

## ENDNOTES

---

### Landmine Free 2025: A Shared Responsibility by Wallen and Loughran [ from page 6 ]

1. "State of Play – The Landmine Free 2025 Commitment," Landmine Free 2025, December 2017, <https://bit.ly/2ISFnlt>.
2. "Policy Brief – The Ottawa Treaty's 2025 Goal for Clearance," Landmine Free 2025, May 2018, <https://bit.ly/2JSqnEM>.
3. "Clearing The Mines 2017," Mine Action Review, Pages 6–8, <https://bit.ly/2zBURGo>.
4. Whereas global humanitarian funding in 2017 totaled US\$27.3 billion, the 2018 Global Humanitarian Overview stated global humanitarian funding need at \$25.3 billion. "global humanitarian assistance report 2018," Development Initiatives, accessed 26 November 2018, <https://bit.ly/2ITNSv2>.
5. The Individualized Approach, created by the APMBC Committee on the Enhancement of Cooperation and Assistance, aims "to support individual states to voluntarily provide detailed information on the challenges it faces and its needs with the aim of fulfilling the remaining obligation of the Convention in an effective and expedient way." It facilitates a collaborative approach between states, the donor community, mine action operators and other stakeholders. <https://bit.ly/2OMqqCP>.

### Enhancing Humanitarian Mine Action in Angola with High-resolution UAS Imagery by Cruz, Jaupi, Njamba, and Cottray [ from page 15 ]

1. Alan Corner, "Commercial Unmanned Aircraft Systems. Breaking down barriers to UAS deployment," published 22 December 2011, Helios Adviser white paper, slide 3, <https://bit.ly/2Qt9PZJ>.
2. Swiss Foundation for Mine Action, "Drones in Humanitarian Action A guide to the use of airborne systems in humanitarian crises," FSD white paper, <https://bit.ly/2K0tqhw>.
3. Inna Cruz, Daniel Eriksson, "Miniature Aerial Photography Planes in Mine Action." *Journal of Conventional Weapons Destruction*, 17, no. 3 (Fall 2013): 50-57, <https://bit.ly/2KPOeVW>.
4. John Fardoulis, Steven Kay, Alaa Alzoubi, Nabil Aouf, Ranah Irshad, "Robotics and Remote Sensing for Humanitarian Mine Action & ERW Survey (RRS-HMA)," Research Gate, 4, <https://bit.ly/2KPCUZR>.
5. UAS output products are processed, geo-referenced, and visualized in a comprehensive way. UAS row images combine with data from other sources (e.g., IMSMA database) and are presented in the format of various maps (e.g., heat-maps) and dashboards.
6. "Drones in Demining – Enhancing Mine Action Operations with UAS imagery (Case Study)," Waypoint –Drone Insights & Inspiration – senseFly, posted 21 December 2016, <https://bit.ly/2Udg3M4>.
7. Geneva International Centre for Humanitarian Demining, "A Guide to Mine Action – Land Release," Geneva, GICHD, <https://bit.ly/2UcQb3g>.
8. Samuel Paulina. "Unmanned Aerial Systems used by Civil Emergency Services and their influence on Resilience," 2014.

