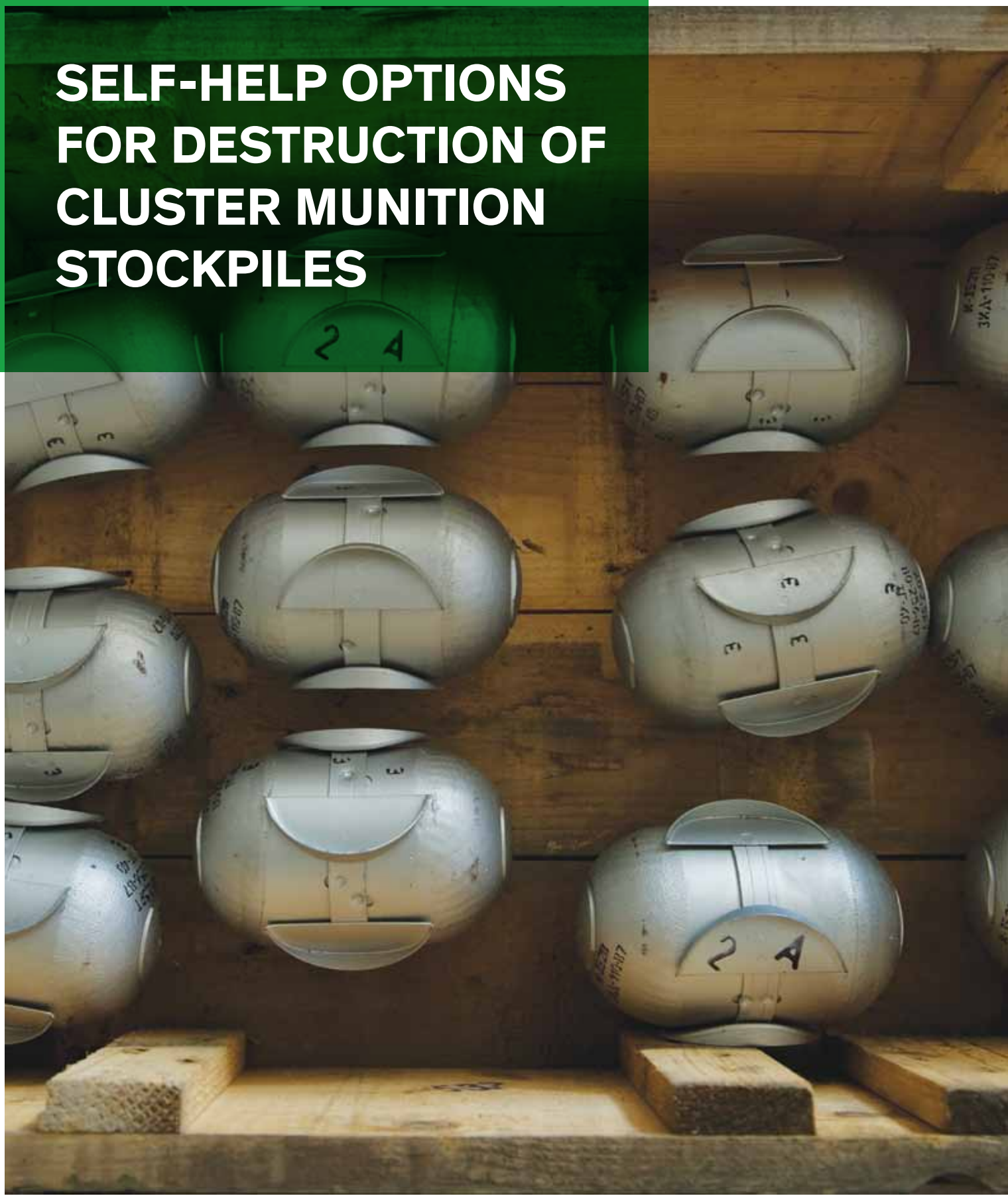
Norwegian People's Aid

SELF-HELP OPTIONS FOR DESTRUCTION OF CLUSTER MUNITION STOCKPILES



Norwegian People's Aid (NPA) is a humanitarian organization rooted in the Norwegian Labour Movement. With programmes in 36 countries worldwide, it supports people in their struggle for more power and influence over their own lives and in the development of their societies.

In the field of humanitarian mine action, NPA is currently operational in 15 countries affected by mines, cluster munitions and other explosive remnants of war. NPA played a significant role in the processes that led to the adoption of the Mine Ban Treaty in 1997 and the Convention on Cluster Munitions in 2008, by projecting empirical experiences from our fieldwork into our policy and advocacy work.

The CCM and Article 3

The Convention on Cluster Munitions (CCM) bans the use, production, stockpiling and transfer of cluster munitions.

Article 3 of the CCM obliges all States Parties to destroy **all stockpiles** of cluster munitions under their jurisdiction and control **as soon as possible** but no later than **eight years** after the Convention enters into force for the State Party.

The CCM also requires countries to clear affected areas, and includes groundbreaking provisions requiring assistance to victims and affected communities.

The CCM was negotiated and adopted in Dublin in May 2008, and opened for signature at a conference in Oslo in December the same year. It entered into force on 1 August 2010.

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Clarifications or corrections from all interested parties are welcome.

This report is dedicated to Maja; a very patient baby girl.

Self-Help Options for Destruction of Cluster Munition Stockpiles



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1.
INTRODUCTION: DESTROYING CLUSTER MUNITION STOCKPILES AND PREVENTING A HUMANITARIAN CRISIS

The Convention on Cluster Munitions (CCM) has entered into force. The aspiration of Norwegian People's Aid (NPA) is now to help states turn the life-saving potential of this treaty into reality.

NPA was closely involved in the Oslo Process to ban cluster munitions and aims to remain a catalyst for even more countries to join the CCM and to assist States Parties in implementing it. This is the basis for our current focus on the Convention's crucial Article 3, which obliges States Parties to destroy their stockpiles of cluster munitions.

The vast majority of the world's cluster munitions have never been used, so most of the cluster munition problem is still in stock. At least 87 countries have stockpiled cluster munitions, with an estimated total of several billion submunitions, according to HRW.[1] If the proliferation and use of these weapons were allowed to continue, the result could have been tens of millions of lethal submunition duds and a humanitarian crisis even worse than the plague caused by landmines. Destruction of stockpiles of cluster munitions is about preventing this crisis at its source!

The only way to be sure that no cluster munitions are ever used again is to ensure destruction of each and every cluster munition in stock. This preventive action will systematically and definitively ensure that no more unexploded submunitions contaminate our land, and save innumerable and unnamed children and adults from being maimed or killed. In terms of numbers of lives potentially saved, the CCM could be of even greater significance than the Mine Ban Treaty, because of the enormous volume of the stockpiles it affects. This is why immediate and speedy global implementation of Article 3 is essential.

During the Oslo Process an unduly pessimistic emphasis was, in NPA's view, placed on the complexity and cost of the de struction of cluster munition stockpiles, and the need for industrial solutions to destroy stockpiles was exaggerated. This has caused some states, particularly in the developing part of the world, to be concerned about the obligation under Article 3 of the CCM to destroy cluster munition stockpiles, fearing that this would be too burdensome and costly for them. Some countries even consider the obligation to destroy stockpiles an obstacle to signing or ratifying the Convention.

It was to address these concerns that NPA became involved in the field of cluster munition stockpile destruction. Through a programme adopted under the name Self-Help Ammunition Destruction Options Worldwide (SHADOW) we provide expert assistance to lower-economy countries requiring support in the destruction of their cluster munition stockpiles.

It is very important that countries without industrial destruction capacities and with limited stockpiles see practical examples demonstrating that it is possible for a country to destroy its stockpile of cluster munitions; that it can be done in a relatively short time; that it can be relatively simple and affordable; and that there is donor interest to support them in this task.

The purpose of this report is to explain to interested stockpiling nations and donor nations that destruction of cluster munition stockpiles – although more technically demanding than the destruction of most landmine stockpiles – is a perfectly feasible task for all states, no matter what their level of industrial development.

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1. Hiznay M, Human Rights Watch: "Survey of Cluster Munitions Produced and Stockpiled. Briefing Paper Prepared for the ICRC Experts Meeting on Cluster Munitions." April 2007. (http://www.hrw.org/legacy/backgrounder/arms/cluster0407/)

2.
BOTH INDUSTRIAL AND SELF-HELP OPTIONS ARE NEEDED

If all States Parties to the CCM are to be successful in destroying their stockpiles in time, then both industrial destruction facilities and complementary small-scale self-help stockpile destruction projects are necessary.

