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Presentation to the MASG:

Study on Operational Efficiency in Mine Action

Background of the Study

- Why: At the request of the Chair of the MASG, Ambassador Yves Marek, funded by the Government of France.

- Study objective: identify and analyse how the performance of land release operations is measured with regards to efficiency and to provide MA stakeholders with examples of key performance indicators (KPIs) in different contexts.

- Areas of focus: the efficiency of land release operations.

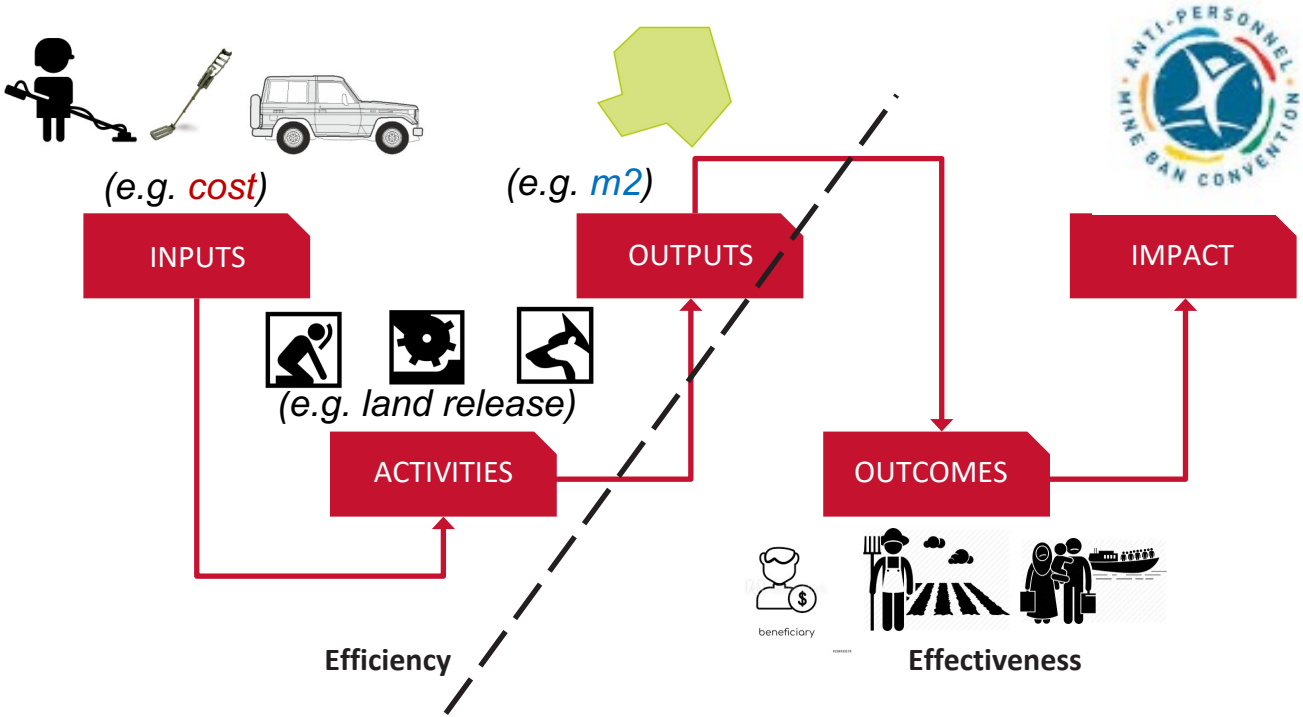
Definitions

- **Efficiency in Mine Action:** measures how economically **resources/inputs (funds, expertise, time, etc.)** are converted to **results (outputs and outcomes)**.

