

STRATEGIC PLANNING FOR THE MINE ACTION PROGRAMME IN AFGHANISTAN



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A Thesis

by

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ABSTRACT

This thesis examines the socio-economic impact of landmines and unexploded ordnance in Afghanistan and the positive effects obtained via the five pillars or activities of Mine Action: mine clearance, victim assistance, stockpile destruction, mine risk education and advocacy. The study will provide general information regarding a non-exhaustive list of strengths and weaknesses of the Mine Action Program in Afghanistan (MAPA), specifically those related to or having a significant impact at a strategic level. Furthermore, the importance and added value of strategic planning tools will be touched upon.

Due to the tremendous complex and challenging tasks that MAPA faces, it should be stressed that, although certain current MAPA performances might be sub-optimal, the scope of this study is to explore different strategic scenarios in order to better comprehend the current situation and predict/anticipate future evolvments of Mine Action in Afghanistan.

Over the timeframe (May-October 2003) this thesis has been written, the MAPA indeed has progressed significantly, stressing the importance to have sufficient strategic options well beforehand. This will allow for a robust kind of change management with flexible programme modifications.

As the creation of socio-economic benefits should be within the scope of all Mine Action activities, this thesis will logically maintain its generally orientation towards this primary Mine Action objective. Mine Action is indeed all about alleviating human suffering and contributing towards a more secure environment which in its turn can serve as a platform for the promotion of a variety of development activities. In this sense, the idea becomes increasingly obsolete that Mine Action is just about number of landmines and square kilometres cleared.

AUTOBIOGRAPHICAL NOTE

A native of Antwerp, Belgium, Filip Van Der Linden (1966) is currently enrolled in the UNITAR POCI as a prelude to his doctoral program at “Universitaire Instelling Anwerpen (UIA)”, being a doctoral student of Professor Doctor Yvan Vandenberghe, where he also received his academic degree in International Relations in 1997. The wider scope of his research are the “Politics of Mine Action”, with this thesis: “Strategic Planning for the Mine Action Program in Afghanistan”, as one of the basic components of the evolving Mine Action activities in the biggest Mine Action programme at a global scale. In addition to the mentioned academic activities, he has degrees in Military and Aeronautical Sciences from the Royal Military Academy of Belgium (1989).

Before taking up his current position, he obtained at the Pearson Peacekeeping Training Centre (Nova Scotia – Canada) the Certificate of Peacekeeping Training - The New Interdisciplinary Partnership (2000) and complemented this effort with a Peacekeeping Seminar at Columbia University (New York - 2001).

His present duties are predominantly related to the Belgian involvement in United Nations Peacekeeping Operations and relevant disarmament issues. His role as deputy Military Adviser for Belgium gives him the responsibility of following up current United Nations Peacekeeping Operations- especially where Belgium has military personnel deployed. His expertise is based on previous participation in peacekeeping operations and/or field missions in combination with ongoing efforts to gain more in-depth knowledge of peace support operations via a variety of United Nations courses and seminars.

He has been following closely UN activities in the field of disarmament, with a specific interest to those related to Mine Action and clearance of Unexploded Ordnance (UXO). Redrafting resolutions and leading debates related to the annual General Assembly (GA) Resolution “Assistance in Mine Action” were part of his duties in year 2001 and 2002. As part

of his portfolio, he also attends the activities of the GA 1st Committee, the United Nations Disarmament Conference, the 4th Special Session on Disarmament (SSOD IV), Mine Ban Treaty (MBT) meetings in Geneva, Convention on Conventional Weapons (CCW), Small Arms and Light Weapons (SALW) related conferences and the Hague Code Of Conduct (HCOC).

As Secretary of the Mine Action Support Group (2002), he assisted in the coordination and participated in several (UN) field visits to Eritrea, Ethiopia, Angola, DRC, South-Africa and Afghanistan, in order to obtain more insight in the national Mine Action activities and mobilize resources for United Nations Mine Action Programs or Projects.

Under contract twice as consultant to the United Nations Mine Action Service (UNMAS) and as part of the Mine Action Program in Afghanistan (MAPA), his position enabled him to build on and further improve Mine Action strategic planning in Afghanistan, simultaneously acquiring more insight into a number of related Afghan politico-military issues. In this regard he developed a preliminary strategic plan in September 2002 for the MAPA in cooperation with the MAPA programme manager and Cranfield University, Mine Action and Disaster Management Department, using the Cranfield strategic planning software: HIGHWAY®. In March 2003 he assisted in the strategic planning workshop in Afghanistan, Kabul, to assist in the further development and revision of the preliminary strategic plan.

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In particular I would like to thank the community of Mine Action practitioners: Cranfield University Mine Action Department, the management of the Mine Action Programme in Afghanistan and the United Nations servants of the UN Mine Action Service. But above my endless respect and gratitude goes to all the de-miners and other personnel who face on a daily basis the challenges of this complex and often dangerous humanitarian and development activity. In no way the UN Secretary-General Special Representative for Afghanistan exaggerated in his statement: they are the real heroes.

Finally, I would like to express my profound gratitude to Ms. Helen Chin, without whose encouragement, editorial assistance and patience this project would have been so much harder to finalize.

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Chapter One - Introduction

Landmines and unexploded ordnance (UXO) contamination affects virtually every segment of the Afghan society and economic activity to some degree. Mine Action therefore has been identified as a very important and cross-cutting issue by the Afghan Government. On July 28 2002, President Hamid Karzai announced that Afghanistan would become a member state to the Mine Ban Treaty (MBT)¹. Consequently, after laying down the instruments of ratification in the United Nations Secretariat in September 2002, Afghanistan officially became the 126th state to ratify the Treaty. Related to the MBT obligations², the target dates for Afghanistan are April 2007 for stockpile destruction and April 2013 for clearance of all mined areas.

After this announcement, the Government established a revised ambitious target: to free Afghanistan from the impact of anti-personnel mines within five years. At the request of the Transitional Government, the Mine Action Programme for Afghanistan (MAPA) was consequently invited to propose a strategy to achieve an accelerated 5-year objective compared to the previously proposed 7-year time frame to clear all high priority areas of Afghanistan.

