



OPTIMIZING PERFORMANCE

Quality and Efficiency of Mine Detection Dogs Across Varied Contamination and Environmental Settings

20th International Symposium Mine Action 2024, Dubrovnik 2024.

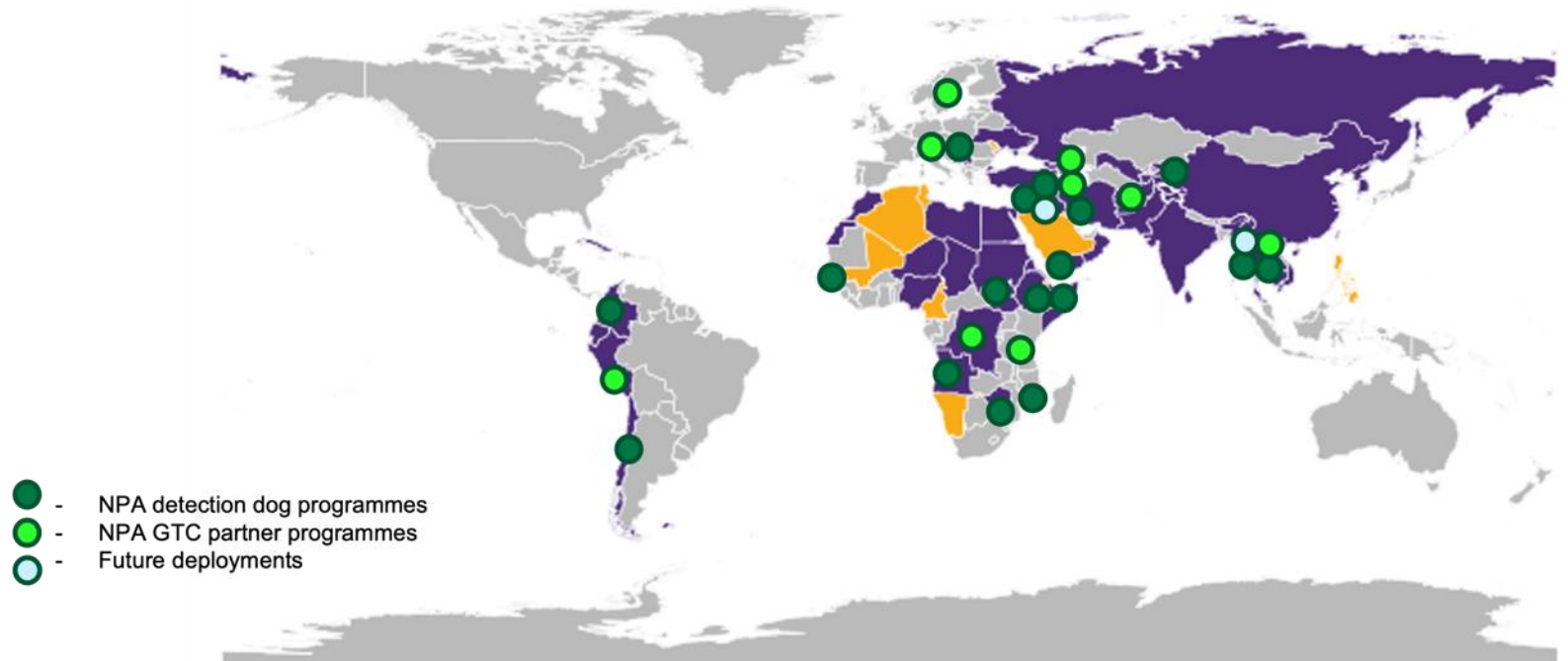


Norwegian People's Aid

Kenan Muftić and Darvin Lisica, April 2024

Background

- NPA using MDDs since 1995
- Significant improvements in efficiency over time



Source: Data as of October 2018, Landmine Monitoring report 2018

BBC



Norwegian People's Aid

Introduction

Mine Detection Dogs (MDDs) play a crucial role in land release efforts, aiding in the technical survey and clearance