  In short, Efficiency = *Input / Output (e.g. cost / m2).*

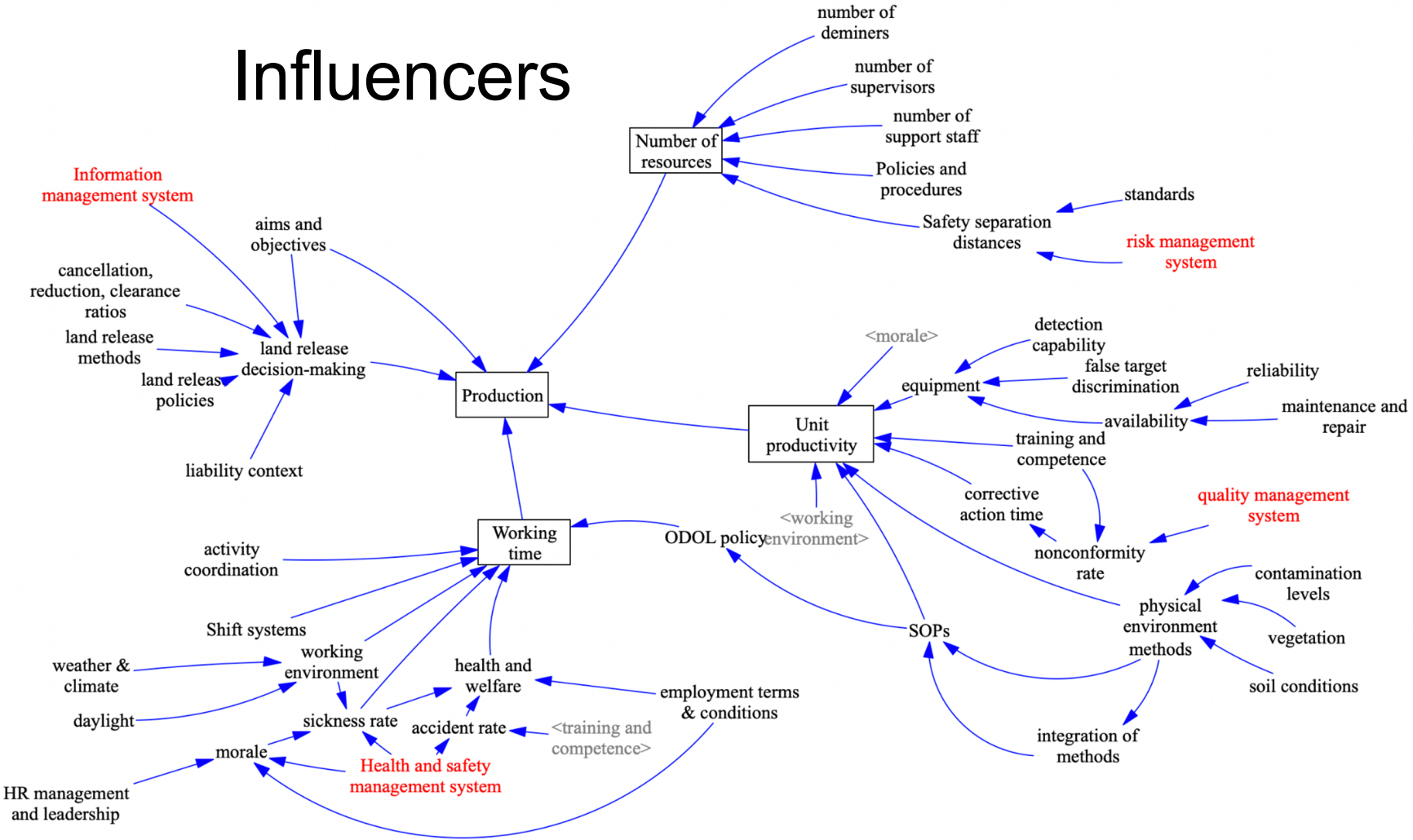
- **Effectiveness in Mine Action:** measures the extent to which the intervention's **objectives** were achieved, or are expected to be achieved, taking into account their relative importance.

Efficiency



Efficiency = *Input / Output (e.g. cost / m2).*

Influencers

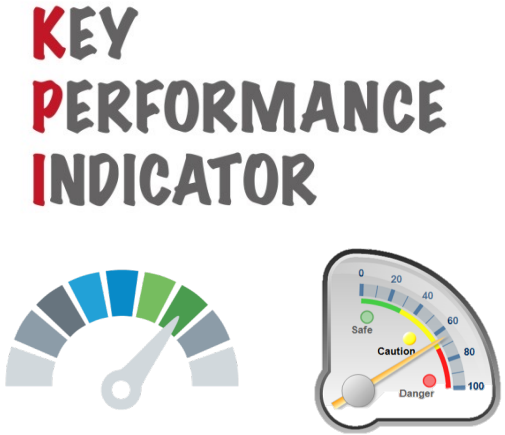


Key Performance Indicators (KPIs)

Production and Productivity is measured using KPIs which can be process or product-oriented.