In September 2002, this strategy was proposed in Geneva by the MAPA in order to clear all mines and UXO from high priority areas by 2007, and all remaining areas by 2012. This strategy should build on the remarkable achievements of MAPA - over 240 km² of mined land cleared over the past twelve years, often in difficult circumstances and during periods of highly intensified conflict.

¹ Also called the Anti-Personnel Mine Ban Convention (APMBC) or Ottawa Convention, providing for a complete ban on the use stockpiling, production and transfer of anti-personnel mines and on their destruction.

² For the purposes of International Mine Action Standards, Article 5 of the APMBC lays down requirements for the destruction of anti-personnel mines in mined areas. Article 6 details transparency measures required under the Treaty including on the location of mined or suspected mined areas and measures taken to warn the local population.

The preliminary strategy³ predicts that the total number of staff involved in Mine Action would increase to nearly 9,000 by the year 2004. Therefore this increase would require continual support from international donors for years to come. The benefits for current and potential donors would be very significant in both social and economic terms. A cost-benefit analysis⁴ was included in the preliminary MAPA strategy, but due to insufficient baseline data only served as an indication and not as a study based on a sound research methodology.

At the time when this strategy was proposed in September 2002, it was based upon the most accurate available data (such as the total amount and distribution of contaminated land), using strategic assumptions (such as clearance rates and costs) based on past experience and where possible on sound and conservative judgements⁵. The development of this strategy was further complicated due to insufficient consultations with mine clearance organisations, since finalisation took place outside of Afghanistan. Consequently, it needs to be acknowledged that the initial price tags put on the five/ten year program were subject to various insufficiently known variables. Hence, it was always assumed that the plan would need further refinement - as more detailed data became available and with further incorporation of changes to the strategic assumptions. It also recognised that the strategic framework proposed by MAPA would need to be further developed - both in scope and in level of detail - during a comprehensive strategic planning workshop. This workshop took place in Kabul from March 1-11, 2003. The purpose of this workshop was to produce an achievable (revised) and affordable strategic plan for the Mine Action Programme for Afghanistan, thus meeting the needs and expectations of national and

³ The preliminary strategy for the Mine Action programme in Afghanistan was developed in September 2002 and was primarily a forecast of future funding requirements in order to meet the Mine Ban Treaty deadlines. It was for the first time presented to the donor community during a back-to-back meeting of the Mine Action Support Group (MASG) with the annual Meeting of States Parties to the Mine Ban Treaty in Geneva.

⁴ See annex J for an illustrative example

⁵ See annex H for a more detailed overview of the assumptions made in September 2002

international stakeholders. This workshop was co-chaired by Cranfield University and the MAPA Programme Manager, attended by the Afghan Senior Mine Action Management, national and international NGO's, the UN agencies and consultants. The outcome of the workshop was however limited and did not lead at the end to the presentation of a revised, comprehensive strategic plan for the Mine Action programme in Afghanistan. Research and analysis of key parameters, in particular mine clearance rates, were more complex than initially estimated. At a later stage, April 2003, this strategy was finalized and presented to the senior management of the programme. Hence, this thesis will look at strategic planning for Afghanistan at a conceptual level, introducing new ideas and approaches. Nevertheless, strategic options will be worked out to support the methodologies dealt in the following chapters. The detailed calculations remain however reserved for the annexes of this thesis, in order to keep this work as clear and concise as possible. One can notice that references to external sources of information or publications are rather limited in this thesis. Strategic planning in Mine Action is relatively new so therefore publications are very limited. When possible, references are indicated and in many instances footnotes are used to refer to annexes, which contain detailed information, data and analysis, which have been built-up during participation in research sessions *in situ* via the above-mentioned Afghan workshop(s) or in collaboration with academic experts specializing in this field.

Chapter Two - Strategic Planning in the field of Mine Action

1. Strategic vision and strategic objective(s)

Strategic planning in Mine Action starts by clarifying the vision and strategic objectives of the organisation. As stated in the introductory chapter, the vision is the desired future end state of the Afghan Mine Action programme.

In general, a Mine Action programme may have one or more strategic goals. They should define realistic and achievable objectives and be consistent with the overall vision of the national authorities. They should be defined in simple and unambiguous terms.

A common error is to have too many or too ambitious strategic objectives. This creates confusion and a lack of focus and clarity. Strategic planning is all about unity of effort and direction. In order to achieve this strategic objective it may be helpful to define a set of enabling objectives, each addressing a separate activity such as information, training, quality management or the mobilisation of resources. It is recommended that objectives be set within a reasonable period of time, say three or five years. To further illustrate this, one can refer directly to the statement of President Karzai himself, namely to free Afghanistan from the impact of anti-personnel mines within five years in a way that is both achievable and affordable.⁶

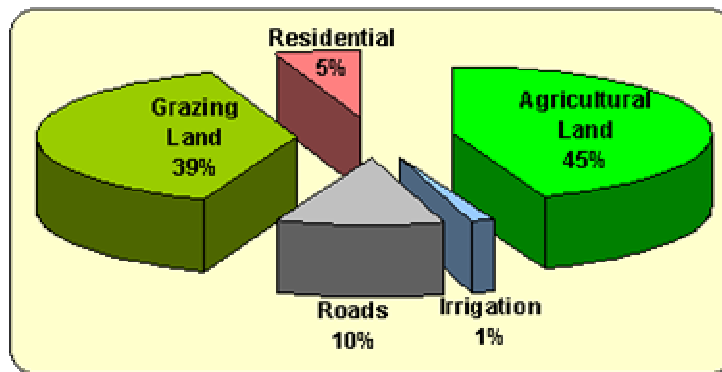
Implicit in this objective is the need by 2007 to clear all mined areas affecting all high-impacted communities, and to remove the threat from all other areas by risk reduction measures such as fencing, marking and Mine Risk Education (MRE)⁷.