Commercial demilitarization plants that destroy cluster munition stockpiles on an industrial level exist in several developed countries. For many states with stockpiles of cluster munitions, the established industrial destruction facilities are an appropriate recourse. If they do not have such facilities in-country, they would need to arrange for transfer of the stocks to a receptive state in which the stockpile destruction can be carried out. The CCM allows States Parties to carry out such transfers of stockpiles of cluster munitions to another State Party for the purpose of destruction.

Destroying the total of all current and future States Parties' stockpiles is an enormous task. In contrast, time, resources and funding are limited. While the wealthier nations are likely to enlist the services of existing industrial destruction providers, these may be beyond the reach of lower-economy countries. They may not afford to engage them, and they may have difficulty attracting the necessary donor funding. Without doubt there will be many calls on donor funds available under the cooperation and assistance framework of the CCM, making it imperative that resources are used wisely.

Even if the funding is forthcoming, a stockpiling nation may find itself unable to benefit from the industrial option. For instance, the condition of its stockpile of cluster munitions may be such that it is unsafe to transport. There may also be large logistical, security or legal challenges involved in transporting the cluster munitions, particularly across borders. Transportation challenges, especially if the cluster munition stockpiles are in dispersed, remote, hard to get to locations, can be a major obstacle to a country's ability to utilize industrial destruction facilities.

In addition, the existing capacity of the industrial destruction facilities is of course not unlimited, and it can be expected that their focus will be on the stockpiles of the larger stockpilers.

In any event, shipping companies or industrial destruction facilities may be reluctant or unable to transport and process stockpiles that have been stored inappropriately or for other reasons are in an unstable condition. Abandoned stockpiles, which may be a problem in some countries, will not be a suitable task for industrial facilities. Industrial destruction facilities are also unlikely to take on small stockpiles that would not be cost-effective. Finally, they may find it uneconomical to develop a new industrial production line for destruction of an unusual type of cluster munition stockpile which only exists in small numbers.

If the industrial option is not within reach or appropriate, a country facing the eight year deadline in the CCM will have little choice but to consider local destruction. However, attempting this without the required expertise or capacity could prove disastrous. The destruction of cluster munitions is significantly more challenging than the destruction of most landmines and must not be underestimated.

The situations described above illustrate why it is unrealistic to assume that all cluster munition stockpiles will be handled through established industrial destruction facilities. There is a clear need for expert-assisted national self-help options that can deal with smaller stockpiles, unusual types, or weapons that are in an unstable condition.

3. STOCKPILE DESTRUCTION METHODS

Destruction of cluster munition stockpiles commonly involves methods falling under the following two generic headings.

- **Disassembly, in which the weapon is broken down into separate components or sub-assemblies. Disassembly can be done manually and/or mechanically assisted:**
  - o Manual disassembly is carried out by hand and/or with basic handheld tools.[2]
  - o Mechanically assisted disassembly is carried out with purpose-built or adapted machinery.[3] Some processes can be fully automated using robotic and remotely controlled machines.
- **Demolition, in which the energetic material (high explosive, propellant and pyrotechnic) is consumed by either:**
  - o Open burning (OB);
  - o Open detonation (OD);
  - o Controlled incineration; or
  - o Contained detonation.

In most cases, in both the SHADOW programme and industrial solutions, stockpile destruction of cluster munitions involves elements of both disassembly and demolition. For example, disassembly could be employed to open a cluster munition canister, extract the submunitions and separate the components of each submunition, before the separated explosive items are demolished.

Demolition considerations

Demolition is usually the fastest and cheapest means of weapon disposal, allowing for multiple weapons to be demolished simultaneously ('bulk demolition'). Whilst demolition can be a very practical method, there are a number of potential problems.

Cluster munitions are notoriously difficult to destroy by detonation. The tendency is for submunitions to be 'kicked out', often some distance from the demolition site. In the process of a 'kick-out' the submunition experiences extreme forces, which have unpredictable consequences. In some cases, submunitions may become fully armed or left in a highly sensitive state, risking widespread contamination of the site with hazardous duds. Such a situation requires the same demanding level of clearance as a post-conflict battlefield.

Secondly, demolition can have a detrimental environmental impact. OB/OD as methods will have greater environmental impacts than controlled incineration and contained detonation. As discussed in Section 13, however, many variables need to be taken into account when assessing the total environmental impact of the various stockpile destruction options, including the carbon footprint of transportation. In appropriate circumstances, OB/OD can still be an environmentally responsible stockpile destruction method, particularly for small-scale stockpile destruction.[4]

Thirdly, detonation shatters and disperses much of the casing material, making the separation and recovery of potentially valuable components far more difficult.

Where a disassembly process to remove the submunitions from the cluster munition canister is possible, this makes successful detonation substantially easier. Taking the additional step of defuzing the submunitions before demolition not only eliminates much of the residual hazard, but also exposes the high explosive filling, further increasing the likelihood of complete detonation.

In some cases however, the only option is to destroy complete cluster munitions (with the submunitions intact inside) using OD. This may, for instance, be the case when the stockpiled weapons are in poor condition and unfit to transport and disassemble. Although technically difficult, safe OD of complete cluster munitions is achievable; however, as with all other stockpile destruction methods it is a highly specialist operation.

Burning

Disassembly may offer the option of burning to be employed as a method of destroying the energetic material within cluster munitions. Although burning also has potential environmental impact, there are a number of potential benefits. These include avoidance of the noise and shock involved in detonation, eliminating the need for high explosive demolition charges, minimising metallic ground contamination, and vastly improving the retention and condition of scrap metal. It also offers a more reliable method to account for items following demolition. Burning of submunitions normally requires removal of the fuze and all primary explosive and exposure of the warhead's main explosive filling.

2. For example, the Russian RBK-250 cluster bomb canister can be opened by manual disassembly by removing the tail assembly; some processes (such as unscrewing nuts) are easily achieved using hand-held tools (including power tools).
3. Special machinery is needed, for example, to open the casing of most artillery projectiles containing submunitions of the type Dual Purpose Improved Conventional Munitions (DPICM).
4. See Section 13 for more information about mitigation measures that can be implemented to further increase the environmental acceptability of OB/OD.

4. SHADOW

"Self-Help Ammunition Destruction Options Worldwide" (SHADOW) is an NPA programme that provides expert assistance to lower-economy nations seeking non-industrial solutions in fulfilling their obligation to destroy cluster munition stockpiles under the CCM.

SHADOW was developed on the basis of studies carried out in 2008-2009 by C King Associates Ltd and NPA, with assistance from Golden West Humanitarian Foundation (GWHF). The studies were initiated because a clear need was identified for safe, practical and cost-effective solutions for local/national small-scale cluster munition stockpile destruction.

NPA has expanded into this field of operations in partnership with the best expertise available; this includes technical specialists Colin King from C King Associates Ltd and Len Austin from GWHF, along with process and quality management specialist David Hewitson and the environmental adviser Henry Thompson. The combination of NPA staff and consultants has brought an exceptional level of proven global experience and knowledge to be used in the programme development and management.

The SHADOW approach is particularly suitable for smaller or unusual stockpiles of cluster munitions, or cluster munitions which, for any reason, are considered unsafe for transportation or unsuitable for industrial processing. Lower-economy nations are the most likely candidates for SHADOW projects; however, they may also be appropriate for other nations under some circumstances (such as small stockpiles or unusual weapons). There is no intention - or indeed capability - to "compete" with industrial organizations. The global situation indicates that both options are needed.

SHADOW projects can be tailored to the needs of the client, ranging from a purely advisory role to a fully managed "turnkey" package. Each project is country-specific, and modified to take account of the host nation's cluster munition types, the available resources and – importantly – individual preferences.

The first country project was implemented in Moldova in 2010. It both proved SHADOW as a concept that can be implemented virtually anywhere and helped to refine the approach.

SHADOW key features

- In-country solution;
- Help for self-help;
- National ownership;
- Capacity-building;
- Local employment and investment;
- Minimal facilities required;
- Minimal transportation;
- Expert technical advice, training and implementation support
- Simple, practical, low-tech solutions;
- Possibilities for local recycling and re-use;
- Environmentally accountable and managed to minimise negative impacts;
- Safe;
- Fast;
- Affordable;
- Facilitates transparent reporting under the CCM.

