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COUNTER-IED TECHNOLOGY IN UN PEACEKEEPING: Expanding Capability and Mitigating Risks

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Peacekeeping missions today need to be prepared to address a range of increasingly complex and diverse threats. This is essential to ensuring the safety and security of mission personnel and effective implementation of the mission mandates. But the evolving threat environments where peacekeeping missions are being deployed—across the Maghreb, the Sahel, the Horn of Africa and the Levant— present a growing challenge. Peacekeepers are being deployed into hostile environments where there is no peace to keep and peacekeepers are the direct target of armed groups, spoilers and terrorists.[1] These insurgents often have limited access to conventional military equipment and weapons. They seek to secure an operational advantage through the application of asymmetric tactics such as the use of improvised explosive devices (IEDs), which can yield high casualties among peacekeepers and civilians and destabilize already fragile political situations.

The use of IEDs in contexts where UN peacekeeping missions are deployed is not a new threat, but the number and sophistication of the attacks has started to sharply increase. Since the UN Multidimensional Stabilisation Mission in Mali (MINUSMA) was established on 1 July 2013, the majority of peacekeeping fatalities in that mission—the highest number of fatalities of any UN peacekeeping mission in 2014—occurred as a result of explosive devices.[2] UN peacekeepers deployed to the Golan Heights and Lebanon face the threat of IEDs in their areas of operations. And the African Union Mission in Somalia (AMISOM) continues to rely on UN support to counter frequent IED attacks to its personnel.

The high rate of casualties and the persistent threat emerging from the use of IEDs carry wide-ranging implications for peacekeeping missions in terms of force protection, particularly the security of premises and the mobility of UN personnel. The use of IEDs also impacts the effectiveness of mandate implementation, especially as it relates to protection of civilians and security sector reform, as well as longer term efforts to support national political dialogues and re-build societies affected by conflict. UN Secretary-General Ban Ki-

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[1] United Nations, 'Secretary-General's Remarks at Security Council Open Debate on Trends in United Nations Peacekeeping', New York, 11 June 2014, http://www.un.org/sg/statements/index.asp?nid=7769

[2] As of February 2015, 32 peacekeepers in MINUSMA had died as a result of malicious acts (see UN Peacekeeping 'Fatalities by mission and incident type', 28 February 2015, available at http://www.un.org/en/peacekeeping/fatalities/documents/stats_4.pdf). More than 21 of those peacekeepers died as a result of IED attacks – see UN News Centre, 'Mali: Security Council, Ban condemn attack that killed five UN peacekeepers', 19 September 2014, available at http://www.un.org/apps/news/story.asp?NewsID=48750#.VKJrhfXABg

moon has identified better protection from IEDs as a necessity in current and future peacekeeping operations.[3]

Technology can perform an important role in countering IEDs in peacekeeping. It can assist in identifying potential threats through surveillance, information gathering and forensics, disrupt potential devices through electronic and mechanical means, and mitigate the effects of an attack through enhanced equipment, body armour and medical support. The application of technology presents some promising solutions as the UN attempts to address the emerging threat of IEDs. [4] Multinational engagements in Iraq and Afghanistan in the early twenty-first century have demonstrated that technology can be utilised to protect against and mitigate IED attacks. But investment in research and development to find technological solutions is expensive for even the most advanced military contributors. Experience has also shown that technology alone will not address the threat of IEDs; nor will it eliminate the threat entirely as insurgents seek new ways, methods and approaches to inflict casualties in a comparatively inexpensive manner. Nevertheless, it is essential that UN peacekeeping operations draw on best practice and strive to deploy with the same level of technological advantage that is vital for many military and police forces globally.[5]

This paper examines lessons emerging from the application of counter-IED technology in multinational operations in order to identify opportunities to expand capabilities and mitigate risks in addressing the threat of IEDs in the context of UN peacekeeping operations. First, it examines the evolving nature of the IED threat. Second, it surveys some of the lessons emerging from the use of technology in multinational engagements such as the North Atlantic Treaty Organisation (NATO) International Security Assistance Force (ISAF) in Afghanistan. Third, it explains some of the approaches already in place in UN peacekeeping operations. Fourth, it identifies potential challenges and constraints to employing more technology solutions to counter IEDs in UN peacekeeping missions. Finally, it submits some recommendations on technologies and broader reforms that could be implemented to address the growing IED threat in UN peacekeeping missions.