⁶ President Karzai made this statement public during the ICBL conference in Kabul, Afghanistan 28-31 July 2002, A Total Ban on Anti-Personnel Mines

⁷ MRE is a process that promotes the adoption of safer behaviour by at risk groups, and which provides the links between affected communities, other mine action components and other sectors

2. Contamination of Afghanistan

Taking the last updates⁸ into account, an estimated 789 square kilometres of land in Afghanistan are contaminated with mines and UXO. The areas affected include potentially valuable agricultural land, irrigation systems, residential areas, grazing land and roads. Some 410 square kilometres are classified as high priority land for clearance, i.e. contaminated areas where there is significant risk of mine/UXO accidents, and land required for essential redevelopment. The figure below gives a perception regarding the contamination of the different types of high priority land.



3. Strategic planning processes

One recent, but very valuable lessons learned about MAPA is the tendency to rely to a large extend on past achievements, not allowing for sufficient anticipation towards future dynamics and inadvertent changes of situations. Strategic planning for MAPA should sufficiently provide the management the capability and flexibility to maintain the highest possible output at any level of funding available at any moment in time. The strategic plan can be based to a great extent on past years studies, experiences, parameters and outcomes, but it should also recognize the importance of having more concrete up to date socio-economic post clearance data, in order to

⁸ Last update is from the Reinforced Mine Action Support Group meeting, New York, 4 November 2003

acquire a better understanding of the potential socio-economical benefits and better facilitate the predictability of future MAPA outputs in terms of land cleared.

In this respect, strategic planning in Mine Action does not necessarily mean one has to develop and adhere to a stringent rule book, a blueprint or a set of programmed instructions. It is the unifying theme or one can call it the strategic vision, that gives coherence and direction to the various decisions and strategic options of a responsible organization as the MAPA.

In order to trigger a sound strategic planning process, it speaks for itself that this clear and achievable strategic objective has to be put forward in a way that provokes national ownership.

4. Strategic Analysis

As was mentioned in the abstract, attention will be drawn upon the strengths and weaknesses of the MAPA. Workshop(s) using extensive analysis methods (PESTEL and SWOT) can provide more insight regarding the management of Mine Action programmes and create a strong basis for further strategic planning processes. In this regard, factors affecting the MAPA were studied in detail during the earlier mentioned March 2003 workshop in Kabul. This included an evaluation of external factors (such as the political, security and economic environment) and internal factors (such as the effectiveness and suitability of its staff, operational procedures, productivity and costs). Although the outcome of such analysis does not necessarily lead to quantifiable indicators, it contributes significantly to a better understanding of recent changes, ongoing developments and trends regarding the very complex environment where Mine Action programmes are taking place. The knowledge of these findings at a strategic level, observations and/or recommendations further facilitate the cooperation and coordination amongst all key players (Afghan authorities, donor governments, NGO's and UN agencies) and further lead to an increase in ownership by the Afghan population itself.

5. Importance of national ownership

This transition process of ownership from a UN led program to Government coordination of MAPA is a complex and ongoing process, which has to be clearly reflected in the strategic plan. As proclaimed during the strategic planning workshop by UNDP Mine Action experts, it should continue in a gradual way that both satisfies national requirements and does not reduce the programme effectiveness or donor support⁹. The Mine Action programme has been coordinated to date by the UN in conjunction with its NGO partners. This can continue under transition arrangements. In addition, there is a new requirement to coordinate at international, national and sub-national levels. Further underlining the importance of national ownership, it should be pointed out, as in other mine affected countries, that Mine Action is a very labour intensive process in Afghanistan, and it is essential to maintain and expand the engagement of the highly experienced body of Afghan de-miners in order to meet the extensive requirements of the strategy, oriented towards the fulfilment of the MBT requirements. This crucial process of transition to the national authorities shall be guided by the Mine Action Working Group (MAWG), which had its first meeting in Kabul on March 6, 2003.¹⁰ Meanwhile the name has been changed to Mine Action Consultative Group.

6. Strategic guidance for prioritisation of Mine Action activities

MAPA operations should be enhanced through improved prioritisation. This issue will be covered in more detail in the following chapter. In this regard, socio-economic indicators are provided by the outputs of the landmine impact surveys (LIS) and Government humanitarian and developmental requirements. Indeed, landmines affect a broad spectrum of humanitarian and

⁹ This was and is reportedly the case for the Mine Action programme of the Lao People's Democratic Republic

¹⁰ One can find in the MAWG terms of reference that the overall objective of the MAWG is to support the Government's desire, as expressed by President Karzai, to rid Afghanistan of the impact of mines and unexploded ordnance in the shortest time possible and includes the Government, donors, NGO representatives and UN agencies. It should be fully recognized and supported in its role to facilitate the transfer to national ownership of MAPA. In the short term it should be able to support the MAPA by providing policy guidance and endorsing the overall framework and especially the strategy under which it should operate, including its legal mandate and structure.

developmental sectors in Afghanistan. Since the humanitarian oriented Mine Action has been totally dependent upon donor funding, reductions in those contributions will substantially affect the goals of the strategy. If strategic goals are ambitious, substantial additional funding will be required from a variety of donor sources, including the Afghan Government, to meet humanitarian, development and reconstruction needs. Thus far, the Afghan programme has been successful in its appeal to this type of donor sources, consecutively raising approximately 60 million US\$ for 2002 and 2003.

The goal of achieving a mine and UXO free Afghanistan by 2013, and assisting landmine survivors, ought to be extensively supported by the MAPA, in coordination with the Government and the Afghan Campaign to Ban Landmines. A more detailed study has to indicate the feasibility and affordability of this long term strategic goal. Support from the international community will be a crucial component of Afghanistan's ability to meet the previously mentioned Convention (MBT) deadlines in conjunction with the vision proclaimed by President Karzai.

The successful implementation of a revised MAPA Strategic Plan for the period 2003 - 2007/12 is predicated on a partnership between the national authorities and the international community. So far, donors have enabled the Program to reduce significantly the social and economic impact of landmines and unexploded ordnance but in order to meet the Convention deadlines, but much more has to be done.