The following KPIs will be used in the study:

1. Cost per m2 of land released
2. Cost per EO item found
3. Cleared versus released ratios
4. m2 / EO item
5. Asset time / EO item
6. m2 / asset / time (m2 / Deminer / day)



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Desk review – open source secondary data

15 mine action programmes as a sample to generate research questions

- Afghanistan
- Angola
- Bosnia and Herzegovina
- Cambodia
- Colombia
- Croatia
- Iraq
- Lao PDR
- Lebanon
- Serbia
- South Sudan
- Sudan
- Tajikistan
- Thailand
- Vietnam

Challenges

- **Data accuracy and validation** (variance between sources)
- **Like for Like KPIs -** Consistency of unit measurement (e.g. NMAAs or MAOs do not always separate annual cost data for CM vs AP/AV clearance in their external reports)
- **Access to data** (data privacy, commercial data, information on cost)

Challenges will be addressed during the next steps, data collection from NMAAs, MAOs and donors, triangulation, verification and validation of various sources.

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KPI 1: Cost per m2 of land released

Note: Full analysis has not yet been completed and these preliminary results are mainly originating from open-source data, the KPIs should be interpreted strictly in context. Taken in isolation they can give rise to misleading or invalid conclusions.

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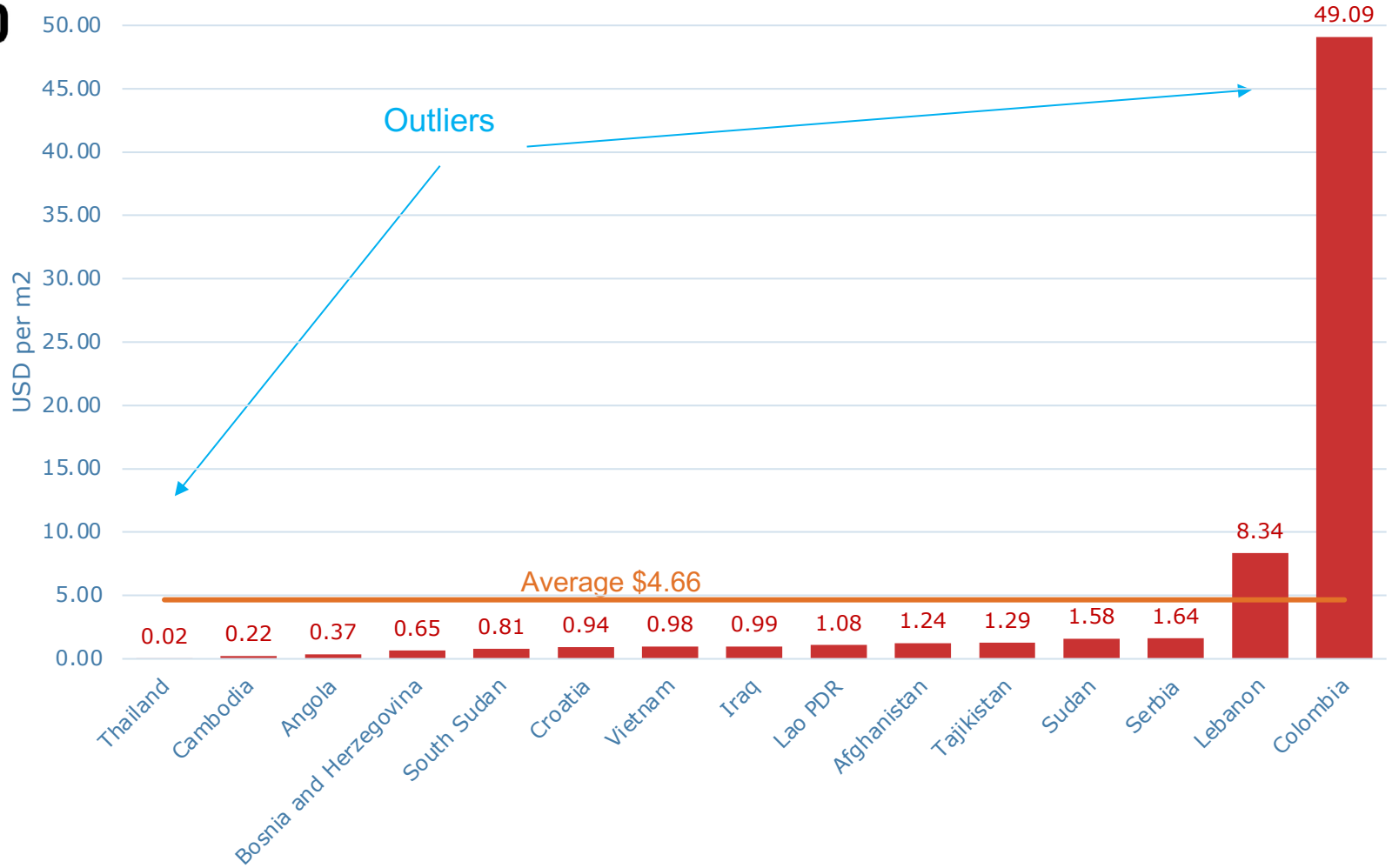
Average cost ($) per m2 released, 2015-2019



