Land Release in Action: TIRAMISU In - field study of practices in use in six countries – major results

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Abstract

The study is born from the need to document land release practices in use in different countries. The aims were manifold: to document current practices in order to be able to propose technologies within the context of TIRAMISU R&D work that could address current problems, be well integrated in current procedures and ultimately be useful; to understand the reasons behind critic choices (i.e. size of the area to investigate during Technical Survey and the relationships between indicators of mine presence found in an area and approaches used to target these areas); to investigate critical areas of the process and possibly propose new solutions; to try to identify what the actual role of machines is in technical survey and how they should be evaluated to be used in such roles; to highlight best practices so that can be shared among different mine action actors; and ultimately to learn more.
The study presents detailed data on Non Technical Survey (NTS) and Technical Survey (TS) practices in use in fourteen different organizations, although not all results discussed here refer to all fourteen organizations visited because it was not possible to collect the same quantity of data from all of them. The majority of the organizations visited welcome the study acknowledging a wide spread need to compare practices in use locally with the ones in use in other countries.
The study has been conceived, prepared and carried out by the author, in the context of TIRAMISU research work on the analysis of end-user's and system requirements. The author also drew the preliminary conclusions presented here.
The in-field data collection lasted from the 2nd of April to the 8th of July 2012 across six countries: Angola, Croatia, Bosnia and Herzegovina, Iraqi Kurdistan, Tajikistan and Cambodia.
The complete study report is available on the project website (http://fp7-tiramisu.eu/).

1. Introduction

Considerable attention has been posed to the formulation of theoretical approaches to land release [GICHD, 2008], [GICHD, 2011], [IMAS 08.20-21-22], but little is known on the practical use of non technical and technical survey tools, the core components of land release, in the field. Only recently, a publication named "Assessment of Sudan Land Release Policy" has become available on the Geneva International Centre for Humanitarian Demining (GICHD) website [GICHD, 2011]. While the latter and the study discussed here have different aims especially because of the nature of data collected, they share some of the conclusions.

The large discrepancy between practices in use in different countries, among different organizations in the same country and more generally between practices currently in use in the field and theoretical approaches makes a comparative analysis very difficult. Anyhow, beside recording good practices in use by organizations that readers are invited to share, the study highlights common trends and some common weaknesses that might be worth addressing.

The weakness most important to address is the fact that although programmes tend to make the best out of resources they have, and their efforts should be greatly praised, a lack of a systematic approach for evaluating assets and first of all a lack of well defined outputs expected from these assets impede managing them at best. This is particularly true for mechanical technologies whose adoption is often not justified by quantitative analyses, but is rather based on perceptions, derived from someone else's experience.

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A better understanding of each asset (manual deminers, mine detection animals and machines) constraints and most suitable application scenarios could help managing resources better. A new standardized way to comparative evaluate assets available for technical survey in the country should be established. Because in technical survey, a combination of assets is always used, the efficiency of the combined system should be evaluated altogether. Of course, first of all, the outputs expected from each asset should be defined and then assets tested against the expected performances.

Because cost is becoming a very important aspect behind the choice of assets, an evaluation based on criteria similar to the ones used in agriculture (like cost per area processed, $\$/m^2$) could be introduced.

The local evaluation of these technologies could also bring new ideas on the desired requirements for new technologies not currently available, helping directing budget choices in the most cost-efficient way.

Although the GICHD also already addressed the need of a tool for better planning the use of assets by publishing in May 2012 an excel based tool helping mine action programs to better plan the use of their resources [GICHD, 2012], results from this study suggest that efforts should be also invested in a preliminary stage: the definition of what tools are expected to perform and the local evaluation of their performance with respect to the requirements defined, possibly through a standardized procedure.

The need of a new CEN workshop agreement will hopefully be addressed by TIRAMISU project in the framework of WP630 dedicated to standardization.