Verification and Feasibility Assessments

The SHADOW Programme is available to carry out Verification and Feasibility Assessment missions in potential partner countries. These missions can be undertaken at no cost to the host nation, with framework funding from the Norwegian Ministry of Foreign Affairs.

The purpose of a Verification and Feasibility Assessment is to identify the cluster munition types and submunition payloads in storage, assess their condition, consider alternatives for stockpile destruction methods, confirm whether a self-help approach is suitable, and – if appropriate – construct an outline plan. Assessment of environmental impacts is an integral component of this phase.

Following the Verification and Feasibility Assessment, NPA will outline available stockpile destruction options to the National Authority. If agreement is reached between the National Authority and NPA, a project proposal is written and efforts to attract the required donor funding are started.

Phases in a country project

Most SHADOW projects will involve the following 7 phases:

1. Verification and Feasibility Assessment;
2. Research and Development (R&D);
3. Detailed planning and preparation;
4. Set-up of Ammunition Processing Building and logistics;
5. Operator training;
6. Implementation of the stockpile destruction operation;
7. Reporting and project closure.

5.
SIMPLE SOLUTIONS TO COMPLEX CHALLENGES

SHADOW provides simple solutions to complex challenges, but the process behind these solutions is highly technical.

The complex characteristics of cluster munitions make them difficult to demolish and potentially dangerous to disassemble. In both cases the processes are far more technically demanding than for landmines. The consequences of an accident could also be far more serious, since multiple warheads, fragmentation and shaped charges are generally involved. Each type of cluster munition requires a unique approach based on an intimate knowledge of its design, and the evolution of specialist procedures within a robust quality management system.

No attempt should ever be made to disassemble a cluster munition unless the appropriate knowledge, expertise and equipment are available.

SHADOW provides simple, practical, low-tech solutions to complex technical challenges - always with the highest regard to safety. With SHADOW solutions stockpile destruction of most types of cluster munitions can be achieved quickly, with minimal facilities and employing everyday tools, and with minimal training.

It must be emphasized however, that these solutions are arrived at only after experienced SHADOW staff and consultants have carried out specialist technical assessment on each type of cluster munition and submunition in a country's stocks. This R&D phase will normally include:

- opening of sample cluster munitions and extraction of submunitions;
- disassembly of sample submunitions for detailed characterisation;
- development of manual and/or mechanically assisted disassembly options;
- trials to optimise the detonation and burning options; and
- establishment of likely environmental impact, and mitigation options.

This R&D establishes the minimum level of resources and activity required to get the job done safely. A practical stockpile destruction technique is developed for each type of cluster munition and submunition which is then refined into a cost-efficient process. Standard Operating Procedures (SOPs) are then developed within a quality management system.

The R&D is also required for several elements of Phase 3 (Planning and preparation) in a country project, such as the compilation of the tools and equipment list and patterns for fabrication of any special tools. It also forms the basis for the development of the training plan used in phase 5 (Training). During the R&D phase some examples of each type of submunition are also rendered free from explosives (FFE) to create inert training aids.

It is worth noting that the R&D phase in each new country project not only benefits the host nation, but also builds experience which can be applied to other countries with similar stockpiles. As the SHADOW Programme is implemented in more countries, R&D will continue with investigations into more unusual or problematic weapons and on more advanced stockpile destruction techniques

6. DISASSEMBLY

In the SHADOW approach to stockpile destruction the recommendation is to maximise the disassembly of cluster munitions, as far as is safe and efficient, before the demolition stage of the process.

Wherever possible each cluster munition canister is opened and the submunitions extracted. The submunitions are also disassembled into separate components or sub-assemblies – to the extent possible while maintaining safety for the workers. This has a number of advantages:

- It enhances recycling and re-use of metals and components.[5]
- It exposes explosive components and thus makes subsequent demolition easier and safer;
- It minimizes the material and explosives subjected to demolition, thus minimizing contamination.
- It minimizes the amount of explosive donor charges needed for demolition.
- It minimizes the requirement for detonation per se, thus avoiding the involved noise, shock and soil erosion.
- It allows for burning to be employed as a demolition method for submunitions instead of detonation, which in turn carries with it a number of the same advantages as listed above.[6] Burning also offers a more reliable method to account for items following demolition than detonation.

However, it is important to understand that not everything is suitable for disassembly in a self-help project. Recourse to detonation of complete submunitions may be necessary for some particularly complex and dangerous types (for example, those with an always-acting fuze[7]), or where the ammunition is in poor condition.

5. See Section 7 for more information on recycling and re-use.

6. For more information on burning, see Section 3.

7. One of the primary objectives of the R&D phase in the Moldova project was to evolve simple, practical processes to remove submunition fuzes, thereby exposing the explosive filling in order to make subsequent demolition simple and safe. This was achieved with four out of the five submunition types in the Moldovan stockpile, the exception being the AO-2.5RT. A number of these submunitions were also disassembled and defused by the SHADOW experts; however, the process was considered too delicate – and therefore dangerous - for inclusion in a self-help destruction project.

Self-Help Options for Destruction of Cluster Munition Stockpiles

7. RECYCLING AND RE-USE

A guiding principle in the SHADOW approach is to salvage all available value from the destruction process.

NPA will make recommendations as to the available and preferable recycling or re-use options; it will then be up to the National Authority to decide if, or to what extent, these measures will be adopted.

The most obvious course of action is to salvage the scrap metal resulting from disassembly of cluster munitions. In addition to the metals in the cluster munition canisters and submunition bodies themselves, there are other potentially valuable materials which may be recoverable, such as the copper used in shaped charges. The salvaged value can be recycled by the National Authority itself, or for instance given to local communities that can earn some income from it.

The emphasis on disassembly in the self-help projects also offers the real possibility of component re-use which is environmentally friendly, beneficial to the local community and potentially profitable. This brings the prospect of partnerships with local businesses, or even the generation of new enterprises built specifically around the re-use of by-products of the stockpile destruction.

The relatively small warheads used in submunitions result in a high ratio of metal to explosive content, making the complete extraction of explosives impractical and inefficient in most cases.[8] However, the shaped charges used in the small submunitions known as 'Dual-Purpose Improved Conventional Munitions' (DPICM) and other anti-armour submunitions such as the Soviet PTAB submunitions that were in the Moldovan stockpiles, have several other potential non-hostile uses. They are well suited to specialist demolition applications, and could be used by both deminers and the military. Additionally, small shaped charges are used in large quantities for engineering applications, such as lowering harbour floors or oil and gas exploration.

The shaped charges in some PTAB submunitions for example, can be salvaged using minor disassembly operations and require minimal modification for their new role. They could be used in the demolition of other cluster munitions, donated to demining programs, or potentially sold for use in commercial demolition applications.

8. For example, an M77 DPICM contains just 33 g of explosive, completely encapsulated in a steel and copper casing of approximately 200 g, just 58 mm long and 38 mm in diameter.

8. TRAINING AND CAPACITY BUILDING

The majority of the workforce in a national self-help cluster munition stockpile destruction project can be recruited and trained locally, particularly where deminers or military personnel are available, with some knowledge of ammunition.

One of the objectives of NPA's self-help approach to cluster munition stockpile destruction is local capacity building at all levels of the project structure. Through a logical process of training and implementation, the technical capacity of the staff is built or further developed. The training is adapted to the resource situation of the host nation. Some countries may have very capable technical personnel that only require introduction to new approaches, whilst in other countries more basic training will be necessary. The training plan is developed based on the experience gained during the R&D phase and taking into account the expected capabilities of the workforce.

The training plan includes:

- Site Management:
- Safety and the Medical Emergency Response Plan (MERP);
- Quality awareness;
- Specific technical procedural training.

Depending on the needs of the host country, "bolt on" training is also possible in various fields such as medical support and project management.

Training is given with the E.D.I.P concept (Explanation/ Demonstration/Imitation/Practice).

People are the most important input to the ammunition management process. It is essential that they be entirely competent to carry out their roles within the project. The National Authority is provided in advance with details of the sort of previous experience and qualifications which would be suitable for the various positions within the project team. Prior to and during training, reviews of progress are carried out to assess the effectiveness and appropriateness of the training and the competence of individual team members. At the end of the training phase the intended roles of the various team members are confirmed, based on their performance during training. For each key job function a list of authorised individuals is produced specifying exactly who is allowed to perform which roles within the team.

Opportunities to provide on-the-job training through shadowing of international specialists, followed by operation under supervision and subsequent qualification, are taken wherever appropriate.