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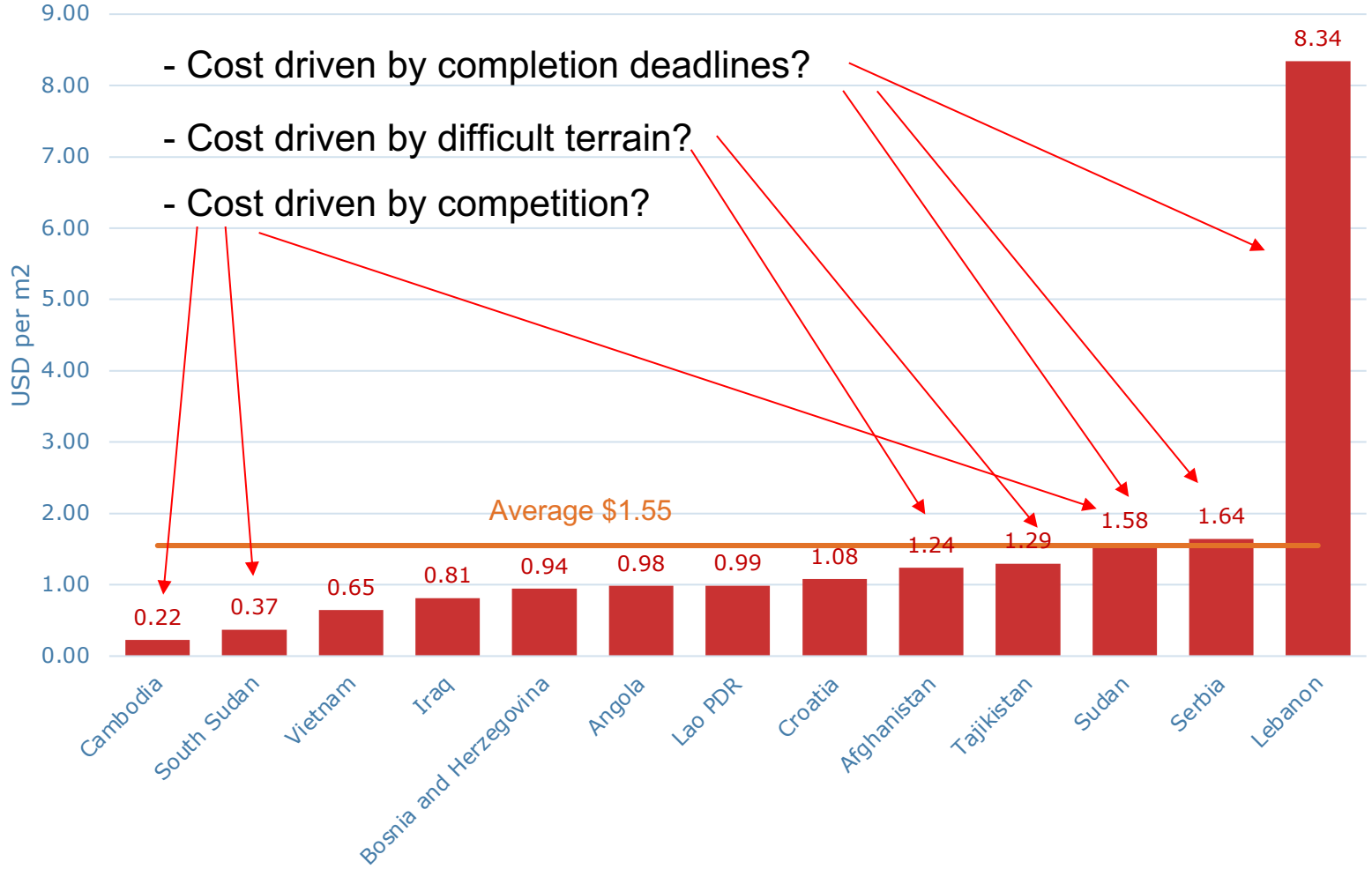
Average cost ($) per m2 released, 2015-2019