### The Effects of ERW Contamination in Sri Lanka by Dathan [ from page 32 ]

1. Devoic, B, 2013, 'Sri Lanka: Physical Reconstruction and Economic Development as Conflict Prevention Factors', CIRR, XIX (69), 55-75.
2. "Sri Lanka: top UN official welcomes recent releases of displaced from camps," UN News, 23 November 2009. <https://bit.ly/2ATLqUh>.
3. According to HALO representatives in Kilinochchi in December 2017.
4. Dathan, J. 2018, When the Bombs Fall Silent: The reverberating effects of explosive weapons. Action on Armed Violence. <https://bit.ly/2tgN9Py>.
5. "Sri Lanka: Cluster Munition Ban Policy." Landmine and Cluster Munition Monitor, Last updated 2 March 2018. <https://bit.ly/2PPopue>.
6. "Two volunteers clearing landmines lose their lives," The Sunday Times, 9 September 2018. <https://bit.ly/2RkuqFY>.
7. According to interviews conducted with the President of the Spinal Cord Injury Association in the Northern Province in December 2017.
8. Balamurali, N. and P. Dunusinghe, "Informal Employment among Youth in the Post-War Northern Economy," A Paradigm Shift of Thoughts and Policies: The Need of the Hour for Developing Economies. <https://bit.ly/2yXRw4C>.
9. Interviewed in the Northern Province in December 2017.
10. Smith, Colin, "Imperial to help develop blast injury hub for conflict survivors," Imperial College London, 17 July 2017. <https://bit.ly/2RJYUrv>.
11. "Sri Lanka: GDP growth (annual %)," The World Bank, <https://bit.ly/2zDIoC0>.
12. Central Bank of Sri Lanka, 'SRI LANKA SOCIO-ECONOMIC DATA 2016', June 2016, [http://www.cbsl.gov.lk/pics\\_n\\_docs/10\\_pub/\\_docs/statistics/other/Socio\\_Econ\\_Data\\_2016\\_e.pdf](http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/statistics/other/Socio_Econ_Data_2016_e.pdf)
13. Ramakrishnan, T, "Tamil areas in Sri Lanka are the pockets of poverty," The Hindu, 20 February 2016. <https://bit.ly/2zE7FvR>.
14. Government of Sri Lanka, "Sri Lanka National Mine Action Strategy: 2016 – 2020," May 2016, <https://bit.ly/2qCgyBQ>.
15. Chandran, N, "Battle scars: Sri Lanka's north counts the cost of a 26-year war," CNBC, 29 April 2016, <https://cnb.cx/2ATkbcu>.
16. Visit Sri Lanka, 'Sri Lankan politicians – have they started to steal cows now?', 25 January 2018, <https://visitsrilanka.com/news/>

sri-lankan-politicians-have-they-started-to-steal-cowsnow/

17. According to HALO representatives in Kilinochchi in December 2017.
18. Internal Displacement Monitoring Centre, 2018, "SRI LANKA: Global Report on Internal Displacement (GRID 2018)," <https://bit.ly/2ROIqhZ>.
19. Interviewed in the Northern Province in December 2017.

### **Opportunities for Regional Training and Information Exchange Reap Benefits for Central Asia by Ober, Shozodaeva, Akhmedova, and Fiederlein [ from page 37 ]**

1. "OSCE Office in Tajikistan supports explosive ordnance disposal training course for regional specialists". OSCE Programme Office in Dushanbe. May 30 2017. Accessed October 2018. <https://www.osce.org/office-in-tajikistan/320226>

### **Demining the Tajik-Uzbek Border: What have we learned from the Tajik experience? by Garbino and Huseinov [ from page 45 ]**