2. Key findings

Rather than to draw direct comparisons between different organizations, the purpose of the study was to present a global overview of the process used to release land in different countries. Data collected were relative to the actual use of procedures and different assets; the nature of these data didn't allow making cost-efficiency comparisons between different practices, but let highlighting critical areas that might need some research investment to be improved. Sharing of good practices in use is a desired output of the study as well; it should be favoured by the presentation of data collected by questionnaires in a comparative way.

The principal findings of the study are listed hereafter.

- Every country uses different terminology, rarely in accordance with International Mine Action Standards (IMAS). The borders between Impact Survey, NTS and TS concepts shift from one organization to the other. Therefore the range of activities embedded in Impact Survey, NTS and TS phases varies according to the organization. This makes difficult to compare practices in use by different organization, which, anyway, vary greatly.

- A direct link between outputs of NTS and inputs to TS is often missing: only two organizations change TS approaches according to the output of NTS: in one case, the size of area investigated decreases as the level of risk assigned to it decreases, in the other case, the size of area investigated decreases as the level of confidence in the asset used in TS increases

- None of the organizations visited has established a systematic system for evaluating performances of the assets in use in TS aimed at assigning different levels of confidence/accuracy/reliability to them or at defining proper follow-ups, including the one that according to SOPs during TS investigates a smaller area if a more reliable asset is used.

- In practice, the only organization visited, that during TS investigates a smaller area if a more reliable asset is used, as far as the author could see, always prefers investigating the whole area[2]. Therefore, for the last organization TS differs from clearance because it implies the use of less accurate assets on the whole SHA, for all other organizations because it implies the investigation of portions of the SHA

- The criteria behind the size of the area processed during TS, when it doesn't depend on the level of threat assigned to the area by NTS, greatly vary according to the organization. In one case it depends on the number of assets used to process the area, in another case, it depends on the possibility to perform visual inspection inside the boxes, in another on the residual threat (if not all mines present in minefield record have been found).

- Although traditional demining machines, such as flails and tillers, are the ones mostly used, they might not be the best tools to be used in TS. In fact, they do not offer the type of output identified as most suitable to TS which, by stakeholders asked, in terms of capacity to collect information about contamination, is considered to be mine detection, then mine removal and then mine detonation by ground processing.

- To the question about what is the best condition in which to find mines after a machine has been used to process an area when manual deminers follow, stakeholders answered that it's better if mines are left intact; if mines are touched than it's better if they are detonated, not crushed. One organization clearly stated that "machines are not deployed with the aim of detonating mines": they are used to cut vegetation and loosen the soil (see fig.1)

Figure 1.(left) AT mine found during TS, after a machine has been used to smooth up the soil. The machine was deployed without the aim of detonating mines. Figure 2. (right) Mine Protected Vehicle used for TS

- All organizations except one agree on the possibility to use in TS ground processing tools similar to the ones used by farmers when cultivating land (this consideration comes from the consideration that

[2] The same result has been pointed out by the GICHD study on the assessment of Sudan land release policy; a reccomendation related tyo this finding suggested by the study is to embed "full coverage inspection" by an asset not capable to achieve a clearance result, as an alternative to tecnical survey

often areas which have been cultivated for a certain period of time without indicators of mine presence becoming known are released after NTS without further processing). Evidence suggests that this type of machines would need to be modified only to withstand AP mine explosions because the study found out that no machine is deliberately sent in areas suspected to be contaminated by AT mines, except two, of which one can only be used in case of AT mines with maximum 2kg of explosive.

- No machine is expected to detonate or crush all mines, in particular metal cased mines (during the visit to one organization out of 46 AP landmines recorded on the maps of the sites visited, in areas where mechanical ground preparation occurred, only 6 were destroyed or detonated by the machine used)

- As second or third asset, even mine protected vehicles are used to build up confidence on the fact that the area is free of explosive hazards (see fig.2)

- The study tried also to define what is the output expected from machines used in TS in terms of soil processing, finding out that machines for TS should be able to achieve a depth comprised between 10cm and 30cm, according to the organization. Only one organization defines the type of soil processing desired by defining the maximum size of soil particles that can be left over by the machine.

