

# The Journal of Conventional Weapons Destruction

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Volume 24  
Issue 1 *The Journal of Conventional Weapons  
Destruction Issue 24.1*

Article 15

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July 2020

## Endnotes

CISR JOURNAL

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### Recommended Citation

JOURNAL, CISR (2020) "Endnotes," *The Journal of Conventional Weapons Destruction*: Vol. 24 : Iss. 1 , Article 15.

Available at: <https://commons.lib.jmu.edu/cisr-journal/vol24/iss1/15>

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**Whither HMA Policy? Linking HMA and Development Assistance by Rasmussen [ from page 4 ]**

- International Campaign to Ban Landmines, "Executive Summary," *Landmine Monitor: Toward a Mine-Free World*, (1999): 5.
- The U.S. State Department credits The HALO Trust with coining the term "humanitarian demining" in 1988 as it differentiated military demining in Afghanistan from efforts designed specifically to reduce the ongoing threat to civilians, livelihoods, communities, and public infrastructure in terms of post-war reconstruction. The U.S. later established an inter-agency Humanitarian Demining Program in 1993 (consolidating under one policy roof such programs as Afghanistan 1988, Cambodia 1991, Kuwait 1991, Northern Iraq 1992, Somalia 1991, El Salvador 1993, and Mozambique 1993); in 1997, the United States designated a Special Representative of the President and Secretary of State for Global Humanitarian Demining; and in 1998 the Office of Humanitarian Demining Programs was established in the State Department Bureau of Political-Military Affairs as the lead for HMA, see <https://bit.ly/39gVIZg>.
- International Campaign to Ban Landmines, p. 12.
- "Millennium Development Goals (MDGs)," MDGs.un.org, accessed 25 March 2020, <https://bit.ly/2y2UR5s>.
- John McArthur, Krista Rasmussen, "How successful were the Millennium Development Goals?" 11 January 2017, <https://brook.gs/2zoXbEw>.
- As Stanley Brown, Acting U.S. Deputy Assistant Secretary of State for Political Military Affairs, noted recently: "From a global perspective, the United States has provided over \$3.7 billion in CWD assistance to more than 100 countries since 1993. Over those 26 years, how we prioritized those funds has changed based on foreign policy priorities, the context of international security and post-conflict recovery, and our application of programmatic tools to achieve those objectives." (See "Evolving Funding Models and Donors Remarks." Remarks at Wilton Park Conference, Magaliesburg, South Africa, November 6, 2019. <https://www.state.gov/evolving-funding-models-and-donors/>). (NB: The figure of \$3.7B reflects an upward adjustment based on more current data as reported on page 5 of *To Walk the Earth In Safety* 2019: the prior quote used \$3.4 billion).  
The tension and need to balance between the moral and political imperatives has long been present, going back, for example, to the first U.S. government interagency strategic plan for humanitarian demining, which was prepared at the Directive of President Clinton back in January 1996 in continuation of President Bush's September 1993 National Security Council directive to establish such a body (see <https://bit.ly/3auDh88>). The plan states that "the purpose of the U.S. Government (USG) humanitarian demining program is to assist selected countries to relieve human suffering and develop an indigenous demining capability while promoting U.S. interests. To achieve program goals, the USG must balance its political, military, technological and economic capabilities with available resources." The point is, how governments fund spending is a political decision around political priorities, and currently the politics suggest greater fiduciary oversight for development assistance and HMA, especially in the face of seemingly competing priorities within and across foreign and domestic policy fronts. Return on investment matters: Evidence matters.
- According to the U.S. Department of State, the U.S. budget for 2019 was just under \$200 billion, per planned allocations. It should also be noted that the total amount of U.S. assistance also includes additional munitions related spending of roughly \$10.2 billion in Defense Department spending as well as \$12.2 million from USAID in 2018, and planned amounts for 2019 of approximately \$20 million and \$12.5 million, respectively. See *To Walk the Earth in Safety*, 19th Edition, 02 April 2020 <https://www.state.gov/reports/to-walk-the-earth-in-safety-2020/>.
- To Walk the Earth in Safety*, 19th Edition, 02 April 2020.