The development of the host nation's capacity in relation to cluster munition stockpile destruction also helps the learnt skills base to be applied in broader issues of stockpile destruction when dealing with other types of legacy weapons as they become unusable and/or redundant.

After having acquired the necessary experience in cluster munition stockpile destruction, a host nation can also make the personnel involved available to assist other countries in destroying similar types of old munitions that are currently stockpiled and that pose a significant explosive risk. The workforce from the Moldovan National Army could for instance assist in new country projects in Russian-speaking countries within the region.

9. THE MOLDOVA SELF-HELP PROJECT

The first national self-help project for destruction of cluster munition stockpiles developed with expert assistance from NPA's SHADOW Programme, took place in the Republic of Moldova in 2010. The implementation phase of the project resulted in the successful destruction of the country's stockpile of cluster bombs in just 17 days.

Moldova was an active participant from the very beginning of the Oslo Process to ban cluster munitions. It was among the first countries to sign the CCM and also one of the first 30 ratifying nations that helped trigger its entry into force.

Moldova completed destruction of its last cluster munit-ions on 29 July 2010, and thus became one of the first countries in the world to meet its destruction obligation under Article 3 of the CCM – even before the Convention had entered into force9 .

Moldova must be commended for the drive and regional and international leadership it has exhibited with respect to the CCM in general and the Convention's Article 3 in particular. It is NPA's hope that Moldova's experience will motivate other countries to start now with the planning and implementation of the destruction of their cluster munition stocks.

Key facts about the Moldova self-help project

Cluster munition stockpile covered by the project[10]: 78 Soviet manufactured air-dropped cluster bombs of the RBK series, containing a total of 6,348 submunitions of five different types.[11]

Verification and Feasibility Assessment: October 2009
R&D: December 2009
Training: May 2010
Implementation: May-June 2010
Workforce: 30 members of the National Army
Project cost: € 73,219.20

The Republic of Moldova is the poorest country in Europe in terms of its GDP.[12] Nevertheless, the country took complete ownership of their cluster munition problem and its solution.

In becoming an independent state after the collapse of the Soviet Union, Moldova had "inherited" a stockpile of cluster munitions and other ammunition, along with an old ammunition storage system and no resources to upgrade it. Despite the challenges ahead, Moldova took the brave step of being transparent about its stockpile of cluster munitions, seeking assistance and starting destruction.[13]

The Moldovan self-help project was a partnership between the Moldovan Ministry of Defence (MoD), the OSCE mission in Moldova and NPA, with funding from Spain via OSCE and Norway.

The project was designed by NPA in cooperation with the MoD in Moldova. Within the host nation's constraints and capabilities, the MoD decided that the SHADOW project would comprise the disassembly stage of the stockpile destruction process, whilst the demolition stage would be entirely under the independent control and responsibility of the MoD and the National Army.[14]

The National Army of Moldova carried out the disassembly operation with 30 members of its own staff, trained and supervised by the experts from NPA's SHADOW Programme and working according to the Operational Management System and SOPs developed for the project.

In addition to the in-kind contribution of the workforce for the actual operation, the National Army provided logistics, operational vehicles (trucks, crane, and ambulance) and the human resources necessary to ensure work security and medical support.

9. *The CCM entered into force on 1 August 2010.*
10. *In their cluster munition stocks, Moldova originally had air-delivered cluster bombs, 220-mm rocket projectiles and 152 mm artillery projectiles – all of Soviet design. The National Army had already destroyed its 473 rocket projectiles of the type 9M27K in 2006. The 834 artillery projectiles were destroyed by open detonation by the National Army in an independent process in 2010, as part of a national project of expired ammunition destruction. This process was finished on 29 July 2010. It was the 78 aviation cluster bombs that Moldova approached NPA about, because of a lack of financial resources and expertise for their destruction.*
11. *16 × RBK-500 containing 60 × AO-2.5RT submunitions*
    8 × RBK-500-255 containing 30 × PTAB10-5 submunitions
    16 × RBK-500-255 containing 60 × PTAB 2.5 submunitions
    14 × RBK-250 containing 42 × PTAB 2.5M submunitions
    24 × RBK-250-275 containing 150 × AO-1SCh submunitions.
12. *http://www.europarl.europa.eu/sides/getDoc.do?language=EN&type=IM-PRESS&reference=20090403STO53395*
13. *NPA presented the concept of small-scale national destruction projects at the Berlin Conference on the Destruction of Cluster munitions (25-26 June 2009); Moldova was among a small number of delegations that approached NPA to explore the possibility of a cooperative approach. At the Berlin Conference the Moldovan delegation also made a statement about its cluster munition stockpile and its willingness to start destruction:*
    "As a participant and active supporter of the Oslo process and in accordance with the Convention provisions, RM would wish to be among the first countries to report on the full completion of the art. 3 Para 2 and is ready, with an appropriate financial assistance, to proceed to an early destruction of all its stockpiles with no any plans to produce or to acquire them in the future. This task does not seem too convoluted since our stockpiles of CM are relatively insignificant. The National Army has never used its cluster munitions and does not plan to enlarge, to modernize or to produce them whatsoever." *(Statement by Mr Emil Druc, Deputy Head of the MCD, MFA).*
14. *The release of items to the National Army demolition team constituted final handover from the project process. The Operational Management System of the SHADOW project included a procedure to ensure that all items requiring demolition were handled in such a way that they had undergone detonation or burning as appropriate and that the demolition of all items was properly recorded.*

Self-Help Options for Destruction of Cluster Munition Stockpiles

10. SITE MANAGEMENT AND THE PROCESS SEQUENCE

A well laid-out and managed work site is an essential feature of SHADOW projects, facilitating safe, controlled and traceable processing of munitions.

In NPA-assisted self-help projects for destruction of cluster munition stockpiles partner countries must be prepared to identify a suitable location for an Ammunition Processing Building (APB). Minimal facilities are required, subject to local weather and geographical conditions. An APB can be set up in tents or even on open ground, if required.

In Moldova, a building was provided at the Bulboaca Military Training Base outside the capital of Chisinau. The building was an empty shell, but with enough space for the various planned activities. As a part of the project and with funding from OSCE, the building was renovated and set-up to become the APB.

As will be the case in all country projects, the planning of the layout of the APB in Moldova was an important task.

Site management has important safety, efficiency and quality implications. It is an important element in the Operational Management System (OMS) provided by NPA.[15]

The APB in Moldova was divided into six operational zones located in three colour-coded areas – a green area, a yellow area and a red area. Each zone was associated with a key stage in the process sequence. Floor markings to reflect the various zone colours and boundaries, as well as signs and wire barriers were used to provide a clear visual picture of the process flow through the building. The workforce consisted of three teams; a green team, a yellow team and a red team. All members of the respective teams wore colour-coded t-shirts. The layout of the APB in Moldova can be seen in the Site Management Diagram in figure i.