THE CONTEXT AND EVOLVING NATURE OF THE IED THREAT

The nature of the global IED threat continues to rapidly evolve. Defined broadly, an IED is 'a device placed or fabricated in an improvised manner incorporating explosive material, destructive, lethal, noxious, incendiary, pyrotechnic materials or chemicals designed to destroy, disfigure, distract or harass'.[6] It may take the form of a rudimentary bomb triggered by a wire or a pressure plate, a hidden device detonated by radio frequencies from a cell phone, a rocket propelled device, a suicide bomber, or a vehicle loaded with explosives. In many instances the device is placed in a geographic location where it will draw maximum casualties or target particular individuals through advance positioning or

[3] United Nations, 'Secretary-General's remarks at Summit on UN Peacekeeping', New York, 26 September, 2014, http://www.un.org/sg/statements/index.asp?nid=8060

[4] See United Nations, 'Final Report of the Expert Panel on Technology and Innovation in UN Peacekeeping', February 2015, available at http://www.performancepeacekeeping.org/

[5] Ibid., p.7.

[6] United Nations Office for Disarmament Affairs, *International Ammunition Technical Guideline*, October 2011 (First Edition), IATG 1.40, para 3.134

by attaching the explosives to an individual or vehicle. In some cases, secondary IEDs will be triggered after the primary explosion, in order to inflict casualties on those responding to the initial attack.

While the history of IED use can be traced back to the nineteenth century, it wasn't until the early twenty-first century that IEDs have become a weapon of choice for many non-state actors in conflicts. The use of IEDs by insurgents in the Iraq conflict from 2003 onwards presented a 'strategic surprise' for coalition forces.[7] At relatively no cost, small groups of individuals were able to gain an asymmetric advantage in conflict environments over the use of conventional weapons and more technologically advanced militaries.[8] IEDs delivered the highest levels of casualties among US military personnel in Iraq, as well as Afghanistan.[9] Consequently, the United States, along with several NATO members and partner countries, started to invest in developing technology to counter the threat of IEDs. Their experiences in Afghanistan in particular provide some valuable lessons for the UN to draw on in terms of its approach to counter-IED technology in peacekeeping.

The inexpensive and often rudimentary nature of IEDs has aided their proliferation. Materials to build IEDs can be sourced inexpensively. Information on how to build them can be found and shared quickly via the internet.[10] And there are indications that the IED challenge continues to grow, with innovation in carrying out IED attacks, as well as the use of larger IEDs to inflict more harm.[11]

The delivery and trigger mechanisms for IEDs differ widely and as result, have different implications for military operations. Radio-controlled or victim-operated devices[12] can allow an individual to inflict casualties remotely and with anonymity. When such devices are deployed roadside, they can inhibit the movement of troops and personnel, and as a result, may be used as a mechanism to launch secondary attacks. The ease at which suicide bombers immerse themselves in the local population can hinder the ability and willingness

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[7] See Andrew Smith, *Improvised Explosive Devices in Iraq, 2003-2009: A Case of Operational Surprise and Institutional Response* (Carlisle, PA: Strategic Studies Institute, 2011)

[8] Graduate Institute of International and Development Studies, *Small Arms Survey 2013* (Geneva: Cambridge University Press, 2013), p.224 available at http://www.smallarmssurvey.org/publications/by-type/yearbook/small-arms-survey-2013.html (hereafter 'Small Arms Survey 2013')

[9] Michael D. Barbaro, 'Improvised explosive devices are here to stay', *The Washington Post*, 17 May 2013, available at http://www.washingtonpost.com/opinions/improvised-explosive-devices-are-here-to-stay/2013/05/17/8d9c9d7c-be64-11e2-9b09-1638acc3942e_story.html

[10] The internet is providing means and opportunity for terrorist organisations to share propaganda and information on constructing improvised explosive devices. See *Sixteenth Report of the Analytical Support and Sanctions Monitoring Team submitted pursuant to resolution 2161 (2014) concerning Al-Qaida and associated individuals and entities*, UN Doc S/2014/770, 29 October 2014, p.9.

[11] United Nations Security Council, *Fifteenth Report of the Analytical Support and Sanctions Monitoring Team established pursuant to resolutions 1267 (1999) and 1989 (2011) concerning Al-Qaida and associated individuals and entities*, UN Doc S/2014/41, 23 January 2014, p.16.

[12] Victim operated devices rely on inadvertent action by an individual to initiate the explosion (eg through pressure plates which close the electrical circuit on a device). For further information, see 'Small Arms Survey 2013', p.221.

of military actors to engage with civilians, to the detriment of counter-insurgency efforts.[13] Similarly, the use of vehicle-borne IEDs presents a threat to more static locations.

The UN has not been immune from IED attacks. Vehicle-borne IEDs (or truck bombs) were used with devastating effect in attacks on UN facilities in Baghdad in 2003, Algiers in 2007, and Abuja in 2011. More than 5,000 IED events were reported across UN missions and programmes in 2013.[14] Nonetheless, the extensive use of IEDs in the context of UN peacekeeping operations is a relatively new development. From November 2013 to October 2014, the use of improvised explosive devices in attacks against peacekeepers increased from one to 16 when compared to the same twelve month period the year before.[15] IEDs have started to affect the conduct of peacekeeping operations on the ground, hampering mission mobility.[16] Lessons learned from similar operational environments have the potential to enhance the ability of peacekeeping missions to counter the IED threat.