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KPI 2: Cost per EO found

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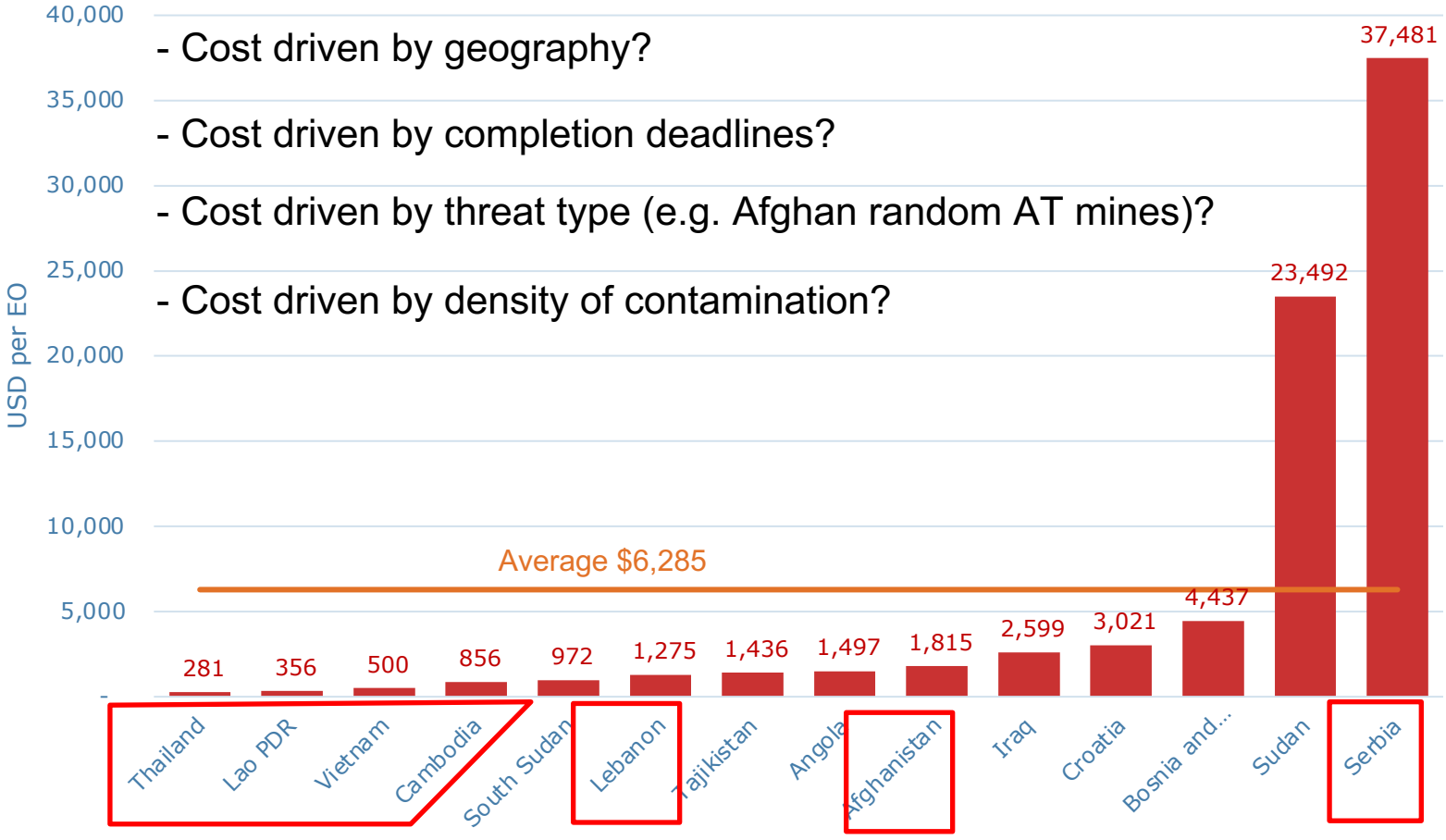
Average cost ($) per EO found, 2015-2019