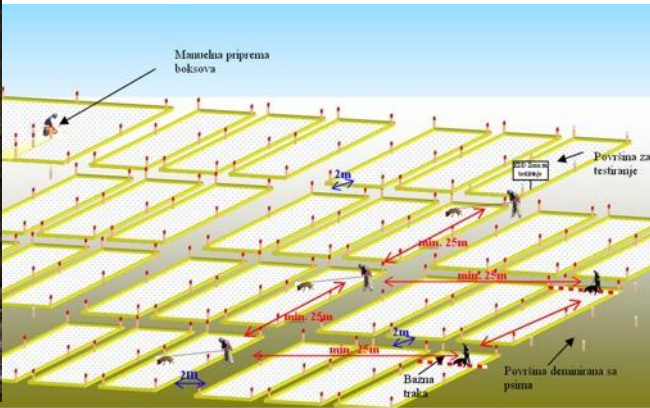
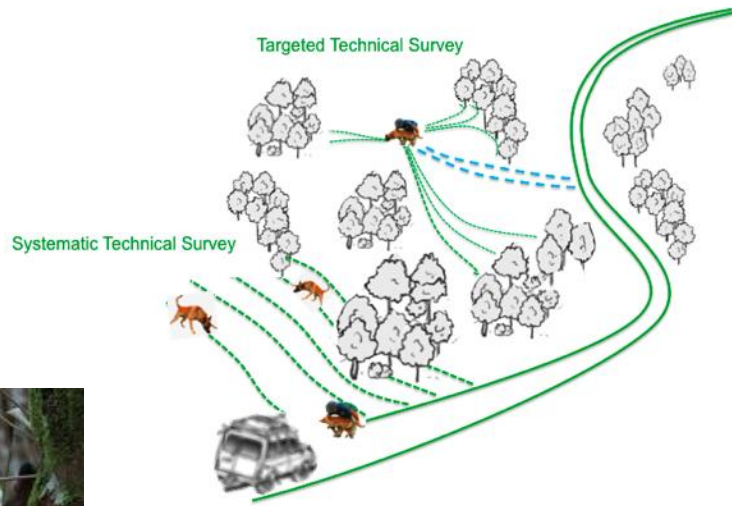
- Enhanced efficiency of land release efforts due to MDDs ability to cover large areas quickly.
- MDDs are versatile and adaptable to various operational contexts and terrains.
- MDDs complement manual demining teams, machinery, and other demining assets.



MDD Deployment Techniques

- Various techniques and search patterns utilized
- “Long Leash” – searching boxes in straight lanes
- “Short Leash”
- Technical Survey (long leash up to 30m, off leash)
 - Targeted investigation
 - Systematic investigation
- Rubble search, structure search





NPA MDDs in Zimbabwe and Thailand

- TSDs in Targeted Investigation within actual mine belts
- Swift Transition Between Clusters
- Breaching Lanes in Thailand
- Relocation of MDDs

Enhanced Operational Outcomes





IEDs in Landmine Context - Iraq

- Detection Capability
- Speed and Efficiency: MDDs can cover large areas quickly
- Adaptability to Terrain: urban areas
- Reduction of Risk? – crush wires
- Complementarity with other assets



CMR Survey - Cambodia

MDD or EDD?

Explosive Detection Dogs (EDDs) are deployed in Cambodia for cluster munition remnants (CMRs) survey, streamlining operations in contaminated areas.

- Detection Capability
- Short-Leash Search Pattern - in both directions
- Simplified Operational Deployment
- Efficient Resource Utilization





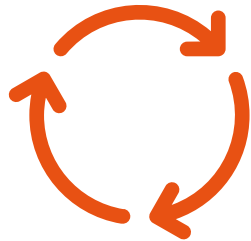
Operations in Northern Bosnia and Herzegovina

challenging terrains, accelerating demining efforts and overcoming obstacles.