COUNTERING IEDS: LESSONS FROM MULTINATIONAL ENGAGEMENTS

Conflicts in Afghanistan and Iraq have been characterised by significant levels of military and civilian casualties from IEDs. Since the launch of military operations in Afghanistan in 2001, more than 60% of US casualties that occurred in Iraq and Afghanistan up until 2013 were the result of IED attacks.[17] IEDs could be easily hidden on roadsides, within vehicles, or on individual persons. This inhibited the secure movement of personnel and equipment by road, as well as efforts by military personnel to engage effectively with local communities as part of broader counter-insurgency efforts. For countries serving in operations in Afghanistan and Iraq, the lessons learned from operating in these asymmetric threat environments had a game-changing effect on conventional military thinking. As a consequence, several countries adopted new approaches to prepare, train and equip their forces to address this constantly evolving threat.

Technology was part of the solution, but it needed to be procured quickly. Consequently, the US and several other countries engaged in ISAF started to establish national joint task forces to counter the IED threat. [18] While primarily military in focus (or led by the military) these task forces engaged a range of entities in their work, including the science and technology arms of the military, defence materiel, intelligence agencies, and police. In some cases, they had separate budget lines and faster procurement and acquisition processes,

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[13] Pierre Claude Nolin, 'Countering the Afghan Insurgency: Low-Tech Threats, High Tech Solutions', *NATO Parliamentary Assembly Special Report,* 189 STC 11, October 2011, p.5 available at http://www.nato-pa.int/default.asp?SHORTCUT=2551

[14] United Nations Security Council, *Fifteenth Report of the Analytical Support and Sanctions Monitoring Team*, UN Doc S/2014/41, 23 January, 2014, p.16.

[15] United Nations General Assembly, *Report of the Secretary-General, Implementation of the recommendations of the Special Committee on Peacekeeping Operations*, UN Doc A/69/642, 9 December 2014, p9.

[16] United Nations, 'Final Report of the Expert Panel on Technology and Innovation in UN Peacekeeping', p.45

[17] Michael D. Barbaro, 'Improvised explosive devices are here to stay', *The Washington Post*, 17 May 2013

[18] Examples include the Australian Defence Force Counter IED Task Force, the United States' Joint Improvised Explosive Defeat Organisation (JIEDDO), the Canadian Counter Explosive Threat Task Force and the Netherlands Joint Taskforce CIED.

aiding innovation in identifying capabilities to respond to the asymmetric threat of IEDs.[19] These entities assisted with the rapid sharing and dissemination of tactics, techniques and procedures on a threat that continues to change and evolve.

Early efforts to mitigate the IED threat were modelled on approaches taken to address mines and other remnants of war (also referred to as IED Defeat or IEDD). Militaries generally had specialised units for de-mining purposes and to disarm and demobilise devices of concern. But these efforts alone were not going to stem the casualties resulting from IEDs. Counter-IED efforts needed to become more comprehensive and focus on a holistic approach. Three operational lines of effort to counter IEDs subsequently emerged: prepare the force, defeat the device and attack the network. This included efforts to predict, prevent, detect, neutralize, mitigate and exploit the threat.[20] Organisations such as NATO and the European Defence Agency coordinated different types of counter-IED efforts among their member states.[21]

Developments in counter-IED technology

Efforts to defeat the device were aimed at inhibiting the execution of an IED attack, or mitigating its potential effects. Improved force protection measures aided the mobility of personnel in the field. These included the use of mine-protected, counter-IED and armoured vehicles, which have now become a standard military capability for many western and European countries. Examples include the Bushmaster, Mastiff, and a range of Mine-Resistant Ambush Protected (MRAP) vehicles. Some of these vehicles feature a 'V' shaped hull, intended to deflect the blast outwards away from the vehicle occupants, as well as Self-Protection Adaptive Roller Kits (SPARK) to more safely detonate undetected IEDs.[22] In addition to improved vehicle protection, body armor was re-developed and updated to ensure that parts of the body that were vulnerable to fatal injury were better protected from the effects of an IED blast in the field. Medical counter-measures were also put in place as part of standard medical kits.