Chapter Three - Priority Setting for Mine Action

1. Resources versus needs

Mine Action practitioners realized early on that there are not enough resources to address the landmine problem in Afghanistan or in any particular mine-affected country in a relatively short timeframe. In response to this lack of resources, programmes in the field developed different models for prioritising mine clearance of affected areas. Although Mine Action experts, especially in Afghanistan and other heavily contaminated countries, were trying to make some progress in this regard, not all of these methodologies were equally effective and lack of standardisation further complicated the exchange of knowledge and expertise in this regard. The complexity of prioritising is obvious, taking into account the number of elements which are at the basis of the decision taking process, and above all not to lose sight of the fact that this process is taking place in a constantly evolving environment, balancing between political, sociological and economic key parameters.

2. Role of the United Nations

The United Nations has a vital role to play in the prioritisation of Mine Action activities, primarily at the highest policy level and in a lesser extent at an implementation/executive level. To begin with, there are the provisions in humanitarian law and several UN resolutions relating to the problem of landmines. These can be subdivided in country oriented UN resolutions (Afghanistan, Sudan, Cambodia...) and the more general UN resolutions. The latter can be further specified as follows: one UN resolution addressing assistance in mine action at a global level, one UN resolution addressing the MBT and one UN resolution addressing the Convention against certain Conventional Weapons (CCW). The resolution “Assistance in Mine Action” is

the only text¹¹, which is adopted annually by consensus, whereas the others are adopted by a vote in the General Assembly. The consensus resolution “Assistance in Mine Action” is consequently the only one which mirrors at a global level what is accepted as a common mine action policy by all member states. Mine Action programmes have been established in various countries before this UN resolution, starting with Afghanistan in 1988 and Cambodia in 1992. This brought awareness to the international community that there was a need for a more systematic approach of an immense problem in certain countries, thus revealing ample justification that there is undoubtedly a requirement for an institution to tackle this at a global level: the United Nations. UN member states requested in the resolution “Assistance in Mine Clearance” for the UN to play an important role in the effective coordination of activities related to mine clearance, awareness and assistance, including those by regional organisations, in particular activities related to standards, technological development, information and training, and, in this regard, encourages the Secretary-General to develop further a comprehensive mine-clearance strategy, taking into consideration the impact of the landmine problem on the process of rehabilitation, reconstruction and development, with a view to ensuring the effectiveness of assistance in mine clearance by the United Nations.¹²

Consequently, in 1998 when the United Nations Policy on Mine Action and Effective Coordination was prepared, this important issue was again recognized in the following section of the policy document:

“The requirement for prioritisation and accountability: All programmes should have **well-established mechanisms to set priorities** for mine action activities on the basis of need and the most effective use of available resources. While it must be remembered that no two situations are alike, priorities for mine clearance will often include, inter alia, the following: provision of emergency assistance; settled land with high civilian casualty rates;

¹¹ The latest version of this resolution (57th General Assembly Session - 2002), adopted by consensus, can be found on www.un.org/Depts/dhl/resguide/r57.htm as A/RES/57/159 under agenda item 28

¹² A/RES/52/173 , 52th General Assembly Session - 1997, Operative Paragraph 7, adopted by consensus, can be found on www.un.org/Depts/dhl/resguide/r52.htm as A/RES/52/173 under agenda item 41

land required for the resettlement of refugees/IDPs; land required for agriculture; community development; access to and free operation of health services; reconstruction, and infrastructure development.

Programmes should also incorporate clearly defined accountability mechanisms to ensure that priority needs are met and that there is cost-effective use of available resources. They should involve periodic review exercises in order to determine overall effectiveness in approach, orientation and implementation, and to advise on what changes, if any, need to be introduced.”¹³

The challenging fact with this broad statement is that Afghanistan and most mine-affected countries can be placed into one of the categories identified in the Policy document. How to allocate resources at a global level amongst different mine-affected countries remains an area where further research is welcomed. To a lesser extent it remains complex on how to determine and allocate resources within the mine-affected country itself. For the latter, especially in emergency and/or post conflict situations, it can mean time and energy absorbing efforts to come to an agreement, which could be called a “well-established mechanism”.

3. Challenges of setting up a prioritisation model

In a fast evolving safety and security environment as Afghanistan, this mechanism faces the challenge to be at the same time user-friendly and transparent in combination with a sufficient refinement, which allows for the most optimum allocation of often scarce and unpredictable resources.

In some other Mine Action programmes, it can be justified to assign assets to single tasks even though they would take years to clear, and in others, the aim or clearance methodology was to locate and destroy as many landmines as possible, irrespective of the impact that the minefield may have on nearby communities. These tasks witnessed by local authorities, donors and others

¹³ A/53/496, annex II on www.ods.un.org - 1998, United Nations policy on Mine Action and Effective Coordination

have often resulted in comments that mine clearance is slow, unproductive, costly and not efficient. In Eritrea, the Mine Action program was heavily impacted by this kind of critics, which led to a deterioration of the working environment for the international NGO's, finally resulting in a decision of the Eritrean Government to expel the latter in an effort to accelerate the transition towards the national authorities.

Another interesting example is Yemen. In this mine-affected country, the first ever Landmine Impact Survey (LIS) was carried out in 1999-2000. By then, it was generally understood that the output of the LIS would be a prioritised list of mine-affected communities for carrying out Mine Action activities. This would considerably simplify the management of a Mine Action programme. Unfortunately, this was not really the end result. The output of the LIS concluded with a classification of mine-affected communities ranked by the severity of the socio-economic impact caused by landmines and unexploded ordnance. It became further clear that the impact survey report was not intended to be a substitute for national planning. It only supports and improves national planning because the entire problem is better defined in terms of scale, type, location, hazards and social and economic impacts experienced by local communities. In this regard it provides essential information and knowledge, which can be used to develop priorities of Mine Action activities and allocate resources in the most cost effective manner. What is needed is to take it one step further and to prioritise these identified areas onto a list from which a programme is able to select tasks and compile a clear programme of action. This process, which can be carried out on an annual basis, should follow out of a more global national strategic mid to long term plan (5-10 years).

