

Importance of risk assessment



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Problem

- **Over-reporting of mine problem**
 - < 3% of cleared land contains mines/UXO
- **Few resources – vast areas to verify**
- **Time pressure**
 - Rapid road clearance requirement
 - AP Mine Ban Treaty requirements
- **Conservative decision-making**
 - Poorly developed survey tools favouring conservative output
 - Poorly developed decision-making tools
 - Limited understanding about scope of problem
 - Limited knowledge about output from tools (survey/clearance)
 - Fear of violating AP mine ban treaty and IMAS
 - No incentive for increased efficiency and improved concepts
 - On the contrary – maximum focus on “what if something goes wrong” and “cover your back” mentality (isolated liability issues)

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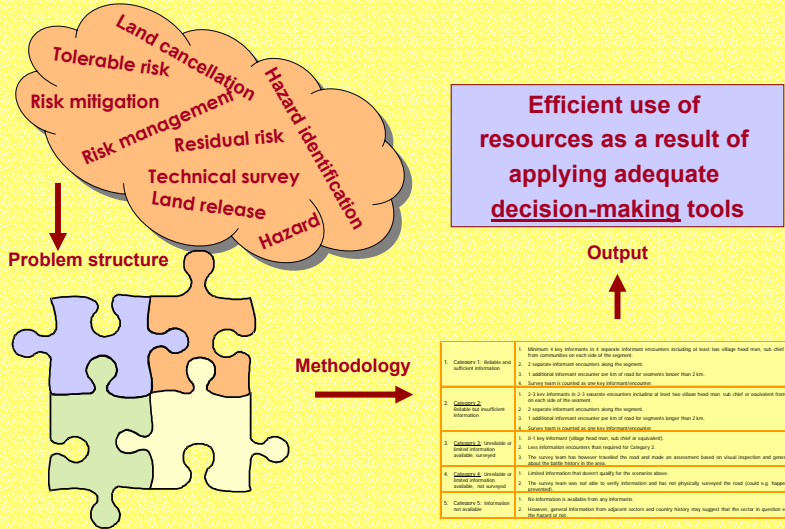


2. Wold War comparison

- ❑ Approx. 200 million landmines
- ❑ Approx 60,000 deminers
- ❑ Approx 20,000 accidents
- ❑ Major part of problem solved by 1948
- ❑ Small manageable residual problem after 1948
- ❑ Would today's approach have been preferred then?



Risk Management/land release



Framework



1. Must not contradict the AP mine ban treaty
2. Must not imply reduced tolerability towards mine clearance (reduced quality)
3. Should perhaps become an instrument to measure treaty compliance
4. Liability in case of accidents must be well defined and understood
5. Should make life safer for wider population groups

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Geneva International Centre for
Humanitarian Demining
Centre International de
Démunage Humanitaire - Genève



Objectives

- ❑ Terms and definitions agreed upon by all
- ❑ A system that promotes cost efficiency
- ❑ A manageable system – easy to use (black box approach)
- ❑ A practical system
- ❑ A credible system – end user acceptance
- ❑ A low bureaucracy system
- ❑ In accordance with the AP mine ban treaty, IMAS, national legislation

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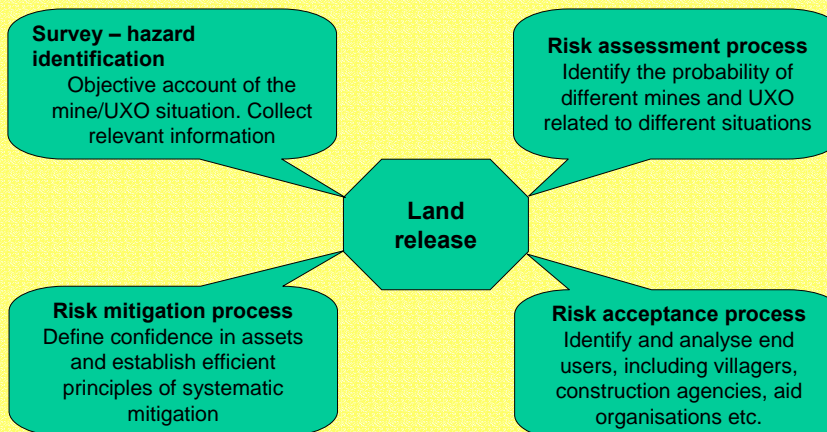


Credible decision making requires



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Model



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The survey

80% of the overall risk management package

Past

- Over-reporting of mine suspected areas - often generated fictive mine problems
- Potential liability issues related to what survey officers report
- Information not tailored to assist risk mitigation