Force protection measures would have had a more limited effect without advances to defuse and disarm IEDs. The type of technology deployed to neutralize IEDs depended on the type of device, the operating environment and the time available to do so. Unmanned ground vehicles were used for locating and in some cases disarming IEDs.[23] Mine arms or ploughs were used on vehicles to clear the road for other vehicles that may be travelling in

[19] For example, JIEDDO argues that solutions can be acquired up to 75 percent faster than the normal military acquisition process, see 'The Official Website of the Joint Improvised Explosive Device Defeat Organisation' https://www.jieddo.mil/about.aspx

[20] See, for example, European Defence Agency 'Counter-IED' 13 August 2012, https://www.eda.europa.eu/our-work/projects-search/counter-ied; and North Atlantic Treaty Organization 'Countering improvised explosive devices' 27 January 2015, http://www.nato.int/cps/en/natohq/topics_72809.htm

[21] Nolin, 'Countering the Afghan Insurgency: Low-Tech Threats, High Tech Solutions', p.7.

[22] See, for example, United States Army, 'US military fields new mine roller technology to defeat IEDs', 3 January 2011, http://www.army.mil/article/49983/; Australian Government Minister for Defence, 'Force Protection Measures', 1 June 2010, Media Release MIN57/10 available here http://www.defence.gov.au/minister/90tpl.cfm?CurrentId=10360

[23] Nolin, 'Countering the Afghan Insurgency: Low-Tech Threats, High Tech Solutions', p.15.

a convoy. In an effort to counter radio-controlled devices, electronic counter measures to jam the signal being used to detonate devices were deployed on vehicles and personnel.[24]

Certain surveillance technologies provided important intelligence to disrupt and mitigate attacks. These included ground radar (which may be used by mounted and dismounted elements) and unmanned aerial vehicles (UAVs) with specific sensors to identify patterns or tell-tale signs of IEDs on the ground. UAVs also assisted with efforts to monitor wider IED networks. For example, the US Air Force utilized the Gorgan Stare video capture technology to conduct surveillance of whole cities, thereby having a deterrent effect on activities by removing the anonymity of the attackers.[25] Some of these technologies could also serve as deterrents to attackers and as force multipliers. For example, closed circuit surveillance cameras on forward-operating bases assisted with surveillance against potential suicide or vehicle-borne IEDs.

In order for advances in technology to be most effective, information and lessons learned arising from incidents had to be absorbed systematically into planning and preparation processes as part of the deployment cycle to prepare the force. Military personnel needed to understand the limitations of the technology and receive training to identify and demobilize IEDs, as well as how to respond to an IED incident. This included basic training to identify potential signs of IEDs on roadways, ensure planning processes varied convoy routes and that medical training to respond to injuries resulting from IED injuries was up to date. Training programs were also essential as part of broader security sector reform efforts with the Afghan National Army, to ensure they were prepared to address the growing threat within their borders.[26]

Nonetheless, if ISAF was going to reduce the number of IEDs being made, then approaches also needed to focus on the supply chains and neutralizing the networks developing and deploying IEDs. The immediate aftermath of an IED event could provide important forensic and biometric information on potential supply chains, as well as the attackers. Technology which included properly equipped laboratories deployed to the field could analyze data emerging from an IED event. For example, the European Defence Agency deployed a laboratory to ISAF under the lead of France, providing ISAF forces with the capability to analyze and exploit an IED event to interrupt the production process.[27] Sharing information on IED events could also assist in efforts to combat the enablers planning and manipulating the attacks. Drawing on lessons from Afghanistan, an initiative is currently being scoped to develop an unclassified internet database of the various IED events, to provide

[24] Ibid., p.9.
[25] Ibid., p.13.
[26] Nonetheless, sustaining these efforts remains an ongoing challenge. See Tim Craig, 'Afghan army, police struggle to combat IED threat as U.S. forces prepared to leave', *The Washington Post*, 6 March 2014, available here http://www.washingtonpost.com/world/middle_east/afghan-army-police-struggle-to-combat-ied-threat-as-us-forces-prepare-to-leave/2014/03/06/f3724c7a-9cba-11e3-975d-107dfef7b668_story.html
[27] European Defence Agency, 'Counter IED Lab Saves Lives in Afghanistan', 7 January 2013, available at https://www.eda.europa.eu/info-hub/news/2013/01/07/counter-ied-lab-saves-lives-in-afghanistan

governments, INTERPOL and other international entities a resource to draw on to improve their efforts to counter IEDs.[28]

Limits to counter-IED technology: developing a more comprehensive approach

Innovation and technology assisted in reducing the level of casualties from IED events during the ISAF campaign in Afghanistan. But it could also be counterproductive and limited in some circumstances. Heavily armored vehicles limited interaction with the local population, which was a key aspect of counter-insurgency warfare.[29] Use of surveillance technologies could be inhibited by certain terrain, weather and operating environments. Devices such as UAVs and video capture technology required significant numbers of trained personnel to dissect the data to formulate actionable intelligence.[30] And technology also required costly investment in research, development and procurement. For example, the US MRAP Task Force was allocated more than USD 40 billion in funding from 2005 through until 2010 (in addition to USD 18 billion appropriated for the US Joint Improvised Explosive Device Task Force from 2006 until 2012).[31] Despite innovation, some of these vehicles would provide ineffectual force protection in an environment with a highly adaptive enemy deploying more innovative and destructive devices (e.g., explosively formed penetrators).