- Cost driven by geography?
- Cost driven by completion deadlines?
- Cost driven by threat type (e.g. Afghan random AT mines)?
- Cost driven by density of contamination?



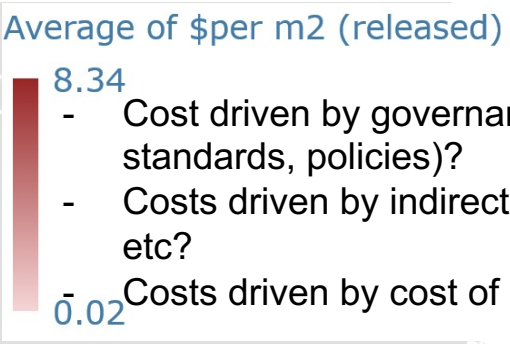
Does Geography matter?

Country	$per m2 released	$per m2 cleared	$per EO
BiH	0.94	16.10	6,367
Croatia	1.08	1.31	4,611
Serbia	1.64	3.62	37,481

Country	$per m2 released	$per m2 cleared	$per EO
Afghanistan	1.24	1.34	3,021
Tajikistan	1.29	2.99	1,497

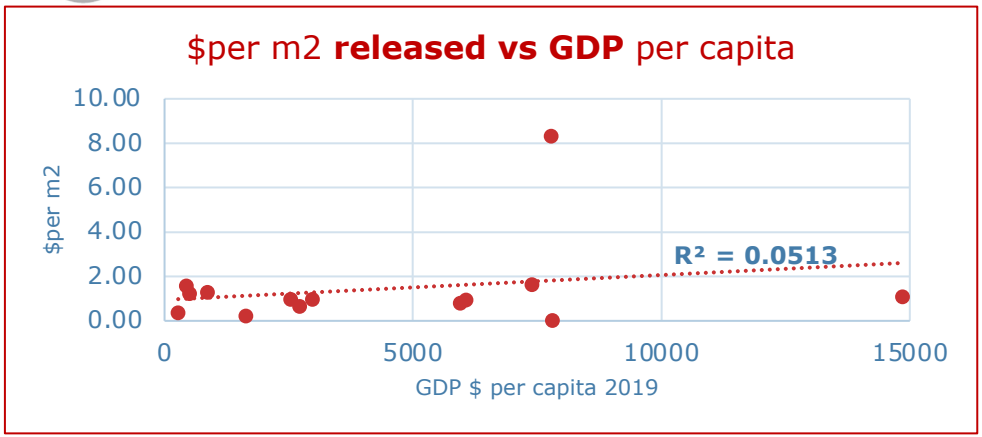
	$per m2 released	$per m2 cleared	$per EO
South Sudan	0.37	1.08	972
Sudan	1.58	2.38	23,492