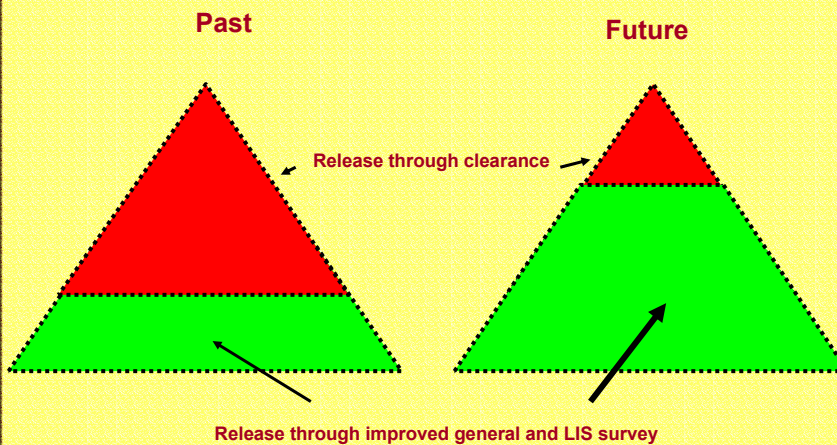
Future

- Realistic and objective account of the type of hazard and the probability of the presence of hazard being present
- Survey tied better in with the subsequent mitigation process (useful information for mitigating risk more effectively)

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Survey - potential output



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Sudan - elements of survey

1. How to classify hazards
2. How to classify land (terrain, soil, burial depth etc)
3. How to ensure objective account of situation in an area (absence/presence of hazards)
4. How to rate confidence in information
5. How to define "hot spots" and areas likely to be mined
6. How to ensure that information is accurate and quantifiable
7. How to tie survey process in with subsequent assessment of information

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Confidence rating

The Sudanese model

Confidence levels	Value	Conditions
Very high confidence Reliable and sufficient information. Very likely to be true	>0,9	<ul style="list-style-type: none"> □ Minimum 4 key informants in 4 separate encounters □ Minimum 2 village head men, sub chiefs or equivalent from each side of segment □ 2 separate informant encounters along segment □ 1 additional informant per km of road if segment is longer than 2 km
High confidence Reliable but insufficient information. Likely to be true	0,75-0,9	<ul style="list-style-type: none"> □ 2-3 key informants in 2-3 separate encounters including at least two village head man, sub chief or equivalent from communities on each side of the segment. □ 2 separate informant encounters along the segment □ 1 additional informant per km of road for segments longer than 2 km □ Survey team is counted as one informant
Medium confidence Unreliable or insufficient information. Indifferent level of truth	0,25-0,75	<ul style="list-style-type: none"> □ key informant (village head man, sub chief or equivalent) □ Less information encounters than required for Category 2 □ The survey team has however travelled the road and made an assessment based on visual inspection and general knowledge about the battle history in the area
Low confidence Unreliable or limited information. Likely to be incorrect	0,1-0,25	<ul style="list-style-type: none"> □ Limited information that doesn't qualify for the scenarios above. □ The survey team was not able to verify information and has not physically surveyed the road (could e.g. happen if access is prevented)
Very low confidence Information not available. Very likely to be incorrect	<0,1	<ul style="list-style-type: none"> □ No information is available from any informants □ However, general information from adjacent sectors and country history may suggest that the sector in question either contains the hazard or not

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Hazard and risk assessment

Category	Probability of hazard Function of confidence of information	Risk of hazard being present Residual risk	
Absence 1 – A1	<0,03	Very Low	VL
Absence 2 – A2	0,03 – 0,08	Medium Low	ML
Absence 3 – A3	0,08 – 0,13	Medium	M
Absence 4 – A4	0,13 – 0,19	Medium High	MH
Absence 5 – A5	0,19 – 0,38	High	H
Presence 1 – P1	>0,38	Very High	VH
Presence 2 – P2		Very high	VH
Presence 3 – P3		High	H
Presence 4 – P4		Medium High	MH
Presence 5 – P5		Medium	M



Risk mitigation

- When can land be released based on LIS or general survey with no need for physical mitigation
- How to quantify output from assets in terms of clearance and information gathering (facts and assumptions)
- How to develop decision-making mechanisms (based on the above) that will result in a minimum use of assets
- How to ensure that the model is appropriately implemented (management change, training etc)
- How to develop ownership of model(s) and ensure acceptance (political and end-user)
- How to calibrate model after implementation

Asset considerations

Output in terms of clearance and survey information

- Manual mine clearance (various detector systems)
- Dogs and rats
- Machines – flails, fillers etc
- Rollers
- Magnets
- Other machines
- Combination of these assets
- Value of sampling in technical survey role

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Sampling

- Purpose: change confidence levels in information provided in survey reports
- Mostly applicable in “absence” scenarios
- Default sampling technique → Manual mine clearance
- All technologies can be used in principle

Example:

Land use	A5	A4	A3	A2	A1
LU 1	60%	45%	30%	15%	-
LU 2	65%	50%	35%	20%	5%
LU 3	70%	55%	40%	25%	10%

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Risk mitigation

Category	Probability of hazard		Potential consequence
Absence 1 – A1	Very Low	VL	Negligible risk - Land release
Absence 2 – A2	Medium Low	ML	Almost negligible risk - Limited clearance or sampling. Nothing found - change to A1 (Very Low)
Absence 3 – A3	Medium	M	Increased clearance or medium sampling. Nothing found → A1
Absence 4 – A4	Medium High	MH	Increased technical survey or high sampling. Nothing found → A1. Alternatively new survey for re-classification
Absence 5 – A5	High	H	Re-survey and technical survey for re-classification
Presence 1 – P1	Very High	VH	Clearance → A1
Presence 2 – P2	Very high	VH	Technical survey/full clearance. Nothing found → A1
Presence 3 – P3	High	H	Technical survey, high confidence in tools. Nothing found → A1
Presence 4 – P4	Medium High	MH	Re-survey and technical survey for re-classification.
Presence 5 – P5	Medium	M	Re-survey and technical survey for re-classification.

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Risk acceptance process

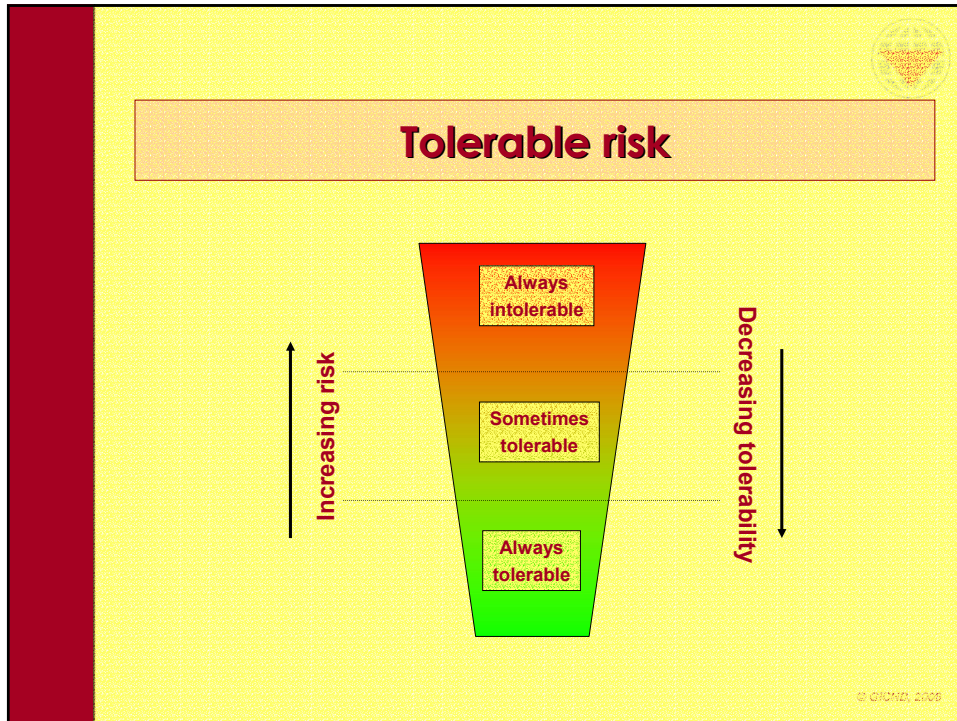
Suspect land – not yet fully surveyed

Risk rating – residual risk of hazards. Absence scenario				
Very high/High risk	Medium high risk	Medium risk	Low risk	Very low risk
A5	A4	A3	A2	A1

Confidence in clearance				
Very high confidence	High confidence	Medium confidence	Low confidence	Very low confidence
? 99 %	95 - 99%	80 - 95%	50 - 80%	?50 %

Land release if found nothing during risk mitigation

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-
- Tolerable risk**
- Who are end users?
 - Individual villager?
 - Local societies – district and provincial levels?
 - Aid organisations?
 - Reconstruction agencies?
 - Traders?
 - IDPs and refugees?
 - A combination of some or all?
 - Difficult to identify the end users, their risk perception/acceptation and the values of society
 - Antagonism between values of small local societies and the overall society
 - Do we need to use expressions like “tolerable risk” or do alternatives exist?
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RM implementation

- ❑ Needs to involve everybody in the mine action sector
- ❑ Model can be developed externally but will require high level of local participation
- ❑ Implementation will generate need for adjustments over time
- ❑ Laborious process of agreeing on values/populating model
- ❑ Will require management changes and training packages
- ❑ Easy end-product to use for implementers

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New highly intelligent risk assessment nerd dogs of NPA



Per

Geir

Steinar

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