- It should be noted that these figures, while reported by the Monitor, may be off a little as some funding was likely spent on minor small arms/light weapons activities and not all went to HMA.
- A review of the annual *Landmine Monitor* reports for the years 2015 – 2019 indicate that the following six countries received roughly 52% of the total global mine action assistance: Iraq (\$469.7M), Afghanistan (\$273M), Syria (\$191.5M), Lao PDR (\$186.4), Cambodia (\$121.8M), and Colombia (\$118.5M).
- "Development aid drops in 2018, especially to neediest countries," OECD.org, 10 April 2019, accessed 25 March 2020, <https://bit.ly/2xZRxYf> (accessed 20 October 2019).
- "Development aid rises again in 2016," OECD.org, 11 April 2017, accessed 25 March 2020, <https://bit.ly/2WGHJN7>.
- Landmine Monitor* 2019, p. 84, November 2019, <https://bit.ly/304Bmoy>, accessed 2 June 2020.
- Other issues have certainly had a positive impact in terms of generating support, such as the ethical argument that mines are indiscriminate weapons, disproportionately affect the poor, have long shelf-lives, and the causal devastation carries generational impact for families and communities. However, casualty and victim reduction results have tended to lead the way.
- Landmine Monitor* 2019, p. 32.
- Landmine Monitor* 2019, p. 54.
- The 2019 Report states that in 2018 "at least 3,059 people were killed, and another 3,837 people were injured." This notwithstanding, earlier mine related casualty data from the 2017 *Landmine Monitor* is used in order enable a comparison across a similar time frame with data reflecting typical causes and rates of death in the developing world inasmuch as global health reporting typically has a much longer lag time.
- The UN's Inter-agency Group for Child Mortality Estimation reported the median of under five child mortality for Sub-Saharan Africa was 82.2 per 1000 live births and 46.4 for South Asia. In contrast, the North American rate was 6.6, while Western Europe was 4.9. See <https://childmortality.org/>.
- Lucia Hug, David Sharrow, and Danzhen You, "Levels & Trends in Child Mortality Report 2017," UNICEF, 2017, <https://uni.cf/3cMWEKk>.
- Lucia Hug, David Sharrow, and Danzhen You, 2017.
- WHO, "World malaria report 2017," November 2017, <https://bit.ly/3fg7E4t>.
- WHO, "Diarrhoeal disease," 2 May 2017, <https://bit.ly/2AlgXkA>.
- Michela Sonogo, Maria Chiara Pellegrin, Genevieve Becker, and Marzia Lazzarini, "Risk Factors for Mortality from Acute Lower Respiratory Infections (ALRI) in Children under Five Years of Age in Low and Middle-Income Countries: A Systematic Review and Meta-Analysis of Observational Studies," *PLOS One* 10, no. 1, (2015), <https://bit.ly/2BXR3f>.
- WHO suggests \$1,000 per capita on health care is the needed global average to dramatically improve health-based quality of life. This is, however, well beyond the means of many underdeveloped countries, as half the world's countries spend less than \$350 per capita per annum.
- Without even modeling potential effects, the HMA community can do a better job of breaking down and communicating the impact clearing the aforementioned 149 sq kilometers had on human and community security and well-being, and do so with attention to sustainability, i.e., longitudinal results. For example, a development oriented HMA key performance indicator might include sustainability, measured by an impact assessment at 1 and 3 year intervals of critical but situationally tailored sub-indicators.
- Fortunately, there is a body of work on which to draw. Two 2004 PRIO publications provide a sufficient base, Preparing the Ground for Peace: Mine action in support of peacebuilding, and the joint publication with UNDP, Reclaiming the Fields of War: Mainstreaming mine action in development. Other representative efforts include the 2008 GICHD report, Linking Mine Action and Development, the 2014 DFID publication Clearing a Path to Development, and the 2016 UNDP report, Mine Action for Sustainable Development. The DFID publication includes a well thought out theory of change, however, itad—the firm hired in 2019 to evaluate DFID's Global Mine Action Programme (2018–2021)—stated they struggled to find good empirical research on the causal connections. Itad noted this is partially due to the lack of policy and operational orientations guiding inquiry into the linkage, especially in terms of longitudinal impact. (See <https://www.itad.com/article/linking-mine-action-to-development-the-need-for-generating-evidence-of-longer-term-change/>). Clearly more work needs to be done by both the development assistance community and the mine action community, each working