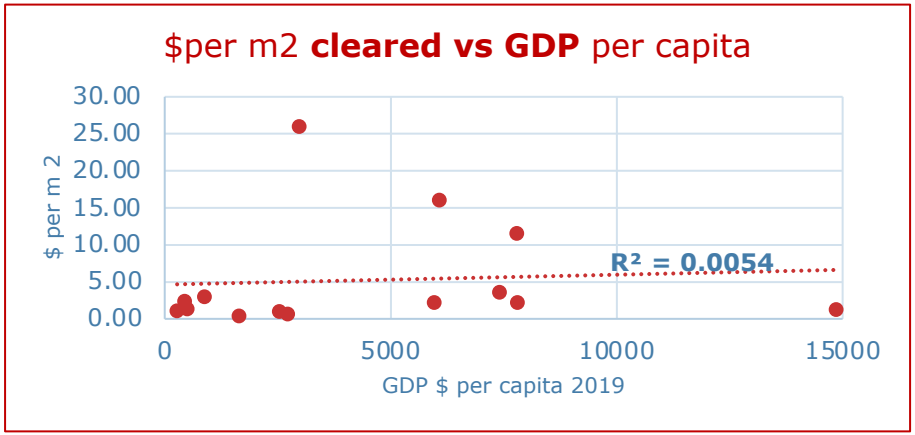
Country	$per m2 released	$per m2 cleared	$per EO
Thailand	0.02	2.25	281
Cambodia	0.22	0.46	856
Vietnam	0.65	0.65	500
Lao PDR	0.99	0.99	356

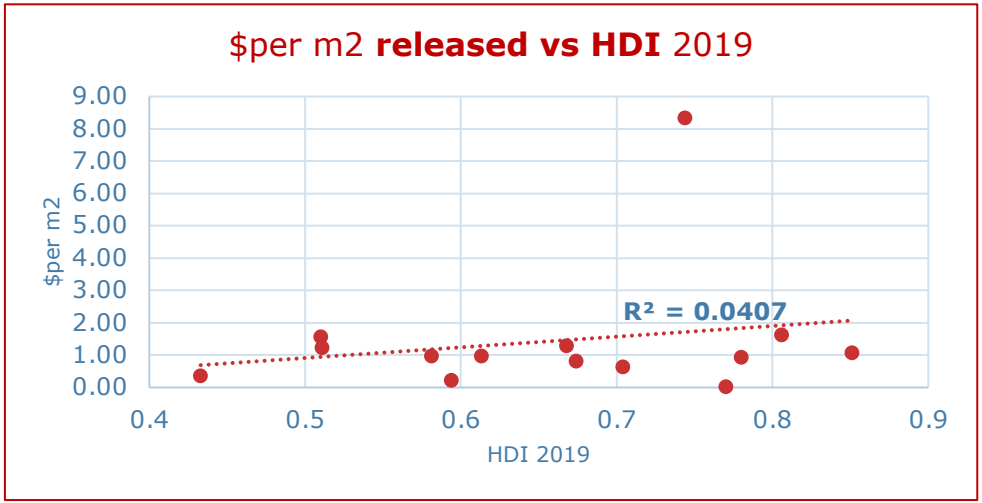


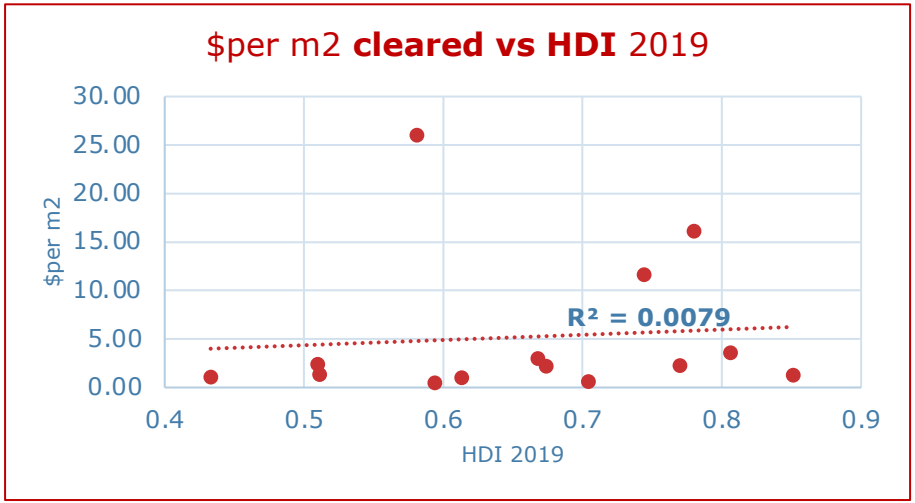
- Cost driven by governance (structures, standards, policies)?
- Costs driven by indirect cost (support, QM, etc?
- Costs driven by cost of living, GDP, HDI, etc?