15. *See Section 11 for more information about the OMS.*

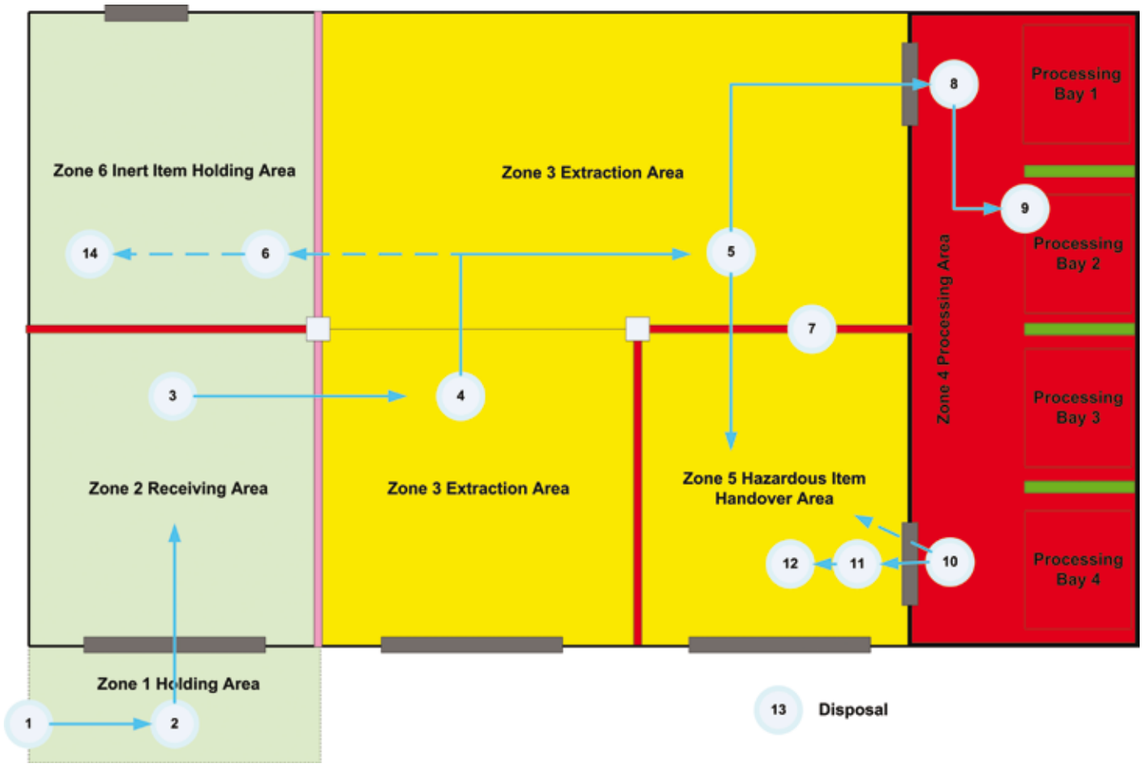

Figure i: Site Management Diagram

The colour coded site layout system allows devices to be processed as though along a factory production line while ensuring:

- that only qualified personnel operate in the vicinity of hazardous items during potentially hazardous activities;
- that there is adequate safety separation or protection between potentially hazardous activities and other parts of the working site,
- that there is no risk of mixing up processed and unprocessed items at any stage in the process,
- that there is no risk of mixing up potentially hazardous items with non-hazardous items; and
- that all activities are properly documented.

Process sequence

The process sequence for the cluster munition stockpile destruction in Moldova was managed through the series of the six colour-coded physical zones within the APB, as illustrated in figure i. The progress of a munition was carefully tracked through the system from initial receipt until final handover. The process sequence was as follows:

- In Zone 1 and 2 in the Green Area the assigned staff received the cluster bombs, inspected them to ensure that they were the expected type of devices and that they were in the condition expected by the project.
- In Zone 3 in the Yellow Area the assigned staff dealt with extraction of submunitions.
- Zone 4 was the Red Area where submunitions were disassembled.
- Zone 5 in the Yellow Area was where fully processed submunitions, fuses and other critical components containing explosives were stored until they were signed for by an authorised representative of the Moldovan Army, and taken away for final demolition.
- Zone 6 in the Green Area was where inert items (such as empty canisters and tail fins) were stored until they were signed for and taken away for final disposal.

Zone Team Leaders were responsible for their zones and ensuring that they had the correct tools available prior to starting work and that the working environment remained acceptable – dealing with puddles following rain in areas where submunitions would be carried for instance.

The Red Area was where the actual disassembly of submunitions took place. When the Red Zone Team Leader was satisfied that the zone was Ready In All Respects (RIAR) for processing the submunitions, the entry and exit doors would be shut and processing could start. When the Red Zone Team Leader was satisfied that all submunitions had been processed and that the correct number of submunitions and fuses were seen in the disposal boxes, Red Zone operations would cease, the exit door would be opened and Red Team members would carry the disposal boxes and fuse boxes to Zone 5 to await transfer to authorised external authorities.

Identification and traceability

All items coming into the project system were identified using a unique batch number and carefully tracked through the process. The batch number was physically written on the outside of canisters as they were accepted into the project. Traceability was achieved by associating the batch number with the canister and its submunitions throughout the process until the final destruction certificate was issued. All items received into the project accounting system were also marked with a spray of white paint so that it was easy to check visually the compliance of any item with the system.

A register was maintained in each Zone recording the items received from the previous stage in the system and confirming the total number of items handed over to the next Zone. Items which had undergone full processing were marked with yellow paint if they contained hazardous material (submunitions, fuses) and blue paint if they were inert (canisters, tail units).

Throughout the process it was possible to identify and trace all critical components. This ensured that if any item were unaccounted for it would be possible to identify immediately that it was missing and identify exactly where it had gone missing, so aiding in any response.

The process sequence through the green, yellow and red areas is visualised on pages 18-21.

GREEN AREA ACTIVITY

Bombs off-loaded into Zone 1

Crate opened; bomb type confirmed

Nose plug removed; fuze well checked

Designation marked and recorded

Accepted into QA-system

Moved into Zone 2 holding area

YELLOW AREA ACTIVITY

Move to yellow zone and check documents

Remove tail assembly

Remove submunitions

Submunitions packed into crates

Submunitions marked with white paint

Documentation compleated and crates marked

RED AREA ACTIVITY

Move to red zone and check documents

Crates positioned; protective equipment checked

Submunition fixed into vice

Components separated according to SOP

Explosive items packed into crates

Inert items separated into crates

YELLOW AREA ACTIVITY

Crates moved to yellow zone

Explosive items marked with yellow

Inert items marked with blue paint

Inert items moved to green Zone 6

Explosive items signed over to demolition team

Explosive items removed to demolition area

11. OPERATIONAL MANAGEMENT SYSTEM

NPA's self-help projects for destruction of cluster munition stockpiles incorporate a comprehensive, effective and achievable Operational Management System (OMS).

NPA is committed to the highest standards of safety and quality for both the intended beneficiaries of its work and the professionals that undertake operations in its programmes. Applicable standards and standard operating procedures (SOPs) will be strictly applied to all its actions in addressing cluster munition stockpiles.

The OMS provided by NPA for destruction of cluster munition stockpiles exhibits many of the basic principles found in a formal ISO 9000 quality management system. It is tailored to each country project and encompasses all technical, safety and quality critical aspects. Rather than having stand alone Quality Assurance Procedures the SHADOW Programme has captured the major principles of quality management where they are relevant within the primary operational procedures.

Procedures

A detailed, but straightforward set of procedures is developed for each country project encompassing the technical, safety and quality requirements of the project:

P1 Personnel
Objective: To ensure that all personnel are competent to carry out their job functions in compliance with all applicable technical, safety and quality standards.

P2 Site management
Objective: To ensure that appropriate safety coordination, including separation of potentially hazardous items, and quality management, including separation of processed and unprocessed items, is maintained at all operational sites.[16]

P3 Records and document management
Objective: To ensure that only the current issue version of any plan, procedure or form is available at the point of use[17]; that all records and reports are complete, legible and accurate; and that all documents are stored and backed up appropriately.

P4 Permission to work
Objective: To ensure that operations only take place when all required preparations are complete and all pre-working checks have been satisfactorily completed; that work stops at any time when there is any doubt about the preparedness of the organisation to carry out operations safely and reliably; and that any non-conformances are identified and managed to maintain the quality of the project and to minimise the likelihood of re-occurrence.

P5 Technical procedure for the extraction of submunitions from cluster bomb canister units
Objective: The safe and controlled removal of all cluster bomb submunitions from within the cluster bomb canister.

P6 Technical procedures for the processing of the different submunitions
Objective: The safe, controlled and traceable processing of all submunitions following their removal from the cluster bomb canisters.

P7 Demolition
Objective: To ensure that all items requiring demolition are handled in such a way that they have all undergone detonation or burning as appropriate and that the disposal of all items is properly recorded.

P8 Transfer
Objective: To ensure that every item of hardware resulting from the project process, including scrap, inert items for re-use and hazardous items for re-use are released from the project in a controlled and documented manner.

Records

Records are maintained for all aspects of the system including Personnel Training Record and Authorizations; Risk Assessments; Permission to Work; Receipt of items into the system; Extraction of submunitions; Processing of submunitions; Final destruction; Non-Conformances and Internal Quality Inspections. The project records are of the utmost value; they represent the only hard evidence that a government has complied with its obligations under the CCM.

Internal audit and control of non-conforming product

Internal inspections are carried out on an on-going basis. Any instance of an item or event being non-conforming (that is it does not comply with some aspect of the operational, safety or quality system) is managed through a formal non-conformance process. The non-conformance is detailed, the required corrective action is agreed with the appropriate supervisor or worker, and a confirmation check is carried out once the corrective action has been completed. All non-conformance procedures are documented and retained in the project records.

16. See Section 10 for more information about site management.
17. A master document register is maintained detailing all important and quality-significant documents within the project system.

12. TRANSPARENCY AND REPORTING

An integral element in NPA-assisted self-help projects for cluster munition stockpile destruction is appropriate documentation of all activities, providing accountability and traceability. This facilitates transparent reporting under the terms of the CCM.

