned to guarding depots (Albania, 2011, p. 4). The BiH MoD assigns approximately 200 soldiers to guard its ASS and WSS (EWG, 2010a; NATO, 2011). In 2011, Macedonia reported that a total of 115 army personnel were assigned to provide security to army warehouses (Macedonia, 2011).

For most RASR countries, stockpile reduction means disposing of surplus ammunition through sales, donations, and destruction, coupled with the sustained implementation of ammunition management processes, including:

- carrying out ammunition surveillance<sup>41</sup> and maintaining an inventory;
- transitioning to UN (and, where applicable, NATO) classification systems for ammunition and explosives;

- conducting consequence risk analysis and managing risk;<sup>42</sup>
- upgrading and refurbishing prospective storage depots; and, ultimately,
- replacing old and obsolete ammunition with new types of ammunition for new combat systems.

Each of these processes requires specific expertise. Stockpile management specialists increasingly understand that improving stockpile management competencies requires more than training (UNODA, 2015). Regional training seminars—although important—are too limited in their scope and duration to alter a host country’s stockpile management practices in a sustainable way. During the seventh RASR workshop,<sup>43</sup> there was broad agreement that training is most effective not when offered as a standalone solution, but when integrated into comprehensive capacity building measures that aim at long-term ownership, organizational reform, and the integration of international standards into existing national legislation, policy, and practices (Berman, 2014).

The following section describes an ongoing initiative in BiH that offers a possible template for building sustainable stockpile management capacity in the region.

### **The EUFOR Mobile Training Team 2.1.6.1**

Long-term capacity building requires long-term commitment. Yet few donor countries are willing to invest the human, material, and financial resources needed over several years to build comprehensive stockpile management capacity in any SEE country, let alone the region.



A participant is trained in firefighting skills during the Ammunition Transportation Safety Course held at Rajlovac, Sarajevo, Bosnia and Herzegovina, mid-2014.  
© Swiss Armed Forces

One exception is the Mobile Training Team 2.1.6.1, set up in 2011, led by Switzerland, and implemented in coordination with Austria and Sweden. The EU-led Operation EUFOR ALTHEA established MTTs to rebuild lost capacities of AF BiH personnel in various domains. MTT 2.1.6.1. coordinates training for, and oversees the equipment and infrastructure aspects of, the life-cycle management of weapons and ammunition. The MTT faces a series of challenges in BiH, including a high number of overloaded ammunition depots, transportation constraints, and the risks of explosion. Achieving project objectives is expected to take at least seven years.

The Small Arms Survey has requested access to interim reports and documents as part of an ongoing study of the project's rationale, inception, and activities, along with the obstacles it encountered and the solutions it found.

The MTT 2.1.6.1 rationale revolves around six key pillars of sustainable stockpile management capacity building:

1. **MTT courses address the needs of AF BiH** personnel working on different aspects of weapons and ammunition life-cycle management. Participants—officers as well as non-commissioned officers—include ammunition technical appointees for advanced ammunition handling and surveillance; facility protection and validation specialists (risk assessment); specialists in the transportation of dangerous goods; and data management specialists. All modules follow relevant international standards and can be adapted by the AF BiH to meet its future needs.
2. **MTT courses are progressively transferred** to the training and doctrine command of the AF BiH. The MTT's moderating, mentoring, and monitoring train-the-trainers approach means that every module it provides is taught at least three times with increasing responsibility and autonomy conferred on pre-selected AF BiH trainers. For the first course, the staff is composed of experts from the MTT's troop-contributing nations, namely Austria, Switzerland, and Sweden. Staff for the second course include MTT-mentored trainers from the AF BiH. The third course is fully organized and staffed by the AF BiH, which is asked to (i) integrate the modules in training and doctrine command's routine training curriculum, (ii) conduct the courses, and (iii) establish related regulations. Although the MTT does not certify participants, it grants a certificate of attendance; meanwhile, the AF BiH awards a national certification to participants once it is in charge of the course. At the end of the process, the AF BiH assumes full responsibility for the certification of its personnel.
3. **Coherence is ensured between training and equipment.** Since MTT trains the AF BiH to manage its stockpiles in accordance with international standards, associated material and equipment also need to meet such standards. The troop-contributing nations provide the AF BiH with necessary equipment, such as forklifts to move ammunition boxes around the depot. Perhaps the best example of the confluence of training and equipment is the refurbishment of the ASS in Krupa, where the MTT provides on-site training. In collaboration with the AF BiH, the site is being transformed into a model site<sup>44</sup>—that is, weapons and ammunition storage practices, depot infrastructure, and perimeter security are all being brought in line with international standards.
4. **Simultaneous reforms at strategic levels** address high-level aspects of ammunition life-cycle management. The building of stockpile management capacity presupposes wider institutional, structural, and organizational reforms of the AF BiH for long-term sustainability. Such reforms might involve, for instance, higher salaries to entice course participants to become instructors. In Bosnia, this reform process is coordinated by a strategic board, chaired by the BiH minister of defence, and a coordination body, led by the deputy chief of staff for resources. At the time of writing, the coordination body oversaw three working groups (including one on ASS Krupa) to address interrelated issues, including normative standardization, surveillance, record-keeping, training and certification, personnel allocation, and infrastructure.