toward new, but common middle ground.

- Toward that end, two other documents explore both policy and operational considerations in terms of linking mine action and development—the 2017 joint publication by GICHD and UNDP, *Leaving No One Behind: Mine Action and the Sustainable Development Goals*, and the latest United Nations Mine Action Strategy 2019–2023. The former maps and explains major direct and indirect linkages between the six primary HMA tasks (land release, victim assistance, gender mainstreaming, risk education, physical security and stockpile management, capacity building, and partnerships) and the 17 SDGs. The UN strategy guideline states clearly that, "Mine action has become a nexus between humanitarian action, peace and security, and development as well as a cornerstone for conflict prevention." The strategy also articulates "the strategic objectives and commitments of the United Nations to address the evolving context and nature of explosive ordnance, and the humanitarian and development challenges these pose." Furthermore, it states that "United Nations activities at both global and national levels to ensure responsiveness to context-specific needs and priorities, while ensuring the integration of mine action across broader humanitarian, human rights, peace and security, and development responses."
- "IMAS 14.20 Evaluation of the mine risk education programmes and projects," 23 December 2003, accessed 24 March 2020, <https://bit.ly/3aIKRRh>.
  - "Fourth Review Conference of the States Parties to the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction," APLC/CONF/2019/5, 9 December 2019, <https://bit.ly/2YnKu5F>.
  - For a good treatment of standardizing and better utilizing this type of KPIs, see Roly Evans and David Hewitson, "Key Performance Indicators and HMA: Time to Standardize?" *The Journal of Conventional Weapons Destruction*, 23, no. 2 (2019): 46–55.
  - To Walk the Earth in Safety*, 2020.
  - It should be noted that this last concern is often made more challenging for both the HMA and development assistance communities given the demands of working with host country counterpart institutions who at times lack either or both necessary institutional capacity and political will.
  - To Walk the Earth in Safety*, 2020, p. 37
  - "Leaving no one behind: Mine Action and the Sustainable Development Goals," GICHD and UNDP, June 2017, accessed 25 March 2020, <https://bit.ly/2xjlpXn>.
  - In September 2016, Lao PDR did just this, developing their own SDG18: Lives Safe from UXO. In so doing they crosswalk their SDG18 with SDG1: No Poverty, SDG 5: Gender Equality, SDG 8: Decent Work and Economic Growth, SDG 10: Reduced Inequalities, SDG 16: Peace, Justice and Strong Institutions. See <https://bit.ly/3AlYqLc>.
  - Russell Gasser, "Linking Mine Action and Development: Local-level Benefits and Challenges," *The Journal of ERW and Mine Action* 12, no. 2, (2008): 6, accessed 18 December 2016, <http://www.jmu.edu/cisr/journal/12.2/editorials/gasser/gasser.shtml>.
  - An excellent illustration of this principle is found in the collaboration between the Angolan government, the National Geographic Society, The HALO Trust and the UK government and the British public in terms of decontaminating the Okavango River Basin in Angola. Such collaboration has not only begun to produce results in respect to promoting economically viable use of land, but also river-based transportation, eco-tourism, environmental and scientific research and discovery, as well as being better able to address a range of human and natural threats facing the natural and built environment, wildlife and the Okavango Watershed itself. HMA, long active in Angola, has stepped up its involvement with clearance activity over the past few years in partnership with the National Geographic and its Okavango Wilderness Project. And, the Angolan government has also increased its financial and governance support of this work. The UK government, who has also long supported demining in Angola, has not only increased its recent assistance there, but announced in October 2019 an extension of the model used in Angola to its support of HMA in Zimbabwe. One pillar of such efforts includes the UK government doubling the private contributions made by the British people to the clearance effort, known as "Breaking Boundaries."

**Confidence-building Through Mine Action on the Korean Peninsula by Rhodes [ from page 9 ]**

- Bill Clinton, "Together with South Korea, we must advance peace talks with North Korea and bridge the cold war's last divide," State of the Union Address, 1997.
- UN Secretary-General Boutros Boutros-Ghali wrote in a letter to the Foreign Minister of the DPRK dated 24 June 1994 that "the Security Council did not establish the unified command as a subsidiary organ under its control, but merely recommended the creation of such a command, specifying that it be under the authority of the United States."
- "Korean War," Wikipedia, last modified 9 June 2020. <https://bit.ly/2MMFTUE>.
- Armistice Agreement, Volume 1. <https://bit.ly/2MLi6EW>, paragraph 6.
- Armistice Agreement, Volume 1. <https://bit.ly/2MLi6EW>, paragraph 10.
- "Tall order to transform DMZ minefield into peace zone," *The Korea Herald*, 26 October 2019.
- Col. J. Lloyd and Major M. Born, "Demining and Remains Recovery in the DMZ," (unpublished manuscript, February 2020).
- UNCSB JSA source.
- "Battle of White Horse," Wikipedia, last modified 7 April 2020.
- "Sending States" refers to the sixteen troop-contributing states (in addition to the US) operating under the UN Flag in the Korean War.
- Sanctuary of Endangered Wildlife, National Institute of Ecology (2018).
- Even with additional capacity the nature and extent of contamination in the DMZ will require many decades of work. The reference to fifteen years was perhaps restricted to clearance activities in the west of the DMZ only.
- "Full text of President Moon Jae-in address to the 74th United Nations General Assembly," Yonhap News Agency, 25 September 2019, <https://bit.ly/3dUqVlq>.
- "IMAS Compliance Made Simple." Accessed 19 June 2020. <http://mineaction.net/>.
- For more details for the databasing of IMAS and compliance tool, see <http://mineaction.net/>.
- "Landmine and Cluster Munition Blog, Archived." Accessed 19 May 2020, <https://bit.ly/2WL8T59>.