1. The Defense Post, 'Tajikistan and Uzbekistan to Study and Schedule Border Demining', The Defense Post, 17 April 2018.
2. Integrated Regional Information Networks, 'Tashkent Moves to De-Mine Borders with Kyrgyzstan and Tajikistan', Landmine Survivor's Network, 24 June 2004.
3. Zarrina Ergasheva, "'Statement of Uzbek Authorities about Beginning of Demining of Uzbek-Tajik Not yet Confirmed': TMAC', Asia-Plus, 14 December 2005.
4. Integrated Regional Information Networks, 'Kyrgyztan-Tajikistan: Landmine Threat along Uzbek Border Removed', Landmine Survivor's Network, 31 October 2005.
5. Landmine & Cluster Munition Monitor, 'Uzbekistan Mine Action Report (2016)' (Geneva, Switzerland: International Campaign to Ban Landmines – Cluster Munition Coalition, 2016).
6. Tajikistan National Mine Action Centre, 'Information Management System for Mine Action: Tajikistan Dataset' (Geneva International Centre for Humanitarian Demining, November 2018).
7. Mine Action Review, 'Clearing the Mines: Tajikistan (2017)' (Oslo, Norway: Norwegian People's Aid, 2017).
8. Government of the Republic of Tajikistan, 'National Strategy of the Republic of Tajikistan on Humanitarian Mine Action for 2017-2020' (Tajikistan National Mine Action Centre, 2017), 8.
9. Agency on Statistics under President of the Republic of Tajikistan, 'Social-Demographic Sector Database' (Government of the Republic of Tajikistan, 2017).
10. Jonmahmad Rajabov, 'Tajikistan Mine Action Programme', Journal of Conventional Weapons Destruction 10, no. 1 (2006): 70–72.
11. Chris Rennick, Operations Manager, Swiss Foundation for Mine Action in Tajikistan, interview by Henrique Garbino, face-to-face, 14 June 2018.
12. Swiss Foundation for Mine Action, 'Impact Survey report: Panjakent, Ayni, Asht, and Isfara' (Dushanbe, Tajikistan: Swiss Foundation for Mine Action, 2011).
13. The coordinates for these accidents are Oftobruï 40°10'26.10"N 70°40'41.40"E, Chashma 39°49'57.70"N 68°38'25.10"E, and Chashma 39°49'57.00"N 68°38'26.20"E.
14. Åsa Massleberg, 'Strategic Planning in Mine Action Programmes: Tajikistan' (Geneva, Switzerland: Geneva International Centre for Humanitarian Demining, October 2013).
15. Landmine & Cluster Munition Monitor, 'Tajikistan Mine Action Report (2018)' (Geneva, Switzerland: International Campaign to Ban Landmines – Cluster Munition Coalition, 2018). (Geneva, Switzerland: International Campaign to Ban Landmines – Cluster Munition Coalition, 2018).
16. Even though the composition of Uzbek minefields is not known, survey teams have found evidence of OZM-72 anti-personnel mines.
17. Nickhwah Din Mohammed, Programme Manager, Swiss Foundation for Mine Action in Tajikistan and Afghanistan, interview by Henrique Garbino, face-to-face, 26 June 2018.
18. It is possible to estimate the confirmed hazardous area by applying the average size of minefields found on the Tajik-Afghan border ( $A = 55,000 \text{ m}^2$ ) to the identified suspected hazardous areas on the Tajik-Uzbek border ( $n = 60$ ). The final estimated areas ( $55,000 \times 60$ ) thus equal  $3,300,000 \text{ m}^2$ . Time for completion is estimated on the basis of 10 demining teams clearing  $100,000 \text{ m}^2$  annually.
19. Estimating the average length of the polygons is not complicated if their shape is known. However, it is well-known that minefields might be laid in various shapes (circles, octagons, rectangles, square, etc). For the sake of simplicity, we converted the known areas of the registered minefields in Tajikistan into perimeter lines and then bisected the perimeter. Thus, it is possible to estimate the length of contamination along the Tajik-Uzbek border by multiplying minefield average length ( $L = 596.6 \text{ m}$ ) and the number of suspected hazardous areas ( $n = 60$ ), as identified in casualty data. The final results show that the extent of contamination totals  $35.8 \text{ km}$  ( $596.6 \times 60$ ).
20. Google Earth Pro 7, Tajik-Uzbek Border, elevation profile, 39°21'16.33"N, 68°53'36.88"E, eye alt. 440 km (Image Landsat / Copernicus, 31 December 2016), <http://www.earth.google.com>.
21. The reduction in funding coincided with the end of mechanical demining operations due to lack of areas suitable for this type of

clearance. After the end of mechanical clearance, funding levels were not maintained to cover the mobilization of additional manual teams to compensate for the lack of mechanical capacity, even though existing mechanical teams from the Ministry of Defence and the Swiss Foundation for Mine Action were converted to manual teams.