Coherence between training supplied and available equipment is essential.



5. **Coordination with international PSSM partners** is necessary to support reforms to each host country's normative and institutional framework. Hence the strategy must be endorsed by the main international stakeholders, including the OSCE Mission in BiH, NATO headquarters in Sarajevo, the EU special representative, the US Embassy, and UNDP–BiH.
6. **The host nation must take ownership** of the project at an early stage. Among other things, this entails identifying and allocating key personnel to the courses; assessing the normative framework and identifying changes needed to bring it in line with international standards; anticipating human resource needs and allocating tasks; and clarifying the chain of command for stockpile management.

The MTT model seeks to combine a bottom–up approach (delivery of technical courses) with top–down reform initiatives (involving changes to force structure, a country's normative framework, and personnel allocation). While the project is still under way and final results are not yet in, the model appears to address many of the abovementioned gaps. To date, several courses have been handed over to training and doctrine command in Travnik. Challenges remain, but ultimately it is conceivable that AF BiH trainers could contribute to PSSM courses elsewhere in the region, with the MTT serving as a model that could assist other countries in need of stockpile management capacity building.

## CONCLUSION

The RASR initiative gathers representatives of ministries of defence and general staffs of Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, Serbia, and Slovenia to explore options for cooperation in the field of stockpile management, and particularly the management of surpluses. This chapter compiles surplus stockpile data provided, for the most part, by these states, and documents the evolution of surplus weapons and ammunition stockpiles in South-east Europe since 2008. More specifically, it seeks to identify the most promising means of building on the stockpile management and destruction efforts already undertaken in the nine RASR countries.

RASR has prompted more and more participating states to declare their levels of surplus ordnance, and especially large conventional ammunition. While most countries report decreasing surplus stockpile levels, the ongoing restructuring of SEE military organizations and the upgrading of small arms and light weapons in use by SEE armed forces are processes that add to national stockpiles, creating new surpluses. The creation of weapons and ammunition surpluses is normal for any country, yet in SEE it presents a continuing problem because the disposal process is politically sensitive. Despite examples of catastrophic accidents associated with surplus, and sometimes unsafe, ammunition, governments generally regard surplus stockpiles as having a high commercial value (if sold) and are reluctant to allocate the budgets required for demilitarization. For this and other reasons, surplus destruction tends to be slow.

The record of UEMS in the region—including during storage at private demilitarization plants—underlines the potential dangers of neglected surpluses. Donor-funded destruction and infrastructure refurbishment programmes are thus instrumental, and, in fact, currently the main driving force behind stockpile reduction. At the national level, such projects have helped to destroy surpluses, revamp infrastructure, and build capacity; however, synergies have proven difficult to create at the regional level, particularly in efforts to pool resources to optimize cross-border transport to facilitate destruction. A number of political, regulatory, and logistical hurdles still hinder regional cooperation in the field of ammunition demilitarization.

RASR workshop discussions have revealed disparities and shortfalls in expertise across SEE, specifically in the areas of stockpile safety and security. Technical knowledge and experience are often lost with the restructuring of armed forces and the consequent reassignment or loss of personnel, which thwarts sustainable capacity building. Critically, many soldiers assigned to guard duty at ammunition and weapons storage sites lack the basic training necessary for ensuring the adequate physical security of these sites.

Regional organizations acknowledge that this loss of know-how jeopardizes the sustainability of previous donor and host-country demilitarization and infrastructure investments; they are addressing the problem by funding and organizing regional technical training courses for national personnel. This new phase adopts a bottom-up approach, placing emphasis on personnel rather than on infrastructure. It also uses detailed and comprehensive curricula that integrate international standards and best practices into national legislative frameworks.