**Disposal of Explosive Ordnance and Environmental Risk Mitigation. Time for Humanitarian Mine Action to Catch Up? by Evans and Duncan [ from page 18 ]**

- M.R. Walsh. Explosives Residues Resulting from the Detonation of Common Military Munitions: 2002–2006 US Army Corps of Engineers. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory. February 2007. pg. 1–2.
- M.R. Walsh, M.E. Walsh, I. Poulin, S. Taylor, & T.A. Douglas. "Energetic Residues from Detonation of Common US Ordnance," *International Journal of Energetic Materials and Chemical Propulsion*. Volume 10. 2011. pg. 169–186.
- M. Walsh, S. Thiboutot, and B. Gullett. "Characterization of Residues from the Detonation of Insensitive Munitions," SERDP Project ER-2219. November 2017. pg. 3–17.
- T. Jenkins, C.Vogel. Department of Defense Best Management Practices for Munitions Constituents on Operational Ranges. SERDP 2014. November 2014. pg. 2.
- C. Ferreira, F. Freire and J. Ribeiro. "Environmental Management of Military Ranges with the Support of a Life-Cycle Assessment Approach," *Global Approach to Environmental Management on Military Training Ranges*. University of Cranfield. 2020. pg. 5–1–5–20, T. Temple and M. Ladyman (Eds)
- Directorate of Environmental Remediation Programs*. Environment and Engineering Branch. Department of Defence. Australian Government. Contamination Management Manual. Annex G. Firing Ranges. March 2018.
- S. Thiboutot, R. Martel, S. Brochu and M. R. Walsh. "Mitigation of the Environmental Footprint of a Munition," *Global Approach to Environmental Management on Military Training Ranges*. University of Cranfield. 2020. pg. 11–1–11–17, T. Temple and M. Ladyman (Eds)
- H. Craig. "Review of Remediation Technologies for Energetics Contamination in the US," *Global Approach to Environmental Management on Military Training Ranges*. University of Cranfield. 2020. pg. 7–1–7–34. T. Temple and M. Ladyman (Eds).
- United States of America. Department of Defense. Munitions Demilitarization/Disposal Subgroup and Environmental Subgroup. Joint Ordnance Commanders Group (JOCC). Open