Some 'low-tech' solutions or community approaches could deliver better results in contexts where 'high-tech' solutions had limitations, or were too costly. Explosive detection dogs were used to locate and identify potential IEDs in diverse terrain. Tethered balloons or blimps could be used at less cost for surveillance purposes.[32] Working closely with the local population and security forces could also assist with understanding the terrain and operating environment, in order to identify patterns or changes on the ground. Information campaigns that assisted the local community in identifying IEDs also aided efforts to build trust with the local population. This was particularly important given that the extensive use of IEDs also had a wider socio-economic impact on local communities.[33] Normal agricultural life and livelihoods were disrupted. Security concerns from IEDs could deter aid projects and development work.[34] Efforts to work with the local population mitigated some of these concerns and assisted with their protection.

Regional and international cooperation across borders was also central in the attempt to reduce the number of IED events taking place in Afghanistan (as well as within Pakistan).

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[28] See Small Arms Survey, *Research Note Countering Improvised Explosive Devices*, October 2014 http://www.smallarmssurvey.org/fileadmin/docs/H-Research_Notes/SAS-Research-Note-46.pdf . The Australian Defence Force has initiated the AXON Global IED Partnership pilot program to develop a secure web based system to track IED events.
[29] Small Arms Survey 2013, p.224.
[30] Nolin, 'Countering the Afghan Insurgency: Low-Tech Threats, High Tech Solutions', p.13.
[31] United States Government Accountability Office, 'DOD Needs Strategic Outcome-Related Goals and Visibility over Its Counter IED Efforts', February 2012, GAO-12-280, available at http://www.gao.gov/assets/590/588803.pdf
[32] Nolin, 'Countering the Afghan Insurgency: Low-Tech Threats, High Tech Solutions', p.15.
[33] Small Arms Survey 2013, p.226.
[34] Ibid.

The United States worked closely with Pakistan in building counter-IED capacity, developing public awareness campaigns and putting in place border controls around the transfer of precursor materials to homemade explosives.[35] Shortages of key ingredients such as ammonium nitrate could inhibit the ability of insurgents to access the ingredients necessary to make certain IEDs. It is an issue the UN Security Council's Al Qaida Analytical Support and Sanctions Monitoring Team has examined, identifying the need for a global approach that reaches out to key partners in government, as well as the commercial sectors (which influence the availability of commercial components such as fertilizer).[36] Ultimately, the impact of any approaches to counter the IED threat will be of limited effect without a comprehensive international approach to disrupt the networks and enablers.

COUNTER-IED APPROACHES IN UN PEACEKEEPING

Efforts to address the threat of IEDs in the context of UN peacekeeping missions are still in the initial stages and remain largely ad hoc. While IEDs are only a pervasive threat in a handful of current missions—in Mali and the Middle East, as well as the African Union Mission in Somalia—they are drawing high numbers of UN peacekeeper casualties. In the context of Mali, concerns about the IED threat were identified as part of the mission assessment before the Security Council authorized MINUSMA to deploy.[37] Yet gaps in policy and guidance on a UN counter-IED approach have meant that force generation processes have been less effective in identifying needed capabilities. Most contributors have limited or no experience operating in asymmetric threat environments, nor the equipment or technology to provide adequate force protection.[38]

Existing approach to counter-IED in UN peacekeeping

In Mali, troop and police contingents are deploying without the training or equipment to operate in an asymmetric environment. A number of troop contributing countries are reliant on the work of the UN Mine Action Service (UNMAS) to provide equipment and mentoring support. UNMAS is accelerating its work to address these gaps through a counter-IED support package.[39] This has included deployment of staff officers and mentors to assist the mission, as well as capacity building initiatives to support EOD teams that have deployed from Nepal and Cambodia (including the purchase of robots and jammers to support the work of EOD units within the mission).[40] Specialized equipment such as armored ambulances, mine-protected vehicles and medical kits were procured in late

[35] Michael D. Barbero, 'Statement Before the United States Committee on Foreign Relations Subcommittee on Near Eastern and South and Central Asian Affairs', December 13, 2012, available at http://www.foreign.senate.gov/imo/media/doc/General_Barbero_Testimony.pdf

[36] See United Nations Security Council, *Fifteenth Report of the Analytical Support and Sanctions Monitoring Team*, UN Doc S/2014/41, p.17.

[37] United Nations, *Report of the Secretary General on the Situation in Mali*, 26 March 2013, UN Doc S/2013/189, p.14.