It should be stressed that the basic principle remains rather simple: prioritisation should be applied in order to ensure that the limited resources of a Mine Action programme can have the greatest possible impact in each planning cycle on the socio-economic blockages or damage caused by landmines. In a broader context this would contribute significantly to internal stability

of communities, regions and finally countries affected by landmines as a whole. If mine clearance tasks are selected without application of deliberate priorities, most likely programme resources would be depleted by year end with limited positive results, thus compromising certain benefits which would have been most beneficial toward the programme. Prioritisation should also be part of a broader approach that uses the technical survey¹⁴ to bridge the gap between the socio economic impact survey and the mine clearance activities. The socio economic impact survey produces a priority classification of affected communities and the technical survey confirms the existence and defines the mine clearance requirements. Prioritisation should not only focus on the effective use of mine clearance assets, but focus on the whole mine action toolbox, including mine clearance, mine risk education, victim assistance and explosive ordnance disposal resources. These assets should all integrate and focus on removing socio-economic blockages of mine-affected communities rather than on individual minefields. As is the case for Afghanistan, managing a clearance operation with thousands of sites is a complex challenge in any given situation. A considerably high number of different Mine Action organizations, each with its own set of skills, preferences and supporters, introduces multi-dimensional decision requirements. Some of these are resource-driven, some respond to short-term tasks, and others to the desired end state. The methodology of prioritisation should therefore be only one of several considerations in determining how soon a confirmed contaminated area can be cleared. Taking these considerations into account results in a programme, which should not necessarily start with those with the LIS highest impact score, and then subsequently working its way down by decreasing scores. Since the magnitude of the problem is in most cases far greater than the programme resources for any given year, priority setting is a crucial element in deciding where to focus attention/resources, which also implies

¹⁴ Previously referred to as a Level 2 survey. This survey focuses on the detailed topographical and technical investigation of known or suspected mined areas identified during the planning phase. Such areas may have been identified during the **general mine action assessment**, the process by which a comprehensive inventory can be obtained of all reported an/or suspected locations of mine or UXO contamination, or have been otherwise reported.

where they will not be focused in that planning cycle. In the early stages, appropriate priority setting is a means to reduce the large number of possible cases for consideration to a more manageable subset with the chance of the greatest impact.

4. Prioritisation: influencing factors

Mine Action programmes have generally applied some version of the prioritisation categories in the UN Policy on Mine Action in good faith, with specific choices typically based on local knowledge, politics, and efforts to make efficient use of resources to minimize lost time through redeployment, reallocation of resources, etc.

Recently the process starts with the strategic planning process, which uses various sources of information such as the results of the landmine impact survey to determine what the scope of the problem is and what resources are required to address the problem in a given period. During this process many political and operational factors are taken into consideration and this planning process repeats itself over the life of the programme. This is followed by the annual planning process, with the purpose of developing an annual works programme with specific objectives. Country-specific prioritisation is considered at both levels, at the strategic level, in which principals are established and at the work plan level; the principals are applied to select tasks for Mine Action from the high, medium and low impacted communities. Following are some factors that have been considered:

- a. Political Factors. In a large country, such as Afghanistan, where mine affected communities are spread out in different regions it is important to deploy clearance assets to all affected regions, although there may be more assets in the most heavily impacted region. In Afghanistan there is a significant difference between the southern and northern provinces. It would not be politically acceptable to carry out Mine Action only in the

north in order to alleviate the highly contaminated areas situated around the former frontlines between the Taliban and the Northern Alliance. A stable security situation is a requirement for effective Mine Action, while an unstable area unfortunately becomes lower priority¹⁵.

- b. Policy Factors. Higher priority should be given to places where refugees and/or internally displaced persons (IDP) are planning to repatriate. Because of this fact, local authorities or even Afghan local warlords can cooperate with UNHCR by identifying areas to which refugees/IDPs will repatriate. In the Afghan programme, prioritising areas is strongly influenced by different types of contamination: cluster bombs, landmines, and anti-vehicle mines. Clearance during spring 2002 was focused on cluster bomb units (CBU) areas in order to remove remnants of cluster bombs before growth of vegetation conceal their location. Subsequently, this policy was reversed, and a new preference for dealing with minefields prevailed.
- c. Operational Factors.
 - i. Vegetation/slopes. Operational factors would be to first clear areas without dense vegetation and or to first clear areas with slope less than 20 degrees.
 - ii. Area. Prioritisation based on the size of area can also be effective. Prioritising small areas for mine clearance appear to increase the efficiency of operations since this results in the elimination of a large number of minefields. On the other hand, it would not result *per se* into significant socio-economic benefits. Other aspects such as effects of mined areas on the daily lives of populations, on the economy, their proximity to the community, the occurrence of incidents, the

¹⁵ This is currently the case for the Kandahar province in Afghanistan, although heavily contaminated, accompanied by a high number of mine victims, threats to the safety of MAPA employees does not allow extensive Mine Action operations in that region.

frequency of land use, etc can play a more vital role in prioritising mine clearance.

- iii. Clearance Toolbox. Expected clearance rates on a specific task can influence its priority order. More understanding of this can be obtained by consulting annex E, amongst other annexes, where the different mine clearance methods are addressed, primarily manual, mechanical and mine detection dog clearance.
- iv. Clustering. Grouping sites together can increase the efficiency of operations by reducing time lost through commuting, setting up field camps and simplified logistics in support of the mine clearance assets.
- v. Seasonal Variances. Weather conditions could also play a significant role in planning mine clearance operations. Extreme weather conditions could hamper mine clearance operations – wet climate, heat, snow or frozen ground, etc suggest a higher priority be assigned to these areas when weather conditions permit.