The format of the documentation that is produced during a stockpile destruction project will be tuned such that it naturally relates to sections of the agreed reporting system and provides supporting evidence for any statements the Government may make in relation to their stockpile destruction actions associated with the Convention.

NPA's aim is to ensure that there is a seamless and efficient track through from receipt of canisters and separate submunitions through processing to demolition with a traceable and accountable package of records which will satisfy international scrutiny.

13. STOCKPILE DESTRUCTION AND THE ENVIRONMENT[18]

For many states, a national self-help project may well be the most environmentally friendly stockpile destruction option. There are clear advantages to stockpile destruction locally where this is appropriate.

Applicable international standards

Paragraph 2 of Article 3 in the CCM requires that States Parties 'ensure that destruction methods comply with applicable international standards for protecting public health and the environment.' There are no internationally recognised general standards for the stockpile destruction of cluster munitions per se, such as those that exist for landmines[19]. It will thus be for each State Party preparing and executing a cluster munition stockpile destruction project to determine on a case-by-case basis the relevant international standards that apply to:

- National storage, handling and transportation of explosives and hazardous materials.
- International/trans-boundary transfer of explosives and hazardous materials.
- Methods and impacts of destruction.

The standards can be drawn from relevant international conventions; and international industrial associations who develop and apply standards which set best practice.

The key environmental issues in cluster munition stockpile destruction can be placed into three groups:

- The energy use and emissions of any specific destruction process;
- the energy use and emissions from any transportation involved; and
- the impacts and energy costs of creating a specialised destruction facility (small-scale or industrial).

The core environmental objectives are simple:

- To REDUCE carbon emissions from transportation by moving as little material as possible;
- To MAXIMISE the recovery of recyclable metals and explosives;
- To MINIMISE the material detonated, burnt or incinerated to lower emissions and energy use; and
- To CONTROL the overall energy input to disassembly, recycling and demolition processes

Environmental impacts of cluster munition stockpile destruction

Environmental impacts are an important factor for states assessing which course of action to take in order to destroy their cluster munition stockpiles. As a very rough guide, the environmental impacts of the available options for stockpile destruct-ion can be tabulated and estimated as in figure ii below. The options listed in the figure assume that the stockpiling state does not have an industrial destruction facility in country.

Environmental impacts:			
Options for cluster munition stockpile destruction	Destruction emissions[20]	Process emissions[21]	Recycling potential
Local/national destruction: On-site. Minimal transportation. Minimal technology. No/minimal disassembly. Open Burning/Open Detonation.[22]	High	Low	Low
Local/national destruction: Small-scale specialised facility established on-site. Minimal transportation. Appropriate technology. Maximum disassembly before Open Burning/Open Detonation.[23]	Medium	Low	High
Remote/international destruction: Significant transportation. Optimum technology. Maximum disassembly and controlled incineration at an industrial specialised facility.	Low	High	High
Remote/international destruction: Significant transportation. Optimum technology. No/minimal disassembly and contained detonation at an industrial specialised facility.	Low	High	Low

Figure ii

This indicates that it can be an attractive option from an environmental point of view, to develop an on-site small-scale specialist facility that can receive munitions from the immediate area, safely disassemble and separate out the components of the munitions, and recover as much recyclable material as possible.

The main factor determining this outcome in comparing the available options for cluster munition stockpile destruction is the environmental impact of transportation. The energy use and emissions from transportation are so great that as a rule of thumb trucking any great distance and shipping should be avoided unless you have a strong case to do so. The avoidance of long distance transportation is a key advantage to local/national self-help projects.

When discussing the environmental impact of ammunition destruction the focus is often on the gasses, particulates, toxins, etc that result from demolition, and in particular from Open Burning/Open Detonation (OB/OD). The negative impact of any demolition may however quickly be outweighed by the carbon dioxide impact from significant trucking and/or shipping. Under the correct circumstances, OB/OD can be an environmentally responsible method of destruction. For small-scale stockpile destruction OB/OD is often justified, and with minimal environmental impact as long as common-sense precautions are taken.

The table above is a rough illustrative guide. In order to choose between the four stockpile destruction options on the basis of environmental impact detailed local information is necessary.

In particular, information is required about the volume of the stockpiles and their location(s) relative to the destruction sites in the various options. The lower the number of cluster munitions in a country's stockpile, the less viable is international transportation.

Information about the type and condition of the cluster munitions in the stockpile is also key. Cluster munitions differ in the degree to which they can be transported and in the degree to which they can effectively and safely be disassembled. Different levels of disassembly mean different options for demolition which in turn imply different levels of environmental impacts. In addition, different levels of disassembly mean different levels of potential for recycling and re-use.

While great emphasis should be placed on the environmental impact of the available options, this is of course not the only factor which must be considered by governments planning destruction of their cluster munition stockpiles. For instance, practical considerations which will limit options include the availability of technical and financial means. For a more detailed discussion of this, see Section 15.

SHADOW environmental policy

It is the policy of NPA's SHADOW Programme to do all that is reasonably practicable to protect the environment and to prevent pollution, through the provision of sound procedures, well designed plant and equipment, a high standard of personnel training and supervision, and regular risk assessments.

Assessment of environmental impacts is an integral part of the Verification and Feasibility Assessment phase of each country

project, and an Environmental Management System (EMS) is embedded in the Operational Management System for each country project.

Mitigation measures

Any stockpile destruction method and technique recommended by NPA to national authorities in a self-help project for destruction of cluster munition stockpiles needs to encourage productivity while minimizing adverse affects.

As explained in Section 6, SHADOW projects utilize disassembly of cluster munitions and their submunitions prior to the demolition stage of the stockpile destruction process in order to minimize the need for demolition and thus minimize adverse environmental effects. Disassembly also enables salvaging of available value from the cluster munitions and creates a potential for recycling and re-use.[24]

SHADOW assistance to small-scale self-help projects for cluster munition stockpile destruction includes expertise about additional mitigation measures that further minimise the environmental impact of demolition. These measures can involve simple techniques such as how to position items in a detonation pit for complete and successful detonation whilst minimizing the use of high explosives as charges. Enhanced techniques can also be employed, for instance to allow the recovery of precious metals like copper from shaped charges after detonation. Whilst it is the prerogative of the National Authority of the host nation within its constraints and capabilities to decide which actions to undertake in its self-help project, NPA will always recommend the most effective mitigation measures that are available and practical.

NPA has a policy of continual improvement in all aspects of these operations; identifying in each new project areas where there is potential for further modification of procedures and systems to improve efficiency and minimise environmental impact in the future.

18. *This Section is based on the findings in Thompson, H., "The environmental economics of cluster munitions destruction" (October 2010, report commissioned by NPA).*
19. *IMAS 11.10, 11.20, and 11.30 deal with destruction of AP mine stockpiles (www.mineactionstandards.org/imas.htm#english)*
20. *'Destruction emissions' refers to the energy required, emissions and environmental impacts from burning or detonating the mass of energetic material (MEM), i.e. explosives in cluster munitions, the charges or fuel required to destroy them, land area used ('footprint'), and site remediation costs.*
21. *'Process emissions' refers to the energy required, emissions and environmental impacts from all activities around the destruction process, including transport, construction, energy used in disassembly, land area used ('footprint'), and site remediation costs.*
22. *This is the option employed in most cases where national armies independently execute ammunition destruction. It is also an option that may be used in a SHADOW project, if the stockpile is in a bad condition and unsafe to disassemble, or if the quantity is not sufficient to warrant the establishment of a small-scale specialised facility.*
23. *This is the preferred SHADOW approach.*
24. *For more information about this, see Section 7.*

Self-Help Options for Destruction of Cluster Munition Stockpiles

14. COST

The cost of cluster munition stockpile destruction depends on the amount and types of munitions to be destroyed and the technology chosen, as well as inputs such as transportation, security and administration.

Many states are understandably concerned about the cost of destroying their stockpiles of cluster munitions. It must be emphasised that the CCM does not create new costs for stockpile destruction; it simply accelerates the destruction timetable. Like all ammunition types, cluster munitions have a "shelf life" expiry date and if they are not included in a regular ammunition maintenance and destruction cycle programme, they may become unstable and unreliable posing a risk in storage and potential use. Thus, every state would have incurred the cost to destroy its cluster munition stocks at some point in the future, after the weapons exceeded their shelf-life (assuming that the cluster munitions were not used in combat).

Some savings will also be realized by no longer having to pay for continued storage and maintenance of the cluster munition stocks.

Why is the SHADOW approach affordable?