22. Until 2014, the coordinating body for all the mine action-related activities was the Tajikistan Mine Action Centre (TMAC), a project mostly funded and run by the United Nations Development Programme (UNDP). The last five years nationalization of the TMAC has been a major focus of UNDP. The efforts from UNDP, together with the support and commitment of the Government of Tajikistan, enabled the nationalization of the TMAC and the creation of the TNMAC. National ownership and responsibility were finally recognized through the official establishment of TNMAC as a national mine action centre under a dedicated entity on 3 January 2014. UNDP was then transformed into the Supporting Team for Mine Action Programme (STMAP), with a limited number of advisers working together with TNMAC officers with specified role of capacity building. As of today, the TNMAC enjoys full responsibility of all mine action activities in the country.
23. TNMAC implementing partners are the Swiss Foundation for Mine Action (FSD), the Norwegian People's Aid (NPA), the Ministry of Defence (MoD), the Committee of Emergency Situations and Civil Defence and the Union of the Sappers of Tajikistan (UST).
24. Muhabbat Ibrohimzoda, Director, Tajikistan National Mine Action Centre, interview by Henrique Garbino, face-to-face, 11 June 2018.
25. Kerry Brinkert and Sheree Bailey, 'Five Key Examples of the Role of Mine Action in Integrating Victim Assistance into Broader Frameworks' (Geneva, Switzerland: Geneva International Centre for Humanitarian Demining, 2014).
26. Artyom Harutyunyan, 'Demining in Remote Areas of Northern Afghanistan', *Journal of Conventional Weapons Destruction* 18, no. 3 (2014): 37–41.
27. Johan Dahl, Demining Officer, Organisation for Security Cooperation in Europe, Programme Office in Dushanbe, interview by Henrique Garbino, face-to-face, 6 June 2018.
28. Melissa Andersson, Country Director, Norwegian People's Aid Humanitarian Disarmament Programme Tajikistan, interview by Henrique Garbino, face-to-face, 27 June 2018.

#### **DRONES AND "BUTTERFLIES": A LOW-COST UAV SYSTEM FOR RAPID DETECTION AND IDENTIFICATION OF UNCONVENTIONAL MINEFIELDS BY DE SMET, NIKULIN, FRAZER, BAUR, ABRAMOWITZ, FINAN, DENARA, AGLIETTI, AND CAMPOS [ FROM PAGE 50 ]**

##### References

1. Dolgov, R, "Landmines in Russia and the Former Soviet Union: A Lethal Epidemic," *Medicine & Global Survival* 7, no. 1 (2001): 38-42.
2. Strada, Gino, *Green Parrots: A War Surgeon's Diary* (2005), Charta,
3. Urban, Mark, *War in Afghanistan*. London: Palgrave Macmillan, 1990.
4. Tkach, B., and Pankratov V., "Afghanistan, October 1980: Scale of Armed Conflict Gradually Increasing," *Journal of Air and Space Defense* 6 (2010): 23–45.
5. Hughes, G., "The Soviet–Afghan War, 1978–1989: An Overview," *Defence Studies* 8, no. 3 (2008): 326–350.
6. MacDonald, J., J.R. Lockwood, J. McFee, T. Altshuler, and T. Broach., "Alternatives for landmine detection (No. RAND/MR-1608-OSTP)," 2003, Rand Corp: Santa Monica, CA, <https://bit.ly/2PJQnHQ>.
7. de Smet, Timothy S., and Alex Nikulin, "Catching 'butterflies' in the morning: A new methodology for rapid detection of aerially deployed plastic land mines from UAVs," *The Leading Edge* 37, no. 5 (2018): 367–371.
8. Alex Nikulin, Timothy S. de Smet, Jasper Baur, William Frazer, and Jacob Abramowitz, "Detection and identification of remnant PFM-1 'butterfly mines' with a UAV-based thermal imaging protocol." *Remote Sensing* 10, no 11 (2018): 1672. <https://bit.ly/2RWFkZh>.
9. Scheidt, S., Ramsey, M., & Lancaster, N., "Determining soil moisture and sediment availability at White Sands Dune Field, New Mexico, from apparent thermal inertia data," *Journal of Geophysical Research: Earth Surface* (2010), 115(F2), <https://bit.ly/2DdCDhV>.

THE **JOURNAL**  
of Conventional Weapons Destruction

on

 **ISSUU**<sup>™</sup>

<https://issuu.com/cisr-journal>