[38] UN DPKO/DFS, 'Uniformed Capabilities Required for UN Peacekeeping: Current Gaps, Commitments to Enable More Rapid Deployment, and other Capability Requirements', 19 February 2015, p2, copy on file with author (hereafter 'DPKO/DFS Uniformed Capabilities Gap List February 2015').

[39] Edmond Mulet, 'Briefing to the Special Committee on Peacekeeping Operations on Operational Issues', 19 February 2015 (copy on file with author)

[40] Author correspondence with UN Official, December 2014.

2014. Most of these efforts were undertaken with voluntary donor funding. While these efforts have improved MINUSMA's counter-IED capability, there are still significant gaps that need to be addressed.[41]

One of the challenges for peacekeeping missions is that there is limited uniformity among member states on the technology and training required to address the IED threat. International Mine Action Standards specify three levels of skill sets for EOD units. Efforts to address IEDs have often been referred to as 'EOD level 3+', but there is a lack of consistency among member states on what this capability refers to.[42] This is compounded by an inadequate level of detail in UN manuals and training materials on the types of equipment, capabilities and levels of preparedness required for troops deploying to mission environments with an IED threat. [43]

Policy approaches that guide planning and operations are also inconsistent. The UN Department of Safety and Security developed a chapter on IEDs as part of its Security Policy Manual.[44] The policy makes a distinction between 'remnant IEDs' (which may include explosive remnants of war that have been abandoned) and 'operational IEDs' (which may have some value to those who use or deploy them).[45] The policy notes that UN personnel 'cannot directly engage in, support or fund activities primarily meant to disarm, remove or destroy an operational IED'.[46] This direction is based on the concern that such actions may result in justification for attacks against the UN. While this policy does not apply to contingent troops or formed police units, it is nonetheless confusing given the operating environment of some peacekeeping missions (where the peacekeeping personnel or civilians may be at risk from an IED).

Work is underway to address some of these gaps in UN policies and procedures, particularly as they relate to uniformed personnel. The UN is developing counter-IED

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[41] For example, the DPKO/DFS Uniformed Capabilities Gap List February 2015, identified the need for one combat engineering company with EOD / C-IED capabilities in the mission.

[42] Author correspondence with UN Official, December 2014.

[43] For example, the Contingent Owned Equipment (COE) Manual 2014 (A/C.5/69/18) details reimbursement categories for a range of equipment that may be deployed by contingents as part of peacekeeping missions. But this is largely focused on demining and EOD efforts. The UN Infantry Battalion Manuals (UNIBAM) recognises the increased threat of potential attacks from IEDs and subsequently includes an annex detailing a policy on 'UN Handling of Improvised Explosive Devices'. But the types of technology that might be employed to benefit the mission—equipment such as mine protected vehicles, ground radar and UAVs—are listed in an annex on high technology equipment. They are not standard requirements for infantry battalions deploying into asymmetric threat environments. See United Nations, *United Nations Infantry Battalion Manual Volume II*, August 2012, available here: http://www.un.org/en/peacekeeping/documents/UNIBAM.Vol.II.pdf

[44] UN Department of Safety and Security, *Security Policy Manual*, Chap IV, Sec Y: Improvised Explosive Devices.

[45] The Security Policy Manual defines a remnant IED as 'an IED that has been declared so through official procedures governing such decisions within the United Nations system, involving the Resident Coordinator/Humanitarian Coordinator, in consultation with the UN Country Team and mine-action advice, if necessary'. An operational IED is 'an IED that has not been officially declared a Remnant IED'. If there is any doubt, an IED is assumed to be an operational IED. See UN Department of Safety and Security, *Security Policy Manual*, Chap IV, Sec Y: Improvised Explosive Devices, p.2.

[46] UN Department of Safety and Security, *Security Policy Manual*, Chap IV, Sec Y: Improvised Explosive Devices, p.3.

guidelines for the use of personnel deployed in peacekeeping missions.[47] It is expected these guidelines will apply to troop and police contributing countries. DPKO and DFS have also commissioned a project on 'IED survivability.' This project will develop further guidance and direction to support military and police operating in complex threat environments, both in terms of force protection and protection of civilians.

Consistent policies will be of limited value if they don't consider how best to utilize and manage technology in counter-IED approaches. The Final Report of the Expert Panel on Innovation and Technology (Expert Panel Report) acknowledged that IEDs were limiting the operational scope of peacekeepers and placing their safety and security at unnecessarily high levels of risk.[48] It provided several recommendations to enhance counter-IED technology in peacekeeping operations. These included physical force protection measures such as mine-protected vehicles, electronic counter-measures, 'bolt on' armour, ground-penetrating radar and hand-held explosive composition detection devices, as well as surveillance technologies such as the use of small tactical UAVs for reconnaissance and security.[49] The report also acknowledged the value of collaborating more extensively with member states that have counter-IED experience and incorporating their lessons learned into practice.