Chapter Four - Achieving the execution of the strategic plan: crucial elements

1. Quality of base data.

The (variable) figure given for the total mined area (789 km²) of Afghanistan is probably an overestimate, as are the clearance rates being quoted by various clearance agencies. Field visits to mine clearance organizations such as HALO Trust and Afghan Technical Consultants (ATC)¹⁶ revealed much lower clearance rates (50 to 70%) than the ones used during early planning sessions. Several mine clearance organizations gave higher clearance rates than the ones used during the September planning session. The 500-km²-battle area contamination¹⁷, as stated during preliminary strategic planning presentation, has been reduced to 51 km², illustrative regarding the tendency to overestimate contamination data. This ten to one ratio however does not allow any kind of extrapolation towards landmine contamination, as the initial 500 km² was even beyond a very rough estimate.

Extrapolating more reliable 2002 data regarding clearance rates¹⁸ indicates that clearing the 410-km² high priority areas before 2008 is not possible with the current MAPA capacity in place and demands further increases in human resources beyond program expansion capability.

Consequently, sound strategic planning has been compromised during the emergency phase by these overestimates and further complicates a credible translation of the strategic plan and needs in required donor funding. The requested annual amount of approximately 60 Million US\$ to achieve the five year high priority clearance of Afghanistan has in this regard merely a political meaning.

If one assumes that the current data of landmine/UXO area contamination is approximately correct, in relation with the observed - more realistic - clearance rates, averaging approximately

¹⁶ These field visits took place during Strategic planning Workshop from 1-10 March 2003 at Kabul.

¹⁷ This estimate was initially used, prior the September 2002 planning session, as an overly conservative estimate.

¹⁸ See Annex A for detailed assessments of mine clearance rates

600 m²/manual team/day¹⁹, more than 900 Million US\$²⁰ will be required over ten years to clear Afghanistan completely compared to the initially estimated 500 Million US\$²¹. Even with this amount of funding available, MAPA human resources expansion limits²² might render this scenario as irrelevant. It further highlights a potential distortion of humanitarian and development aid to Afghanistan if the MBT clearance timeframes (10 years after ratification) or Government targets are interpreted as a rigid timeframe without the foreseen MBT possibilities of extension(s)²³. The clearance of the low priority 300+ km², with almost no known impact on the Afghan society, can lead to unrealistic Art. 6 expectations as donor funding tends to decline significantly once the humanitarian imperative is not the core issue of the Mine Action programme anymore.

Efforts undertaken during the workshop to obtain more reliable clearance rates from the de-mining organizations were not directly successful due to very significant spreads in clearance outputs²⁴ amongst the NGO's and thus required more study and skilled analysis. The clearance capacity/productivity of the different components of the MAPA should however be treated as a most important planning issue. Empirical data, based on the Mine Action activities over the past 13 years, does not provide a basis for credible analysis regarding future MAPA achievements and has led to overly optimistic planning²⁵. Limited post clearance documentation about the cleared land does not allow sound extrapolations towards future MAPA achievements. The recently developed International Mine Action Standards (IMAS), more specifically the higher safety precautions for de-miners, appear to have a slow down effect on the clearance rates. De-

¹⁹ See Annex A

²⁰ See Annex F

²¹ This was the optimistic outcome of the September 2002 preliminary strategic planning session in Geneva

²² See for more detailed information the individual assessments of strategic options in Annex F

²³ This possibility is provided in Article 5, §3 and further of the MBT: "If a State Party believes that it will be unable to destroy or ensure the destruction of all anti-personnel mines referred to in paragraph 1 within that time period, it may submit a request to a Meeting of States Parties or a Review Conference for an extension of the deadline for completing the destruction of such anti-personnel mines, for a period of up to ten years."

²⁴ See Annex A

²⁵ Clearance of 789 km² in 10 years is not realistic with the currently planned resources

miners need to investigate each signal and excessive amounts of time are consequently invested in highly polluted grounds with small metal fragments due to extensive prodding and sapping procedures. Nevertheless, this statement does not mean current procedures should be evaluated and/or revised, merely it is a factual observation about how mine clearance methods in Afghanistan are complicated by many external factors. The impact of these factors at an execution level should be well understood in order to reflect correctly this at a strategic planning level.

2. Prioritisation model for optimising socio-economic benefits

The current division in Afghanistan between high and low priority mine clearance tasks does not sufficiently allow a refined handling of the mine/UXO contamination problem. Proposals to further subdivide the contamination in five categories²⁶ might serve as a basis for the further development of strategic options for the MAPA. In anticipation of the Landmine Impact Survey, a related working group concentrated on how criteria can be set regarding further subdivision of contaminated area in these five categories based on issues related to rehabilitation/development, repatriation, casualties and other aspects motivated by relief agencies. The LIS, taking place over a timeframe of 14 months (launched in October 2003), is a 2,2 Million € project which should allow for a more optimal prioritization and allocation of resources and is intended to provide inputs in the prioritization process from the onset, in addition to the considerable amount of contamination and impact data already available from previous surveys.

All programmes strive to be productive and efficient, the different approaches developed to assist in prioritisation reflect this. The methodology described in this chapter should not be viewed in isolation, but rather as being part of a comprehensive process of planning and managing Mine Action activities. The purpose of the proposed model is to ensure that the

²⁶ Till 2003, MAPA has only subdivided contaminated land in high and low priority land to be cleared, see annex B and C for a refinement of this system

limited resources of the Afghan Mine Action programme could have the greatest possible impact in each planning cycle on the socio-economic blockages imposed on mine affected Afghan communities. As mentioned before, the Landmine Impact Surveys assists in clarifying the appropriate priority setting for affected communities that are classified in order of socio-economic impact due to number of recent victims, blockages and presence of mines and UXO. The classification can be done immediately upon visiting an individual Afghan community, and does not require a full survey (including technical surveys) to produce useful impact scores. Based on results from landmine impact surveys, mine affected communities can be classified as follows²⁷:

- **High Priority 1**
- **High Priority 2**
- **Medium Priority 3**
- **Low Priority 4**
- **Low Priority 5**

Application of the prioritisation framework will permit different scenarios to be looked at and compared, in order to determine which option would provide the greatest impact in a given period on the socio-economic blockages caused by landmines/UXO. It will also provide an upfront view of what the programme aims to achieve, which is not only defined in cleared m², but more important how impacted communities will benefit from the work executed.