GDP and HDI (Preliminary)









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KPI 3: Cleared land / Released land

KPI 3: Cleared versus released ratios

Country	Cleared vs Released	Average of $per m2 (released)	Average of $per EO item
Thailand	2%	0.02	281
Angola	4%	0.98	1,815
Bosnia and Herzegovina	6%	0.94	6,367
Iraq	37%	0.81	4,437
Tajikistan	46%	1.29	1,497
South Sudan	47%	0.37	972
Cambodia	52%	0.22	856
Serbia	55%	1.64	37,481
Sudan	68%	1.58	23,492
Lebanon	74%	8.34	1,275
Croatia	81%	1.08	4,611
Afghanistan	93%	1.24	3,021
Vietnam	100%	0.65	500
Lao PDR	100%	0.99	356
Grand Total	**40%**	**1.44**	**6,285**

Cost driven by Land release approach?

Do `Costs per m2 ` contracts promote efficiency?

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Cost driven by Land release approach?

KPI 4: Land released or cleared per EO item

KPI 4: m2 / EO item

Country	Cleared vs Released	$per m2 (released)	$per EO item	m2 cleared/Item	m2 released/Item
Thailand	2%	0.02	281	199	17,661
Angola	4%	0.98	1,815	385	15,773
Bosnia and Herzegovina	6%	0.94	6,367	405	9,113
Iraq	37%	0.81	4,437	1,834	7,794
Tajikistan	46%	1.29	1,497	399	988
South Sudan	47%	0.37	972	673	3,198
Cambodia	52%	0.22	856	1,908	4,145
Serbia	55%	1.64	37,481	17,430	62,579
Sudan	68%	1.58	23,492	4,599	4,993
Lebanon	74%	8.34	1,275	253	307
Croatia	81%	1.08	4,611	4,283	5,138
Afghanistan	93%	1.24	3,021	2,094	2,253
Vietnam	100%	0.65	500	810	811
Lao PDR	100%	0.99	356	394	394
Grand Total	**40%**	**1.44**	**6,285**	**2,554**	**9,761**

Lebanon - Expensive metres, but very targeted (effective) clearance, (EO density, difficult terrain, local costs)?

Vs Serbia - Cheaper cost per metre, but lots of areas being released and cleared with little EO found?

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Initial Hypotheses

Some of the initial hypotheses:

- Is cost driven by Land Release method (e.g. Thailand and Angola)?
- Is cost driven by competition (e.g. Cambodia, Croatia vs Afghanistan, Lebanon)?
- Is cost driven by difficulty of terrain (separate research)?
- Is cost driven by how close the country is to completion (Lebanon vs Croatia)?
- Is cost driven by local cost of living (GDP, HDI)
- Is cost driven by geographic location (South Sudan vs Sudan, Cambodia vs Laos, etc)?
- Are $ per m cleared contracts an efficient contracting modality?
- How does costs of potentially productive resources that were on site, but that were not being productive, affect efficiency?
- What is the impact of indirect / enabling costs (e.g. cost of training, insuring, maintaining and administration)?
- How do start-up costs affect efficiency?
- How does asset productivity affect cost efficiency?
- How does governance (structures, standards, policies) affect efficiency?

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Initial conclusions

- **Avoid committing to any specific costs analysis approaches** until the availability and nature of data becomes clearer
- **Avoid becoming too bogged down in contextual factors** (vegetation, soil, contamination levels, etc.), using ‘big data’ approach accept a spread of results for some indicators, reflecting variation from ‘hard’ to ‘easier’ sites
- **Look for opportunities to apply a ‘big data’** approach wherever possible
- **Focus on quantitative approach,** but also use case studies to explain influencing factors and variances.

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Next Steps

- Finalisation of desk review and research scope - 30 April 2022
- Primary data collection from NMAAs, MAOs and donors: May-August 2022
- Data analysis and report writing: - September 2022
- Presentation of Final Report at MASG meeting – 20 October 2022
- Incorporation of inputs received during MASG and finalization of report - November 2022

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