Nonetheless, deployment of certain counter-IED technology remains the exception rather than the rule in UN peacekeeping missions. Some former ISAF contributors are introducing this technology as part of their force protection measures. For example, the French contingent have deployed counter-IED jammers on their vehicles in UNIFIL,[50] the Irish have deployed a counter-IED team to UNDOF,[51] and the Dutch have deployed a small counter-IED team in Mali.[52] The All Sources Information Fusion Unit—staffed mostly by Nordic countries and the Netherlands—is providing surveillance and information analysis for MINUSMA. Troop contributors with experience operating in asymmetric threat environments can have an important enabling effect in the mission. But these developments also point to a widening gulf in capabilities with some troop contributors able to provide more robust force protection measures for their personnel than others.

Challenges to deploying counter-IED technology in peacekeeping missions

Security Council members and troop and police contributing countries are in broad agreement about the growing threat of IEDs in peacekeeping missions. Several delegations on the Security Council expressed concern about the emerging IED threat during the

[47] Author correspondence with UN Official, December 2014.
[48] United Nations, 'Final Report of the Expert Panel on Technology and Innovation in UN Peacekeeping', p.48.
[49] Ibid.
[50] Presentation by Andreas Joedecke, UN DPKO during event hosted by International Peace Institute, 'Technology and Innovation in Peacekeeping Panel Discussion', 7 April 2014, https://www.youtube.com/watch?v=QvTAOF6WN7o
[51] United Nations Security Council, *Report of the Secretary-General on the United Nations Disengagement Observer Force for the period from 4 December 2013 to 10 March 2014*, UN Doc. S/2014/199, 18 March 2014, p9
[52] Author interview with Dutch Defence Official, November 2014.

Council's briefing with Heads of Military Components in October 2014.[53] The UN General Assembly, through the Special Committee on Peacekeeping Operations (C-34), has recognized that IEDs pose a threat to peacekeepers.[54] But views among peacekeeping stakeholders on the use of technology generally differ and have implications for potential policy and financial reforms in this area.

The debate over technology within the UN system has for some time focused on the use of UAVs in peacekeeping missions. Technologies that aid information gathering or surveillance (such as UAVs) are politically sensitive for some member states with concerns about how the information is managed and potential violations of state sovereignty.[55] Concerns about technology are further compounded by fears that more advanced capabilities are only in the hands of a limited number of contributors and that such technology may reduce the number of troops needed in the field. The Expert Panel Report addressed these concerns, noting that technology has the potential to act as an enabler to personnel in the field and more importantly, strengthen safety and security measures.[56] But this divide highlights the critical need for ongoing dialogue between the UN Secretariat and troop and police contributors on technology requirements in the field. If these concerns are not adequately addressed, they could hamper reform efforts to address deficits in equipment, training and policies to counter IEDs.

Specific to the issue of the IED threat in the context of peacekeeping operations is the extent to which UN peacekeeping missions may be mandated and willing to use force to attack the IED-production network. Missions such as MINUSMA have robust mandates to protect civilians, which are equally at risk from an IED attack. Such issues have important implications for the use of technology when it comes to tracking and identifying insurgents deploying IEDs and what form of action the peacekeeping mission may be prepared and allowed to take in that context (including whether to use force).

These scenarios also highlight the need for a more comprehensive approach within and beyond the peacekeeping mission to disrupt and interdict enablers at their source. Other Security Council tools, such as sanctions regimes, provide wide scope to restrict the transfer of precursor materials to build IEDs.[57] However, their effectiveness is greatly reduced by limited host state capacity to implement arms embargoes in the context of

[53] United Nations Security Council Meeting, *United Nations Peacekeeping Operations*, UN Doc S/PV.7275, 9 October 2014.
[54] United Nations General Assembly, *Report of the Special Committee on Peacekeeping Operations 2014 Substantive Session*, UN Doc. A/68/19, p.12.
[55] See, for example, remarks during United Nations Security Council Meeting, *United Nations Peacekeeping Operations,* UN Doc S/PV.7196, 11 June 2014.
[56] United Nations, 'Final Report of the Expert Panel on Technology and Innovation in UN Peacekeeping', p.22-23.
[57] See United Nations Security Council, *Fifteenth Report of the Analytical Support and Sanctions Monitoring Team*, UN Doc S/2014/14, p.17.

peacekeeping operations. Such measures may also be viewed as punitive by the host state.[58]

Programs to research, develop and rapidly procure counter-IED technology are expensive. The experiences of ISAF contributors in Afghanistan demonstrate that higher technology solutions can inhibit some operational objectives and may not necessarily mitigate against all types of potential IED threats. Furthermore, some member states may be unwilling to share information about certain counter-IED technology and capabilities, as they may be sensitive or classified in nature (such as electronic countermeasures). While safety and security will remain paramount, planning, capability development and force generation processes will also need to consider the right balance of 'high'-tech' equipment versus 'low-tech' approaches as part of a comprehensive counter-IED strategy.