Programmes will be able to project benefits versus costs²⁸ to show when benefits will start to outweigh the costs for carrying out Mine Action activities. Donors and government administrations in mine affected countries will now be aware of what to expect as the work for an annual plan should be developed in conjunction with them. They will further have the opportunity to estimate in advance what kind of benefits²⁹ Mine Action activities will entail.

²⁷ See annex B, C and D for a detailed description and pragmatic usage of this categorization of contamination and land to be cleared

²⁸ See annex K for an illustrative example on how costs versus benefits can be assessed

²⁹ See annex J for an illustrative example of an estimation of economic benefits of MAPA for 2003 – 2012, assuming that all contaminated land would be cleared

Mine Action programmes should consider applying the following prioritisation guidelines:

- a. Focus for the short and medium term (two to five years), on communities with medium to high blockage impact, in other words clearance of those areas which can be classified as follows: High Priority 1, High Priority 2 and Medium Priority 3.
- b. Focus on removing blockages that have a socio-economic impact on communities and apply the following principles:
 - i. High priority 1 and 2 minefields should be carefully assessed to determine the minimum clearance activity required to remove the socio-economic blockage. This assessment should involve both the blockage caused by the minefield and its related technical aspects. In many cases this will not require clearance of the entire minefield, but rather opening an appropriate passage and marking the remaining area for eventual clearance. While it may be less efficient in logistics terms the programme will reap greater benefits versus costs expended.
 - ii. In assessing the blockage - and thus the positive impact of removing that blockage - it is important to confirm whether the removal of this blockage would be beneficial for intended usage desired. That is, will the land be used as intended³⁰ simply with the removal of the blockage, or does it require provision or investment of additional resources? If it does require further resources, and they are already guaranteed, then this is a particularly high priority; if it requires further resources and they are not assured, then this should be considered a lower priority site for clearance.

³⁰ See also annex B, Priority One: “the requesting organisation must provide proof that funds are available for rehabilitation tasks to begin immediately, once clearance is completed.

Clearing these sites will actually constitute wastage since potential productive output of the cleared area will not be realized immediately after clearance has taken place and the area may lay dormant until other inputs arrive. Blockages to funded reconstruction programmes would normally be high priority for Mine Action, although mine clearance should be included as part of the financing of the respective investment.

- c. Minefields which had confirmed casualties should receive high priority³¹ attention, in order to remove the danger and alleviate the fear/trauma the community may have endured.
- d. Most of the “medium” and “high” impact communities reach this level due to a recent history with several mine victims and/or blockages caused by a limited share of the associated minefields. All of these communities should benefit from Mine Risk Education. The limited areas causing blockages should be cleared, while other areas should be marked for future clearance.
- e. In most of the countries where a Landmine Impact Survey has been completed, over three-fourths of communities are ranked as “low” impact. Significant proportions (perhaps a majority) of mine-affected communities do not suffer blockage impact from the minefields – these communities should benefit from Mine Risk Education, and the minefields marked for eventual clearance.

3. Interoperability amongst the different de-mining organizations

One should acknowledge that several Afghan mine clearance organizations can not operate as ‘stand-alone’ units in a certain area. Before mine clearance, extensive surveys take place to determine precisely the area to be cleared and preferably considerably reduce the originally

³¹ See also annex B, distinction is made pending on the frequency at which mine accidents occur

presumed contaminated area; called: area reduction. In this regard, it was observed that technical survey for other mine clearance organizations not having their own in-house survey assets is a vulnerable concept. Especially HALO Trust is reluctant towards technical survey and area reduction executed by other NGO's using Mine Detection Dogs (MDD), due to their embedded lack of confidence in MDD's (widely used in Afghanistan for technical survey).

4. Clearance by Mine Detection Dogs (MDD)

The current five-10 year plan for the clearance of low/high priority areas relies heavily³² on the use of MDDs. Some experienced Mine Action operators³³ have a lack of confidence in dog clearance in Afghanistan and do not believe that they should be relied upon extensively for the clearance of high priority sites. The MAPA states³⁴ however to apply very strict quality standards for MDDs. If the MDD component would or has to be significantly reduced, the increase of the cost of MAPA in combination with a slow down of the clearance rates will further hamper the achievability and affordability of the vision to clear all high priority areas before 2008.

Mine clearance for reconstruction versus the humanitarian imperative will be a complex exercise of balance where key funding and reconstruction partners such as the World Bank, US AID, Asian Development Bank have yet to determine further their role in funding MAPA. If significant resources are reallocated to reconstruction tasks then this may add to the inevitability that the aim of clearing all high priority land before 2008 will not be achieved.

³² Starting at slightly below 50% of the land cleared by dogs, further increased till almost 60% whilst the MDD component gets further expanded.

³³ After three years of intense dog field trials, HALO doubts the ability of MDD to find mines consistently.

³⁴ Statement made by the MAPA, QA Officer at the Strategic Planning Workshop, Kabul, March 2003

5. Mine clearance as part of Disarmament, Demobilization and Reintegration

This could contribute considerable additional resources to MAPA. On February the 22nd, 2003, President Karzai announced in Tokyo his intention to disarm his nation within one year after the commencement of the disarming process. A more detailed Disarmament, Demobilization and Reintegration (DDR) program has been recently announced. At this recent Tokyo conference on DDR, Japan pledged 35 million US\$, the US 10 million US\$, UK 3,5 million US\$ and Canada, 2,2 million US\$, to give an indication of the significant amounts of money potentially available for the launching of this DDR campaign. It is important to stress that the success of the DDR will ultimately depend upon the economic capacity of Afghanistan itself. How the Afghan economy and the international community will be able to generate enough job opportunities to absorb the capacity “on the market” is a very important topic. Since MAPA is one of the biggest employers in Afghanistan, supplementing the Government’s efforts to assert control nationwide and providing alternatives for insufficient basic economic activities and regulated employment, could convince donor countries to direct for the time being considerable amounts of additional funding for MAPA on DDR budget lines.