- Burning/Open Detonation Units. March 2019. pg. 1.
11. <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32000L0060&from=EN>
  12. <https://www.epa.gov/sites/production/files/2017-08/documents/federal-water-pollution-control-act-508full.pdf>
  13. <http://www.legislation.gov.uk/ukpga/1991/57/contents>
  14. <http://www.legislation.gov.uk/ukpga/1990/43/contents>
  15. International Ammunition Technical Guideline 10.10. Demilitarization and destruction of conventional ammunition. UN ODA-2015.
  16. The most recent is the Cambodian National Mine Action Standard on Environment but this contains only very general information on chemical contamination from EO. Cambodian Mine Action Standards. Chapter 20. Environmental Management in Mine Action Operations.
  17. International Mine Action Standard 07.13, Environmental Management in Mine Action. First Edition. 14 March 2017.
  18. For example, Chicala in Maputo Province, 2002. Email. Olaf Juergensen to R.Evans. 19 February 2020.
  19. M. Jebens. "Protecting the Environment; Mine Clearance in Skallingen, Denmark," *The Journal of Conventional Weapons Destruction*. Volume 19. Issue.1 Article 11. 2015.
  20. <https://adbook.com/en/2017/UN/3288>
  21. Q3D Elemental Impurities Guidance for Industry. U. S. Department of Health and Human Services Food and Drug Administration Center for Drug Evaluation and Research (CDER) Center for Biologics Evaluation and Research (CBER) September 2015. pg. 42.
  22. I. Bortone, F Coulon, W Fawcett-Hirst, M Ladyman and T Temple. "Scientific Principles of Environmental Management," Global Approach to Environmental Management on Military Training Ranges. University of Cranfield. 2020. pg. 1-1-1-3. T. Temple and M. Ladyman (Eds)
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  29. C. Emond, V. Vergara, E. Lombardini, S. Mog, J. Kalinich. "The Role of the Component Metals in the Toxicity of Military-Grade Tungsten Alloy," *Toxics* 2015, Volume 3, Issue 4. pg. 499-514.
  30. WNIco splinters typically consist of 92% tungsten, 5% nickel, 3% cobalt. See E. Roedel, D. Cafasso, L. Lee, L. Pierce. Pulmonary toxicity after exposure to military-relevant heavy metal tungsten alloy particles. *Toxicology and Applied Pharmacology*. Volume 259, Issue 1, 15 February 2012, pg. 74-86.
  31. S. Chatterjee, U. Deb, S. Datta, C. Walther and D. Gupta. "Common explosives (TNT, RDX, HMX) and Their Fate in the Environment: Emphasizing Bioremediation," *Chemosphere*. Volume 184. June 2017. pg. 438-451.
  32. Methoglobin is unable to bind with oxygen. An abnormal amount of methoglobin formation causes the blood to be unable to release oxygen effectively to body tissues.
  33. U.S. Environmental Protection Agency (EPA) 40 CFR 261.30.
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  36. Environmental Protection Agency. Technical Fact Sheet. RDX. November 2017
  37. Environmental Protection Agency. Technical Fact Sheet. TNT. November 2017
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  46. T. Richard and J. Weidhaas. Biodegradation of IMX-101 explosive formulation constituents: 2,4-Dinitroanisole (DNAN), 3-nitro-1,2,4-triazol-5-one (NTO), and nitroguanidine. *Journal of Hazardous Materials*. Volume 280. August 2014. pg. 372-379.
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  49. M. Walsh et al. "Characterization of PAX-21 Insensitive Munition Detonation Residues," *Propellants, Explosives, Pyrotechnics*. Volume 38. Issue 3. June 2003. pg. 399-409.
  50. Environmental Protection Agency. Technical Fact Sheet. Perchlorate. November 2017.
  51. S. Thiboutot, R. Martel, S. Brochu and M. R. Walsh. Mitigation of the environmental footprint of a munition. In T. Temple and M. Ladyman (Eds), Global Approach to Environmental Management on Military Training Ranges. University of Cranfield. 2020. pg. 11-2-11-4.
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  53. M. Pope, E. Baker. Munitions Safety Information Analysis Centre. Insensitive Munitions Explosive Ordnance Disposal Challenges. International Explosives Safety Symposium San Diego. 2018.
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  55. A. Cumming. "Legislative Impact," *Energetic Materials and Munitions Life Cycle Management, Environmental Impact and Demilitarization*. pg. 2-4, A.Cumming and M.Johnson (Eds).
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  58. "Burning the Bullet. Industrial Demilitarization of Ammunition," *Small Arms Survey* 2013. Chapter 9. pg. 207-209.
  59. S. C. Peffer. "The Demilitarization of Ammunition," IMPEL Waste & TFS Conference. 16-17 October 2019. pg. 21.
- Measuring Behavior Change Resulting from EO and the Need for Complementary Risk Reduction Activities by Boyd, Kasack, and Nielsen [ from page 23 ]**
1. "Combating land-mines in El Salvador," UNICEF, accessed 18 March 2020, <https://uni.cf/33t86r9>.
  2. EO is a recent term following on from mine risk education (MRE) that aims to reflect more adequately that EO efforts comprise other types of explosive ordnance as well. See IMAS 12.10 Mine/ERW Risk Education. For more on explosive ordnance, see IMAS 04.10 Glossary of mine action terms, definitions and abbreviations.
  3. "Explosive Ordnance Risk Education, Sector mapping and needs analysis," GICHD 2019, accessed 18 March 2020, <https://bit.ly/39XraJQ>, page 32. 3.4. "The situation is particularly problematic for measuring behaviour change, the long-term aim of EO, because sustained behaviour change takes place over an extended period of time."
  4. REPP surveys are conducted one-on-one with usually one or two persons per EO session (10-12 questions, lasting 7-10 minutes). The answers provide a good idea as to whether knowledge increased (with a post-interview done right after the EO session) and, if another interview is conducted three to six months later, how much knowledge was retained. Although answers are not statistically representative, a high number of sessions and a strict protocol for selecting interviewees are measures followed to get best results possible.