RECOMMENDATIONS

Technology can improve force protection, intelligence and the medical support available to peacekeeping missions to prevent and mitigate the effect of IEDs. But in order for it to be most effective, a comprehensive approach that incorporates revised policies and systems are needed to integrate the technology into operations. The UN could consider several reforms to support these efforts.

First, the UN Secretariat should identify technology needs when it comes to counter-IED approaches, particularly in the areas of physical protection, detection and disruption, information and surveillance, forensics, and medical support. The Expert Panel Report identifies a number of basic requirements in areas such as force protection and surveillance. The Department of Peacekeeping Operations (DPKO) and Department of Field Support (DFS) should identify countries that can meet these technology needs (identified as potential 'TechCCs' in the Expert Panel Report). But it should also identify 'low-tech' capabilities that can work in parallel with these capabilities. These gaps should then be routinely shared with member states that may have the capacity to provide equipment, training or mentoring support (particularly those that have drawn down from ISAF operations in Afghanistan). Initial efforts should focus on equipment and training that will enhance force protection and operational mobility in the field.

Second, the UN Secretariat should identify the capabilities required by troop and police contributing countries to ensure that they can utilize counter-IED technology effectively in missions. Technology won't be automatically absorbed into the system. This will require revision of existing training materials and more extensive partnerships on capacity building efforts. UNMAS is already developing smart phone applications to assist in the identification of landmines and explosive remnants of war. Similar easily accessible smart technologies should be explored.

Third, in order for technology to be used effectively, there is a need for a clear and comprehensive policy on counter-IED in UN peacekeeping, including the use of particular

[58] For example, see statement by South Sudan's Permanent Representative during the UN Security Council's adoption of resolution 2206; United Nations Security Council, *Reports of the Secretary-General on the Sudan and South Sudan*, UN Doc S/PV.7396, 3 March 2015.

technologies. This is essential to inform mission assessment and planning processes, force generation processes and rules of engagement (particularly in the context of attacking insurgent networks). Existing policies related to mandated tasks such as protection of civilians and security sector reform should also be reviewed and updated to identify potential implications as a result of operating in an IED threat environment. Fora such as the C-34 and the UN Security Council Working Group on Peacekeeping Operations should be utilized to be discuss these issues among troop and police contributing countries.

Fourth, counter-IED technology must be under constant review and include an ongoing assessment of future needs. Slow and cumbersome UN processes are a disadvantage in responding to the rapidly evolving threat presented by IEDs. Groups that utilize IEDs will adapt and change their application to circumvent some of the counter measures that are put in place. IED threats will evolve and may take advantage of new technologies, such as UAVs.[59] The UN should establish a capacity within DPKO and DFS to examine potential technology needs. The Expert Panel Report's recommendation for a dedicated office for innovation could address this challenge.[60]

Fifth, greater information sharing on IED incidents globally could assist peacekeeping missions in anticipating threats within the mission area of operations (and the types of technology that could assist in addressing those potential threats). The UN should work with other international actors (such as INTERPOL), regional organizations and member states to support the establishment of an international database tracking IED incidents globally. Further coordination between peacekeeping missions and UN Security Council sanctions committees could assist these efforts, in addition to peacekeeper training on identification and implementation of arms embargoes addressed at precursor materials, where applicable.

IEDs will continue to remain a threat in peacekeeping missions. Experiences from ISAF operations in Afghanistan provide valuable lessons for the UN to draw on. Unfortunately, that experience has also shown that casualties from IEDs in conflict environments can't be completely eliminated. Ultimately, the UN Security Council, mission leadership and troop and police contributors will be required to make assessments on the levels of risk they are willing to accept in peacekeeping missions with an asymmetric threat environment. These risks can be reduced by enhancing troop and police contributor capabilities and putting mitigation measures in place. Technology offers some solutions that will assist these efforts. But in order for it to be most effective, a comprehensive approach that incorporates revised policies and systems are needed to integrate the technology into operations. This is critical to strengthen the safety and security of peacekeeping personnel, and their ability to implement the mission mandate.

[59] See United Nations Security Council, *Sixteenth Report of the Analytical Support and Sanctions Monitoring Team*, UN Doc S/2014/770, p.23. The Monitoring Team notes that 'use of other expanding technologies such as drones should not be ruled out'.

[60] United Nations, 'Final Report of the Expert Panel on Technology and Innovation in UN Peacekeeping', p.105.