Some stockpiling nations would have to transport their cluster munitions great distances in order to utilize the option of industrial destruction facilities. A self-help stockpile destruction project in-country would bring savings on transportation, as well as savings on storage and security costs related to the transportation.

In a self-help stockpile destruction project supported by international donors the stockpiling nation also has an opportunity to provide considerable in-kind support to reduce the cost.

Very importantly, the vast majority of the funding for a national self-help project for cluster munition stockpile destruction – for construction, equipment, workforce and consumables – will benefit the host nation rather than a commercial entity. Local resources are used wherever possible, which means for instance that there are employment opportunities and that wherever possible locally produced and procured tools are used, to ensure economic input. Upon completion of a country project, facilities constructed or refurbished as a part of the project and all purchased equipment and tools will stay with the appropriate National Authority.

Furthermore, the capacity that is created in a self-help project (expertise and facilities) may well result in greatly reduced costs in future stockpile destruction programmes implemented by the host nation with respect to other types of weapons.

Finally, other savings can occur through the recycling and re-use of salvaged value from the disassembly of cluster munitions during the stockpile destruction process. Generally the aim with disassembly has been to go only as far as it is relatively easy to go and to a point where all energetic material is exposed to encourage a more efficient demolition process. In theory, the further you go down the road of disassembly, the more recovery and recycling you can do and the more cost-recovery becomes possible. For more information on the potential for recycling and re-use, see Section 7.

15.
ASSESSING A STOCKPILING NATION'S DESTRUCTION OPTIONS

Each stockpiling nation must consider the available stockpile destruction options in terms of a range of factors. The condition, type, quantity and location of its stockpile will help narrow down the options.

In broad terms, there are four available options for cluster munition stockpile destruction for countries that do not have an industrial destruction facility in-country. These options, which were discussed in Section 13 with regards to their respective environmental impacts, are as follows:

1) **Local/national destruction: On-site. Minimal transportation. Minimal technology. No/minimal disassembly. Open Burning/Open Detonation (OB/OD).**[25]
2) **Local/national destruction: Small-scale specialised facility established on-site. Minimal transportation. Appropriate technology. Maximum disassembly before OB/OD.**[26]
3) **Remote/international destruction: Significant transportation. Optimum technology. Maximum disassembly and controlled incineration at an industrial specialised facility.**
4) **Remote/international destruction: Significant transportation. Optimum technology. No/minimal disassembly and contained detonation at an industrial specialised facility.**

Four key variables will influence which of these options are appropriate or even available for a stockpiling state:

- The condition of the stockpile;
- The types of cluster munitions in the stockpile;
- The size of the stockpile;
- The location(s) of the stockpile and the distance to the destruction sites in the respective options.

These data are important because they will answer the following questions:

- Can the cluster munitions be safely transported?
- Can the cluster munitions be safely disassembled?
- Are there enough cluster munitions to justify (in terms of environmental impact and cost-efficiency) transportation to an industrial specialised destruction facility?
- Are there enough cluster munition to justify (in terms of environmental impact and cost efficiency) creating a local/national small-scale specialised destruction facility?

If the cluster munition stockpile is in a condition that makes it unsafe to transport and disassemble, the stockpiling state will have little choice other than destroying the complete cluster munitions on site with OB/OD.

If the cluster munition stockpile is safe to transport but of a type or condition that is not fit for disassembly, options 1 and 4 will be available. The location(s) and volume of the cluster munition stockpile will then determine which of these options is more appropriate.

As regards quantity there is a primary threshold, determined by an economy of scale, below which it is **not** worthwhile transporting the cluster munitions to an external destruction facility. This is true both with respect to the environmental impact and with respect to cost-efficiency. Commercial destruction facilities are unlikely to take on smaller stockpiles that would not be cost-effective. They may also find it uneconomical to develop a new industrial production line for destruction of an unusual type of cluster munition which only exists in small numbers.

If the cluster munition stockpile is safe to transport and of a type or condition that allows for disassembly, options 2 and 3 also become available. The location(s) and volume of the cluster munitions will then determine which of these options is more appropriate.

As mentioned above, there is a primary threshold below which it is not worthwhile transporting the cluster munitions to an external destruction facility. Then there is a secondary threshold, again determined by an economy of scale, below which it is also not worthwhile developing a local/national small-scale stockpile destruction facility to disassemble the cluster munitions to recover materials and ensure a more complete and clean destruction.

The four key variables of condition, type, volume and location will help a stockpiling state narrow down the options in the decision-making process. Each state must however also consider its available options in terms of a range of factors (many of which in turn also are determined by the four key variables). These factors include:

- **The environmental impact of the various options, as discussed in Section 13.**
- **Their direct costs (including labour and transportation – this will vary widely from model to model and may not be easy to predict);**
- **Their direct financial benefits/cost recovery;**
- **Their risks;**
- **The degree of legal challenges involved;**
- **The degree of bureaucracy and administration involved:**
- **The degree of logistical challenges involved;**
- **The degree of security challenges involved;**
- **The availability of funding;**
- **The availability of the required technical expertise; and**
- **The perceived political benefits or costs**

With respect to the last factor, it seems likely that some nations – as Moldova – would prefer as a matter of principle to address their own obligations and take ownership of their challenges.

The decision-making logic can be illustrated as in figure iii overleaf:

25. This is the option employed in most cases where national armies inde pendently execute ammunition destruction. It is also an option that may be used in a SHADOW project, if the stockpile is in poor condition and unsafe to transport or disassemble, or if the quantity is not sufficient to warrant the establishment of a small-scale specialised facility.

26. This is the preferred SHADOW approach.

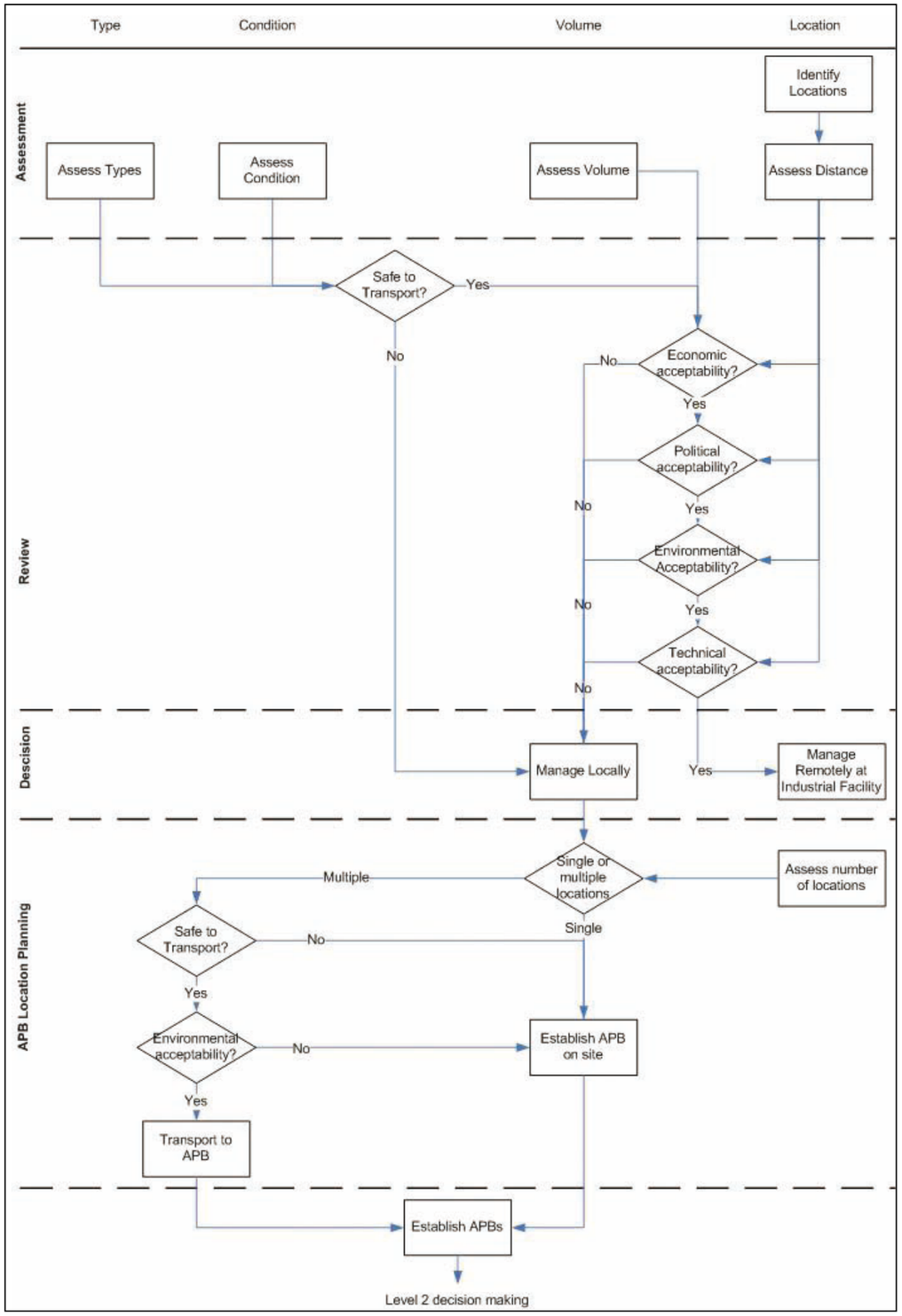

Figure iii

16. COOPERATION AND ASSISTANCE

Cooperation and assistance among States Parties will be vital in ensuring that they collectively succeed in destroying their stockpiles.