As practitioners acknowledge, however, technical training alone does not guarantee sustainability. Building stockpile management capacity over the long term presupposes wider institutional, structural, and organizational reforms. The ideal—but resource-intensive—solution may lie in combining technical courses with concurrent, top-down reforms that address national normative frameworks, force structures, and personnel allocation. BiH will prove an interesting test case in this regard. ■

## ABBREVIATIONS AND ACRONYMS

AAF	Albanian Armed Forces
AF BiH	Armed Forces of Bosnia and Herzegovina
ASS	Ammunition storage site
AUW	All-up weight
BiH	Bosnia and Herzegovina
CASM	Conventional ammunition stockpile management
EOD	Explosive ordnance disposal
EU	European Union
EUFOR	European Union Force
EXPLODE	Explosive Ordnance and Remnants of War Destruction
IATG	International Ammunition Technical Guidelines
MEICO	Military Export-Import State Company
MoD	Ministry of defence
MoI	Ministry of interior
MONDEM	Montenegro demilitarization
MTT	Mobile Training Team
NATO	North Atlantic Treaty Organization
NSPA	North Atlantic Treaty Organization Support Agency
OB/OD	Open burning/open detonation
OSCE	Organization for Security and Co-operation in Europe
PSSM	Physical security and stockpile management
RACVIAC	Regional Arms Control Verification and Implementation Assistance Centre
RASR	Regional Approach to Stockpile Reduction
SEE	South-east Europe
SEESAC	South Eastern and Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons

UEMS	Unplanned explosions at munitions sites
UNDP	United Nations Development Programme
UXO	Unexploded ordnance
WP	White phosphorus
WRA	Office of Weapons Removal and Abatement
WSS	Weapons storage site

## ENDNOTES

- 1 The Small Arms Survey defines UEMS as 'accidents that result in an explosion of abandoned, damaged, improperly stored, or properly stored stockpiles of munitions at a munitions site' (Berman and Reina, 2014, p. 3).
- 2 Kosovo attended the workshops as an observer. The designation of Kosovo is without prejudice to positions on status and is in line with UN Security Council Resolution 1244 and the relevant opinion of the International Court of Justice (UNSC, 1999; ICJ, 2010).
- 3 The four other members are the Regional Arms Control Verification and Implementation Assistance Centre (RACVIAC–Centre for Security Cooperation), ITF Enhancing Human Security, the NATO Support Agency (NSPA), and the South Eastern and Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons (SEESAC).
- 4 By 1991, the Serbian government had inherited an estimated 3.5 million Yugoslav small arms and light weapons (Griffiths, 2010, p. 184).
- 5 Small Arms Survey interview with Lt.-Col. Vukadin Tomašević, MoD, Podgorica, Montenegro, 6 July 2010.
- 6 These standards include those found in the *Manual of NATO Safety Principles for the Storage of Military Ammunition and Explosives*, International Ammunition Technical Guideline 02.20, and US Army's Ammunition and Explosives Safety Standards (NATO, 2010; UNODA, 2011b; USDA, 2011).
- 7 Owned by the company Vitex JSC, the plant is located in Gorni Lom, north-western Bulgaria.
- 8 This number excludes land mine-related deaths and injuries that have occurred on the Albania–Kosovo border.
- 9 The following RASR countries are NATO members: Albania (since 2009), Bulgaria (2004), Croatia (2009), Romania (2004), and Slovenia (2004).
- 10 See RASR (n.d.a).
- 11 Romania, for instance, only attended the seventh workshop. Kosovo attended some of the workshops as an observer.
- 12 Among these organizations were ITF Enhancing Human Security, the NSPA, the OSCE, RACVIAC, SEESAC, and the UN Development Programme.
- 13 In contrast, EUFOR advocated three prospective ASSs (EUFOR, 2014).
- 14 Confiscated, seized, and collected small arms, for instance, are distinct from 'surplus' and often fall within the responsibility of MoIs. See Lazarevic (2010) for a review of the disparate disposal policies in SEE for this category, which often include the absorption of these weapons into state arsenals and their reuse by state forces.
- 15 In 2006 Serbia was reportedly storing around 12,600 tonnes of ammunition in open-air facilities (statement by Serbian representative, third RASR workshop, Sarajevo, BiH, 3 November 2010). In mid-2011, the MoD declared that it had completed the removal of all ammunition from open-air storage areas (Serbia, 2011c, slides 7–8).
- 16 For propellants, the primary risk is autocatalytic decomposition, which has the potential to result in spontaneous ignition, leading to mass explosions in ammunition storage areas.
- 17 Physical security measures include controlled access and perimeter measures, such as fencing and external lighting, security guards, cameras, perimeter intruder detection systems, and any other measure designed to minimize the risk of illegal entry, which might result in the loss or diversion of weapons and ammunition.
- 18 The following conversions apply: 1 US ton=0.907 metric tonnes; 1 UK ton=1.016 metric tonnes.
- 19 Author correspondence with Alexander Savelyev and Gerhard Faustmann, OSCE, 6 November and 4 December 2014.
- 20 Statement by Montenegrin representative, third RASR workshop, Sarajevo, BiH, 3 November 2010.
- 21 The explosion took place during surplus ammunition disposal operations conducted by a private contractor hired by the Albanian MoD. See Carapic and Gobinet (2014, p. 3) and Lazarevic (2012).
- 22 Author correspondence with Ivana Krizanovic, Ministry of Defence, Croatia, 24 December 2014.
- 23 Author correspondence with David Towndrow, NSPA, 4 December 2014.
- 24 By comparison, BiH destroyed only 6,300 tonnes of surplus ammunition, mines, and explosives by combining OB/OD and industrial demilitarization over the same period (AF BiH AWE, 2014, slide 12).