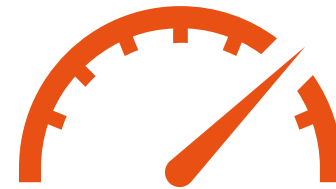
- 1. Strategic Deployment** - mechanically prepared access lanes
- 2. Complementary Role with Manual Deminers**
- 3. Flexibility in Operational Planning**
- 4. Enhanced Efficiency**



Quality Management



Continues testing, training, and monitoring



Maintain detection performance and operational standards



Operational Efficiency

Area processed by MDDs in 2021- 2023	Contamination context							
	Landmines (including improvised mines)				CMRs			
	2021	2022	2023	Annual growth	2021	2022	2023	Annual growth
	m ²			%	m ²			%
MDD 2-search	296,348	355,38	715,64	55,4%	8,16	18,607	-	-100,0%
MDD 1-search	327,121	547,114	453,899	17,8%	327,121	679,79	706,131	46,9%
Total	623,469	902,494	1.169.539	37,0%	335,281	698,397	706,131	45,1%
Share of MDD 2-search	47,5%	39,4%	61,2%		2,4%	2,7%	0,0%	

NPA MDD average monthly productivity	All contamination contexts			Contamination context
	2021	2022	2023	
	m ² /MDD			
Angola		4.542	2.530	Landmines
Bosnia and Herzegovina	2.767	3.191	3.193	Landmines
Cambodia	12.243	11.006	12.081	CMRs (85% of outputs)
Iraq	9.813	9.657	22.464	IED of landmine nature
Thailand		4.407	3.250	Landmines
Zimbabwe	6.902	4.954	3.953	Landmines
Average	8.745	5.720	9.934	

All figures are for the monthly productivity of MDD single search

- positive trends
- areas for improvement



Cost-effectiveness Analysis

- **Lower Cost per Square Meter**
- **Variability Across Contexts**
- **Operational Contribution and Efficiency Trends**
- **Integration into Operational Toolkit**
- **Long-term Sustainability**

Index of the cost of MDD single search compared with the cost of manual clearance (MCI=1) in 2022	Landmines incl. IED	CMRs
Angola	0.48	
Bosnia and Herzegovina	0.16	1.64
Cambodia		3.73
Iraq	0.61	
Thailand	0.74	
Zimbabwe	0.53	
Average for NPA	0.38	2,78



Conclusions

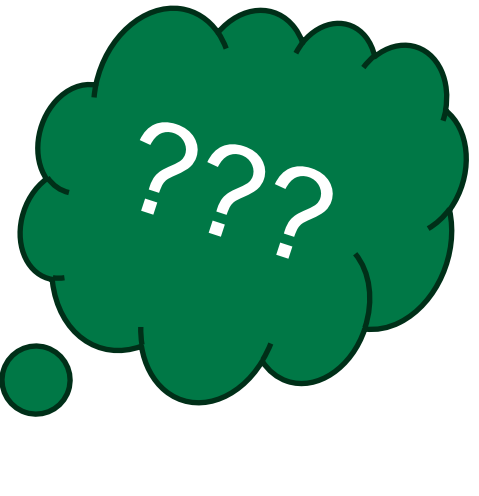
1. **Evolution of MDD Utilization:** notable improvements in efficiency and effectiveness.
2. **Training and Standardization:** contributing to their seamless integration into NPA's arsenal.
3. **Versatility and Adaptability:** versatility and adaptability across various operational contexts
4. **Deployment Techniques:** Various deployment techniques employed to optimize MDD effectiveness in different scenarios.
5. **Operational Efficiency:** The strategic deployment of MDDs has led improvements in operational efficiency
6. **Quality Management:** Rigorous quality management practices, including regular testing, training, and monitoring, are essential.
7. **Cost-effectiveness:** Comparative analysis indicates that MDD deployment offers cost-effective solutions
8. **Recommendations for Future Deployment:** Continued investment



Recommendations

- 1. Continuous Training and Development:** Invest in ongoing training and development
- 2. Enhanced Quality Management:** Strengthen quality management practices
- 3. Strategic Integration:** Integrate MDDs strategically into operational planning
- 4. Adoption of Best Practices:** Learn from successful operational outcomes
- 5. Collaboration and Information Sharing:** Foster collaboration and information sharing
- 6. Research and Innovation:** Support research and innovation initiatives
- 7. Monitoring and Evaluation:** Enabling continuous improvement and adjustment of strategies as needed.
- 8. Capacity Development:** National mine action authorities and partners





QUESTIONS?