  5. "Evaluation Report UK Department for International Development SUMMATIVE EVALUATION OF THE DFID GLOBAL MINE ACTION PROGRAMME," Itad, May 2018, accessed 3 April 2020, <https://bit.ly/2Rah0oD>, page 10.
  6. For guidance on FGDs, see OXFAM Research Guidelines 2015, Conducting Focus Groups, or MSF (no year), Le Focus Group, Guide Collecte (en Français).
  7. "Focus Group Discussion Guidelines for Communities, Risk Communication and Community Engagement for the New Coronavirus." IFRC. Accessed 6 April 2020. <https://uni.cf/2xY452f>.
  8. Community outreach team is DFID's terminology, MAG prefers the term community liaison (CL), a term that is used at times in this article.
  9. "IMAS Mine Risk Education Best Practice Guidebook 1, An Introduction to Mine Risk Education," GICHD/UNICEF 2005, accessed 18 March 2020, <https://bit.ly/3b4Fvrc>, page 11.
  10. HALO, MAG, and NPA, "Behaviour Change Focus Group Discussion Guidelines, DFID GMAP 2 - Lots 1 And 2," updated as of July 2019.
  11. Kayin State is home to one of the world's longest running civil wars between the Myanmar military and ethnic armed groups. Local communities continue to be impacted by heavy militarization in some areas of Kayin State due to the presence of military camps in and around their villages. Many soldiers and former soldiers continue to live in these villages, making landmines and other explosive ordnance a sensitive topic for community liaison teams.
  12. Blast fishing or dynamite fishing is the practice of using explosives to stun or kill schools of fish for easy collection. This often illegal practice can be extremely destructive to the surrounding ecosystem, as the explosion often destroys the underlying habitat that supports the fish. The frequently improvised nature of the explosives used means danger for the fishermen as well, with accidents and injuries. (Wikipedia)
  13. Risk reduction as defined in IMAS does not reflect the way it is used here in this article. Here, the authors define risk reduction as "actions taken to lessen the probability, negative consequences or both, associated with a particular risk." Mine risk reduction can be achieved by physical measures such as clearance, fencing or marking, or through behavioural changes brought about by MRE.
  14. "Fourth Review Conference of the States Parties to the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction APLC/CONF/2019/5," Oslo, 26-29 November 2019 <https://bit.ly/3deFC9o>, page 36. This action plan for the first time in the Convention's history includes a dedicated chapter on risk education, called Mine risk education and reduction.
- Detonating the Media, Raising the Profile of Mine Action by McCann [ from page 30 ]**
1. Princess Diana traveled to Bosnia and Herzegovina for a three-day trip with an American organization, The Landmine Survivors Network, in August 1997 to visit landmine victims.
  2. "Diana's Landmine Crusade Put Tories in a Panic," *The Guardian*, accessed 1 April 2020, <https://www.theguardian.com/uk/2000/jan/03/monarchy/freedomofinformation>.
  3. "Angola Unravels: The Rise and Fall of the Lusaka Peace Process," Human Rights Watch, 13 September 1999, accessed 1 April 2020, <https://www.hrw.org/report/1999/09/13/angola-unravels/rise-and-fall-lusaka-peace-process>.
  4. Interview with Adriano Goncalves, Head of International Relations, National Intersectoral Commission for Humanitarian Demining and Assistance (CNIADH), Geneva, 8 June 2018. <http://www.the-monitor.org/en-gb/reports/2019/angola/casualties.aspx#ftn2>.
  5. Image of Diana, Princess of Wales, body armor, <https://collections.royalarmouries.org/object/rac-object-48446.html>.
  6. The Landmine Free 2025 Campaign membership includes the HALO Trust, Mines Advisory Group, Humanity and Inclusion, Norwegian People's Aid, Association for Aid and Relief Japan, and APOPO. For more information please see <https://www.landminefree2025.org>.
  7. "Mine Action's Fair Share: An Agenda for Change", Landmine Free 2025 campaign, November 2019, accessed 9 April 2020, <https://bit.ly/2Rsu9d0>, page 5.
- A New Approach to Understanding, Achieving, and Demonstrating IMAS Compliance by Hewitson [ from page 35 ]**
1. A nonconformity is defined as 'nonfulfillment of a requirement' (IMAS 07.12 Section 3 Terms, definitions and abbreviations)
  2. [www.iso.org/about-us.html](http://www.iso.org/about-us.html)
  3. There are a great many such organizations around the world: over one million certified against ISO 9001 alone.
  4. For example, in the UK it is UKAS, in Vietnam it is STAMEQ, in Algeria it is IANOR and so on. A full list of members and accrediting bodies can be found at [www.iso.org/members](http://www.iso.org/members)
  5. For example: The organization shall determine external and internal issues that are relevant to its purpose and its strategic direction and that affect its ability to achieve the intended result(s) of its quality management system. (ISO 9001:2015, 4.1 Understanding the organization and its context)
  6. For example: The organization should evaluate its existing risk management practices and processes, evaluate any gaps and address those gaps within the framework. (ISO 31000:2018 Risk management - Guidelines, section 5.1 Framework, general)
  7. In this case the text is taken from ISO 9001:2015(E) Introduction, 0.1 general, but similar text is found in other ISO standards.
  8. In the English edition of ISO 9001:2015 (Quality management systems - Requirements) for example, 'shall' appears 129 times, 'should' only twice, and then in the forward and explanatory introduction only. In ISO 31000:2018 (Risk management - guidelines), which provides guidance and is not a standard against which an organization can be certified, 'shall' appears once, in explanatory text, and 'should' 69 times in the main body of the document.
  9. Although 'can' is used in this way in the International Ammunition Technical Guidelines (IATGs).
  10. While the role of the Technical Notes for Mine Action (TNMAs) is to explain how to comply with some specific aspects of IMAS, as well as to provide other information of a technical