- 25 Author briefing by BiH Ammunition, Weapons and Explosives (AWE) Task Force, Sarajevo, BiH, 16 September 2014.
- 26 For more on surplus sales, see Gobinet (2011) and Gobinet and Gramizzi (2011).
- 27 Ammunition that is donated is transferred free of charge or for a nominal fee, with someone paying the transport.
- 28 According to the media, the donated ammunition included 22 million 7.62 x 39 mm cartridges, 15,000 hand grenades, and 32,000 artillery shells of various calibres (IBNA, 2014).
- 29 Kula near Mrkonjić Grad, Krupa near Pazarić, Rabić near Derventa, and Teufik Buza near Visoko.
- 30 A joint ministerial statement issued in October 2010 endorses a regional approach to stockpile management but does not specifically mention RASR (SEDM, n.d.).
- 31 The Council is the successor to the Stability Pact for South Eastern Europe.
- 32 Government-owned ammunition is almost always controlled, accounted for, and secured during transport under instruments (1) and (2). Surplus munitions are subject to the Basel Convention in addition to instruments (1) and (2) only when they are categorized as 'waste'. However, most nations do not regard surplus munitions, even when destined for demilitarization, as waste. Some have specific explosive legislation dealing with final transport for disposal (Gobinet, 2013, p. 200; author correspondence with David Towndrow, NSPA, November 2014).
- 33 For the purposes of classification for transport, the UN hazard class and compatibility system assigns explosives to one of six hazard divisions depending on the type of hazard they present, and to one of 13 compatibility groups, which identify the kinds of explosives substances and articles that are deemed to be compatible for storage.
- 34 See Articles 70(1), 79(2), and 70(3) of the Defence Law (BiH, 2005).
- 35 Author briefing by Michael Aramanda, Sarajevo, BiH, September 2014.
- 36 Small Arms Survey correspondence with Macedonian EOD team leader, 17 September 2011.
- 37 A stockpile management training programme is reportedly being developed (Slovenia, 2014).
- 38 Such special ordnance includes the Grad, Šturm, Igla SA-18, OFAB-100, OFAB-250, S-8, cluster bombs, and ammunition containing white phosphorous (Macedonia, 2011, p. 3; EWG, 2010b, slide 12).
- 39 For the full array of courses as of November 2014, see RASR (n.d.b).
- 40 Representatives from the Serbian MoI attended the course as well (author correspondence with Blaz Mihelic, ITF, November 2014).
- 41 Ammunition surveillance is defined as a 'systematic method of evaluating the properties, characteristics and performance capabilities of ammunition throughout its life cycle in order to assess the reliability, safety and operational effectiveness of stocks and to provide data in support of life reassessment' (UNODA, 2011a).
- 42 See IATG risk reduction process levels (UNODA, 2012).
- 43 The workshop, held in Sofia from 12 to 15 May 2014, focused on RASR countries' training curricula in the field of stockpile management.
- 44 International organizations—and particularly the OSCE and SEESAC—are implementing infrastructure upgrades, including fencing and intruder detection systems. See Table 5.2.

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