- The study highlighted also that life-cycle cost is becoming an important aspect of machines; in particular the cost and frequency of maintenance are among the most important aspects evaluated when choosing a new machine together with production rate and purchasing cost (see fig.3)

- A general lack of technical knowledge of machines has also been highlighted because only three organizations have chosen the machines they have and those are also the only ones that have expressed desire for new existing machines they currently don't have. Investing in technical skills of the management staff might help investing resources in cost-efficient technologies suitable to the local context.

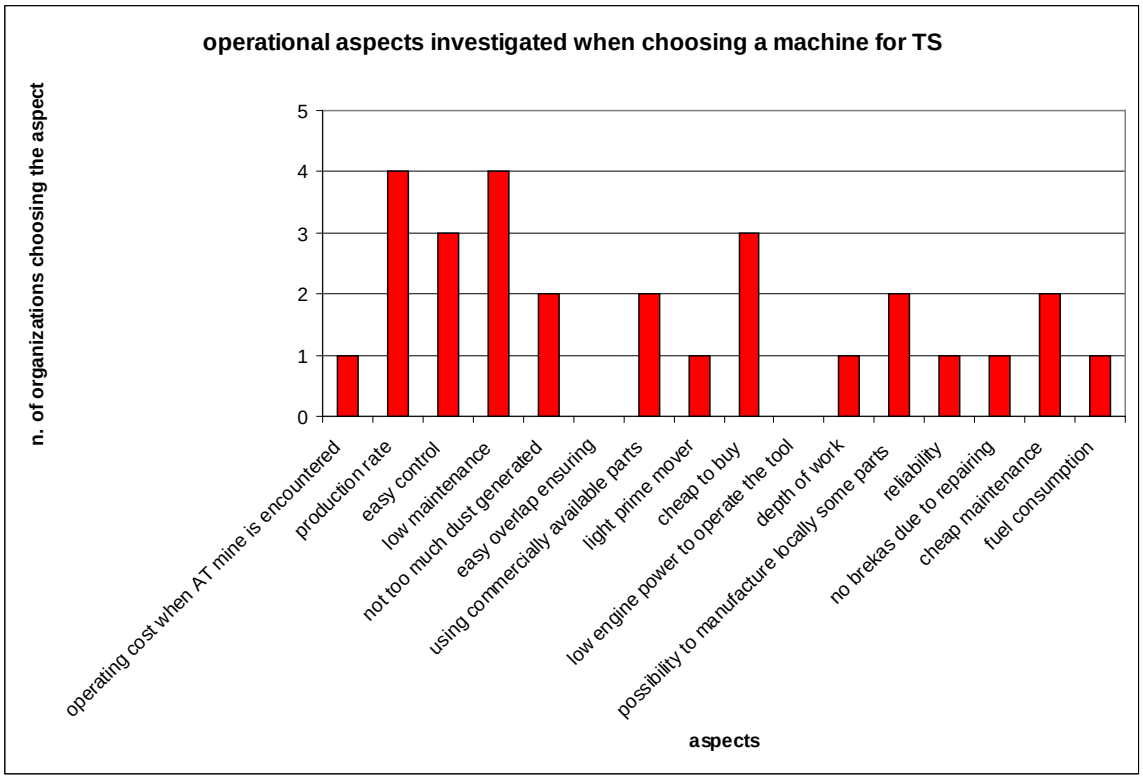

Figure 3. Operational aspects investigated when choosing a machine for TS.

3. Structure of results presented in the study

Possibly, while being in the same country more entities, either mine action centres (MACs) or local or international Non Governmental Organizations (NGO), involved in land release have been visited for data collection. Within each organization, different types of interviews and questionnaires have been used targeting different types of stakeholders.