nature, there is not such a clear distinction within the IMAS system between documents that contain exclusively requirements and those that provide supporting guidance.

- The normative elements are those 'shall', 'should' and 'may' statements found within the main body of each standard (which is always 'normative') and in a small number of normative annexes. Most annexes to IMAS, other than the references to other standards, are 'informative'. IMAS 01.10 is unusual in that it has several normative annexes covering fundamental aspects of the IMAS system such as the IMAS management structure, terms of reference for the IMAS Review Board and the procedure for amending or developing an IMAS.
- Such as the extensive recommendations in Annex B to IMAS 07.40 on the conduct of site monitoring visits, or Annex C to IMAS 09.31 which provides recommendations on working practices and management oversight during IED operations.

#### The Lethality Index: Re-Conceptualizing IED Clearance Planning and Delivery in Iraq by Wilkinson [ from page 38 ]

- While UNMAS has a number for Iraq, and it's relevant, the same question still applies to other environments. For further information, please see *Landmine Monitor* 2019 Report, accessed 15 June 2020, <http://www.the-monitor.org/media/3074086/Landmine-Monitor-2019-Report-Final.pdf>, p. 88: in 2018, Iraq received \$116.4M in international support; p.89: "Iraq was the recipient with the largest decrease, receiving \$86.9M less than in 2017".
- "IEDs and Urban Clearance Variables in Mosul: Defining Complex Environments," *Journal of Conventional Weapons Destruction*, Vol. 23, Issue 2, pp. 13-20, July, 2019.
- ISIS carries out (an average of) 60 attacks a month in Iraq according to Masrour Barzani, Prime Minister, Kurdistan Regional Government, "The Inconvenient Truth About ISIS," *The Atlantic*, February 14, 2020.
- From the start of operations in August 2016 through December 2019, UNMAS Iraq teams alone cleared more than 39,800 explosive remnants of war, including more than 3,900 IEDs including suicide vests and IED main charges from Iraq's liberated areas. UNMAS Iraq data
- International Campaign to Ban Landmines, *Landmine Monitor* 2019 Report, November 2019, accessed 8 June 2020. <http://www.the-monitor.org/media/3074086/Landmine-Monitor-2019-Report-Final.pdf>
- The term "explosive hazards" is interpreted here includes: mines, cluster munitions, unexploded ordnance, abandoned ordnance, booby traps, improvised explosive devices and other devices as defined by CCW APII = Convention on Certain Weapons Amended Protocol II (CCW APII).
- iMAP data, August 2018
- International Campaign to Ban Landmines, *Landmine Monitor* 2019 Report, November 2019, accessed 15 June 2020. <http://www.the-monitor.org/media/3074086/Landmine-Monitor-2019-Report-Final.pdf>, p. 28.
- World Bank, 2018. Iraq Reconstruction & Investment: Damage and Needs Assessment of Affected Governorates. [pdf] World Bank. Retrieved from:
- National Iraqi News Agency (NINA), 13th April 2020 – Story quotes police sources investigating deaths of two young Yazidi men killed and four others wounded by an unspecified ISIS explosive device hidden in an abandoned house in Al-Qahtaniyah district, west Mosul.
- Of 111 confirmed and suspected areas in Ninewa governorate contaminated with IEDs, 75 percent were in agricultural land in Al-Hamdaniya, 85 percent in Baashliqa, and 100 percent in Takaif. Norwegian People's Aid Non-Technical Survey Results, 2018 and 201
- "Rural Areas in Ninewa: Legacies of Conflict on Rural Economies and Communities in Sinjar and Ninewa plains," a report, International Organization for Migration (IOM), 2019, p 5
- "IED Threat Consistency, Predictability Suggest a 'Simple' Model for Clearance," *Journal of Conventional Weapons Destruction*, Vol. 23, Issue 2, pp. 7-12, July, 2019
- "IEDs and Urban Clearance Variables in Mosul: Defining Complex Environments," *Journal of Conventional Weapons Destruction*, Vol. 23, Issue 2, pp. 13-20, July, 2019
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- "IEDs and Urban Clearance Variables in Mosul: Defining Complex Environments," *Journal of Conventional Weapons Destruction*, Vol. 23, Issue 2, pp. 13-20, July, 2019
- 10 deceased victims recovered from debris, west Mosul, 26th January; United Nations Security Service Report, 27th January 2020
- "IEDs and Urban Clearance Variables in Mosul: Defining Complex Environments," *Journal of Conventional Weapons Destruction*, Vol. 23, Issue 2, pp. 13-20, July, 2019
- "Connecting the dots: The Pace of IED Clearance Seen as Key Factor to Safe Return of 1.6 Million Displaced Iraqis," *Counter-IED Report*, Autumn, 2019, pp.17-22
- Vladimir Voronkov, Undersecretary-General, U.N. Office of Counter-Terrorism, United Press International, 23rd August, 2019: "(ISIS) continues to evolve into a covert network" following a pattern from 2017 whereby ISIS "insurgency activity reportedly designed to prevent normalization and reconstruction efforts continue."
- In January 2020, UNMAS Iraq began supplementing its operational data tracking work days lost due to various factors, including security, for each of three clearance teams deployed across Iraq. For the month of January, the three teams reported a combined total of 42 actual work days versus 59 potential work days, with work day losses attributable to weather (-2), manning (-3), non-operational reasons (-5) and security (-8). Most significant, all work day losses attributable to security affected the same team, a clear indicator of ISIS focus in that team's area of operation, reducing that team's cost-effectiveness by 66 percent.
- Iraq Bi-Weekly Estimate, 2020-081, UN Iraq Joint Analysis Unit, 21 January, 2020, p.8
- UNDS estimates 2019 strength at between 4,000 to 10,000
- "isis in Iraq: Militants 'getting stronger again,'" By Orla Guerin, BBC News, Northern Iraq, 23 December 2019, quoting unnamed Kurdish intelligence officials.
- Iraq Bi-Weekly Estimate, 2019-080, UN Iraq Joint Analysis Unit, 31 December, 2019, p.6, revised to 4,462 as of 20 April 2020
- ISIS is believed to have decentralised its command and control structure and has increased the number of operational sectors in Iraq from four to ten, with each operational sector self-financed through illegal economic activities, such as extortion. Courtesy UN Joint Analysis Unit, 20 April 2020
- Infographic covers a period approximately from September 21, 2017 to January 31st, 2020. Estimate courtesy Saif Al-Tatooz, UNMAS Iraq. For most of 2019, open source data indicated a larger number of ISIL incidents, when compared with ISIL's Amaq New Agency data until September of 2019. Gol sources usually admit to approximately 23 percent of the attacks claimed by ISIL. The discrepancy in reporting ISIL incidents can be attributed to the confusion of mixing security incidents with ISIL attacks. Courtesy UN Joint Analysis Unit
- For a more detailed analysis of 'cost benefit analysis' and reporting metrics, see, for example, Eliot, G. and Harris, G., A Cost Benefit Analysis of Landmine Clearance in Mozambique, Development Southern Africa, Volume 18, No. 5, pp. 625 - 633
- Defined as a system of numbers used for comparing values of things that change according to each other or a fixed standard, Cambridge Dictionary, Cambridge University Press, 2020
- See: Wilkinson, M., IED Threat Consistency and Predictability in Fallujah: A Simple Model for Clearance, & IEDs and Urban Clearance Variables in Mosul: Defining Complex Environments, *The Journal of Conventional Weapons Destruction*, Issue 23, No. 2 (July 2019), pp. 7 - 12 and 13 - 18.
- See, for example: Bibby, P R, Shepherd, JW, 2004, 'Developing a New Classification of Urban and Rural Areas for Policy Purposes – the Methodology' Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/137655/rural-urban-definition-36-37](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/137655/rural-urban-definition-36-37).
- See, for example: A Guide to Mine Action, Fifth Edition, GICHD, Geneva, March 2014, pp. 36 - 37.
- Courtesy of Nathan Williams, Operations Planning Officer, UNMAS Iraq.
- Evans, Roly and Hewitson, David (2019) Key Performance Indicators and HMA: Time to Standardize?, *Journal of Conventional Weapons Destruction*: Vol. 23 (2019) Issue 2, pp. 48 - 49