For some lower-economy states with legacy stockpiles of cluster munitions the technical complexity and expense involved in ensuring their destruction could serve to delay or prevent adherence to the CCM. Under the terms of Article 6 of the Convention, States Parties in need have the right to request international assistance with stockpile destruction, and others who are in a position to do so have an obligation to provide such support.

There will inevitably be many calls on available donor resources, with clearance and victim assistance understandably being the priority for many. In the context of the Mine Ban Treaty, only a small number of donors prioritized stockpile destruction assistance and had well-developed programmes for providing such aid. Given the large amount of stockpiled cluster munitions and the preventative focus of the CCM however, donor states should make assistance with stockpile destruction as regularized as other types of assistance under the CCM.

It is NPA's hope that the Moldova example and self-help solutions for cluster munition stockpile destruction first of all can give more lower-economy stockpilers confidence that their stockpile destruction aspirations are achievable, and secondly make more donor countries motivated to fund such projects, thereby accelerating destruction.

Countries that require assistance should make their specific needs known within the first year of entry into force of the Convention to ensure that on-time stockpile destruction is possible. Donors are likely to prioritize countries that move forward in planning their stockpile destruction.

Donor states on their part should strive to organize assistance programmes as soon as possible, given the often timeconsuming nature of such undertakings. States should avoid a situation where bureaucratic delays could lead to missed destruction deadlines.

17. START NOW!

Article 3 of the CCM obliges all States Parties to destroy all stockpiles of cluster munitions under their jurisdiction and control as soon as possible but no later than eight years after the Convention enters into force for the State Party. The most important thing that states can do in order to meet this deadline is to START NOW!

Strong political will is the key to the timely destruction of stockpiles. States should plan to accomplish this task in the near term, not shortly before their deadline. All states that have joined the CCM thus far should be able to complete stockpile destruction well in advance of the eight-year deadline as long as they make a good plan and begin the work early on.

As a matter of best practice, all states with stockpiles should, at a minimum, within one year or less of entry into force have a plan in place for the destruction of stocks that includes a timeline and budget. Physical destruction should begin within two years or less.

The first critical step in the process is to establish the type, quantity and, if possible, lot numbers of all stockpiled cluster munitions and explosive submunitions owned or possessed, and to report this information as required by Article 7 of the CCM.

If unable to meet the eight year deadline a State Party may according to a provision in Article 3 seek an extension of up to four years, and, in exceptional circumstances, an extension may be renewed. NPA's opinion is that **no state should need to ask for an extension**. States Parties to the CCM should make clear from the outset their expectation that there be no extension requests, and that if the extension provision is used, it would only be for the most exceptional cases. States Parties should also make clear early on that extension requests from states that have not made a good faith effort to meet the deadline will not be looked upon favourably.

During the negotiation of the CCM, NPA and its partners in the Cluster Munition Coalition opposed the provision allowing for an extension of the stockpile destruction deadline, on the basis that it may encourage states that do not truly need extra time to utilize it nevertheless. The Mine Ban Treaty does not provide for an extension of the stockpile destruction deadline, and numerous states finished just barely ahead of their deadlines; many would no doubt have asked for an extension had the option existed.

Self-Help Options for Destruction of Cluster Munition Stockpiles

CONVENTION ON CLUSTER MUNITIONS ARTICLE 3 – STORAGE AND STOCKPILE DESTRUCTION

1. *Each State Party shall, in accordance with national regulations, separate all cluster munitions under its jurisdiction and control from munitions retained for operational use and mark them for the purpose of destruction.*

2. *Each State Party undertakes to destroy or ensure the destruction of all cluster munitions referred to in paragraph 1 of this Article as soon as possible but not later than eight years after the entry into force of this Convention for that State Party. Each State Party undertakes to ensure that destruction methods comply with applicable international standards for protecting public health and the environment.*

3. *If a State Party believes that it will be unable to destroy or ensure the destruction of all cluster munitions referred to in paragraph 1 of this Article within eight years of entry into force of this Convention for that State Party it may submit a request to a Meeting of States Parties or a Review Conference for an extension of the deadline for completing the destruction of such cluster munitions by a period of up to four years. A State Party may, in exceptional circumstances, request additional extensions of up to four years. The requested extensions shall not exceed the number of years strictly necessary for that State Party to complete its obligations under paragraph 2 of this Article.*

4. *Each request for an extension shall set out:*
   - *(a) The duration of the proposed extension;*
   - *(b) A detailed explanation of the proposed extension, including the financial and technical means available to or required by the State Party for the destruction of all cluster munitions referred to in paragraph 1 of this Article and, where applicable, the exceptional circumstances justifying it;*
   - *(c) A plan for how and when stockpile destruction will be completed;*
   - *(d) The quantity and type of cluster munitions and explosive submunitions held at the entry into force of this Convention for that State Party and any additional cluster munitions or explosive submunitions discovered after such entry into force;*
   - *(e) The quantity and type of cluster munitions and explosive submunitions destroyed during the period referred to in paragraph 2 of this Article; and*
   - *(f) The quantity and type of cluster munitions and explosive submunitions remaining to be destroyed during the proposed extension and the annual destruction rate expected to be achieved.*

5. *The Meeting of States Parties or the Review Conference shall, taking into consideration the factors referred to in paragraph 4 of this Article, assess the request and decide by a majority of votes of States Parties present and voting whether to grant the request for an extension. The States Parties may decide to grant a shorter extension than that requested and may propose benchmarks for the extension, as appropriate. A request for an extension shall be submitted a minimum of nine months prior to the Meeting of States Parties or the Review Conference at which it is to be considered.*

6. *Notwithstanding the provisions of Article 1 of this Convention, the retention or acquisition of a limited number of cluster munitions and explosive submunitions for the development of and training in cluster munition and explosive submunition detection, clearance or destruction techniques, or for the development of cluster munition counter-measures, is permitted. The amount of explosive submunitions retained or acquired shall not exceed the minimum number absolutely necessary for these purposes.*

7. *Notwithstanding the provisions of Article 1 of this Convention, the transfer of cluster munitions to another State Party for the purpose of destruction, as well as for the purposes described in paragraph 6 of this Article, is permitted.*

Abbreviations

APB	Ammunition Processing Building
CCM	Convention on Cluster Munitions
CMC	Cluster Munition Coalition
DPICM	Dual Purpose Improved Conventional Munitions
EOD	Explosive Ordnance Disposal
EMP	Environmental Management Plan
GWHF	Golden West Humanitarian Foundation
MEM	Mass of Energetic Material
MoD	Ministry of Defence
NPA	Norwegian People's Aid
OB/OD	Open Burning/Open Detonation
OMS	Operational Management System
OSCE	Organization for Security and Cooperation in Europe
R&D	Research and Development
SHADOW	Self-Help Ammunition Destruction Options Worldwide
SOP	Standard Operating Procedure
States Parties	States Parties to the CCM

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NPA is also deeply grateful to the international experts on its team: Colin King, whose knowledge, ideas and heartfelt desire to see the CCM faithfully implemented it was that inspired us to get involved in stockpile destruction; David Hewitson, whose process and quality management assistance is all-important; Henry Thompson, for helping us integrate environmental issues in the overall planning and management of cluster munitions; and Len Austin, Roger Hess and all of Golden West Humanitarian Foundation for their important work in R&D and training.

Self-Help Options for Destruction of Cluster Munition Stockpiles

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