The majority of data have been collected through semi-structured interviews and questionnaires from the director of operations and planning or an equivalent figure. Other key figures interviewed were field experts or decision making persons identified by the director of operations and when possible persons in charge of quality assurance. Visits to field operations have been used for deepening the understanding of information collected. Interviews have been used to collect data on a higher scale, on a more general level. Questions allowed open answers sometimes including suggestions on the type of answers expected. Questionnaires have been used to collect detailed information in a way that allows easy comparison among different organizations.

The Study presents results by country and by topic. In the country section, data from all available country tables and PM interviews are merged together in two separate tables presenting general relevant facts about the country one and a general overview of the landmine problem as perceived by stakeholders interviewed, the other.

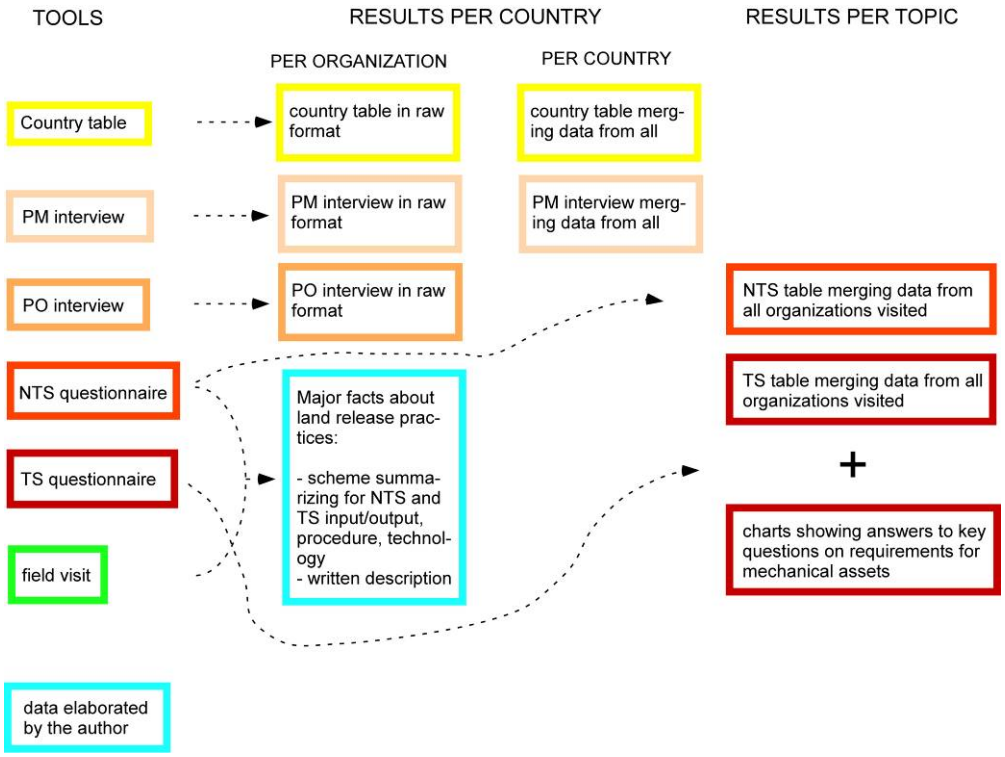

Figure 4. Analysis and presentation of data collected

Other data collected through interviews are presented in raw format by organization. Because the study aim was not to compare and evaluate different organizations efficiency in achieving land release but to analyse the process and share good practices while highlighting weaknesses on which more research should be done, organizations are not named but referred to with numbers. To the same number doesn't always correspond the same organization.

Information acquired through questionnaires and field visits, in the country section, only contribute to the sub-section "Major facts about land release practices", elaborated by the author per each organization.

Here, a scheme summing up what are inputs and outputs, what is the procedure followed and what are the technologies used in the traditional steps of land release (Impact Survey, NTS and TS) comes first a description of land release practices written following the same points per each organization. “Major facts about land release practices” section embeds all information collected per organization (see fig. 4).

Acknowledgment

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