#### Seventh Mine Action Technology Workshop: A Space for Innovation by Khanyan and Cruz [ from page 45 ]

- For more information, please see [gichd.org/en/7thminetechworkshop/](http://gichd.org/en/7thminetechworkshop/).
- Podest, Erika, "Basics of Synthetic Aperture Radar (SAR)." NASA, November, 2017. <https://go.nasa.gov/35UINAH>.
- Imperial College London. Space and Atmospheric Physics, Fluxgate Magnetometers. <https://bit.ly/35QtKjU>.

#### Understanding the Logic of Rebel Restraint on Landmine Use by Garbino [ from page 48 ]

- This article is based on the author's master's thesis, entitled "Rebels Against Mines? Explaining rebel restraint on landmine use", presented at the Department of Peace and Conflict Research, Uppsala University, on 3 June 2019. <http://uu.diva-portal.org/smash/record.jsf?pid=diva2%3A1321893&dsid=7849>
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- Ann-Kristin Sjöberg, "The Involvement of Armed Non-State Actors in the Landmine Problem: A Call for Action," in Nairobi Summit on a Mine Free World (Nairobi Summit on a Mine Free World, Nairobi, Kenya: Geneva Call, 2004), 35.
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- Developing a Sustainable National Training Capacity: Non-Technical Survey Training in Colombia by Bonnet, Gray, and Matassa [ from page 53 ]**
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