6. National ownership

Being the most mature and evolved Mine Action program worldwide, in combination with approximately one hundred Afghans trained in middle management, eight having followed the Cranfield senior Mine Action management course, provokes questions on how and when the transfer of knowledge and ownership is further going to take place. A UNDP consultant has been recently working on a handover plan. The international staff is further increased to fifteen, coming from five.

7. Coordination and cooperation

Coordination of the different Mine Action activities of the de-mining organisations is supported by the UN Mine Action Centre (MACA) for Afghanistan. It is a recurrent point of discussion on how to further optimise cooperation and coordination amongst Mine Action partners. As UN Member States request for the UN to coordinate, in general, much progress has to be achieved in order to allow for more optimal coordination, resource allocation, standardization, clearance certification and synergy amongst the different Mine Action implementing partners.

Chapter Five - Towards a strategic fit

Developing a certain number of strategic options provides more in-depth knowledge of strengths and weaknesses of strategic possibilities on how to run the Mine Action programme in Afghanistan. Assessing each option as in Annex E, is primarily about affordability (=cost) and feasibility (=within technical constraints) in order to gather both the international donor community and Afghanistan behind a Mine Action programme they consider as achievable in its strategic goal and objectives. In this regard, the achievability of the target of the Afghan Government to free Afghanistan from the impact of anti-personnel mines within five years, will depend heavily on how this target gets further translated into operational terms, and exactly how 'high impact area' or 'high priority area' gets defined. With only having the contaminated area categorized in 'low' and 'high' priority area, with high priority area³⁵ estimated 410 km², it became obvious through the previous chapters and Annex E that the size of the task at hand can only be considered as enormous. However, with the refined prioritisation system, increasing from two to five categories of impact, 'high priority' land to be cleared (high priority 1 and 2), entails a reduced and far more achievable number of 197km² land to be cleared³⁶ before 2008. By redefining the concept of 'high priority' land, partly possible due to lack of standardisation of any kind of definition thereof, one can observe significant shifts in what the 'strategic goal' entails. The five different strategic options have been defined in their scope and targets based on the further refined definition of low, medium and high priority area to be cleared in Afghanistan. Annex G gives an illustrative example of a scoring and weighting of each strategic option in search for a strategic fit. The usage of this formal and systematic method of evaluating the five strategic options, further supports a multi-disciplinary decision taking process of pointing out a preferable strategic choice or best strategic fit. In this regard, each option is given a number of

³⁵ See Chapter Two, §2

³⁶ See Annex D for the revised strategic assumption of contaminated land in Afghanistan, more specifically option 2, with an approximate cost of 350 million US\$ over the period 2003 – 2007.

scores in order to determine how well it satisfies a number of key criteria, including: the socio-economic benefits (at community, regional and national level) of each option, the costs, the achievability (using the human skills and technology likely to be available), stakeholders needs and expectations, international treaty obligations and national legal requirements, and the risk of the option failing to achieve the declared strategic objective as a result of political intervention, the withdrawal of donor support, or a worsening security situation. SWOT and PESTEL inquiries can be a most relevant source of information, reflecting to a great extent how the internal and external environment are perceived by the stakeholders. Scoring each option³⁷ against agreed future scenarios³⁸, can be found in the strategic fit part of the scoring and weighting table. This evaluation of options against a range of possible future scenarios is the process of determining the best performing strategic option or strategic fit. The weighting should be done before the options are scored, and ideally with the involvement of stakeholders to encourage a collective 'ownership' of the final decision. Indeed, the outcome depends heavily on how the weighting is applied in the model. The scoring system should be consistent. For example, a full score (5) should be given only when an option meets the criteria in all respects, a minimal score (1) should be given when an option marginally satisfies the criteria, and a middle score (3) should be given when the option meets the criteria to some significant degree, but not in all respects. A score of (0) should be given when an option fails in all respects to meet the criteria. If data allows and stakeholders approve, refinement can be achieved by further subdividing the scoring system. Sensitivity analysis can be further very informative regarding the strength of a strategic option versus external threats and changes, especially related to funding. To conclude, one can observe in the illustrative example in annex G the systematic highest score of Option 2, clearing 197 km² before 2008, which further illustrates the 'performance' of this option when changing the likelihood of funding scenarios. Both in best-case scenario A (high commitment of the donor

³⁷ Based upon the individual assessments of each option in annex E.

³⁸ See three distinct strategic scenario's in annex F.

community to the MAPA), as in a close to worst-case scenario C (low commitment), the total score of Option 2 is distinctly higher than the other options, indicative for its strengths in a changing and/or unpredictable environment.

Chapter Six - Concluding remarks

As stated in the introduction of this thesis, strategic planning has to face the complexity to balance the objectives of saving lives, maximizing output and economic effect, and maintaining or justifying future funding.

To save life and alleviate suffering regardless of the intrinsic value of the land or its substitutability has been - in respect with the humanitarian imperative of Mine Action – the primary driving factor for task prioritisation during the (past) emergency phase in Afghanistan, following the increased military activity and usage of cluster munitions. The evolving importance of the humanitarian imperative of MAPA needs however to be evaluated continuously versus the potential threat of a fragile or absent security country-wide and lack of development, consequently acknowledging the potential threat of a greater number of casualties from the possible resumption of internal conflict or war. The MAPA strategic plan must focus as much as possible on supporting peace and drawing Afghanistan away from resumption of war.

If Afghanistan is to consolidate its opportunity for peace, then it will require unification under a Government that is seen as a service-provider. With already limited resources and manpower to do this in the Kabul region, it is essential for the broader stability of the country and acceptance of the current and future Government to extend this role of a service-provider to the other 31 Afghan provinces. Thus clearing roads, restoring telecommunications, power and water, might evolve in the near future towards becoming the highest priority tasks.

A simple and general MAPA cost-benefit analysis (CBA), attributing monetary values to mine/UXO victims, quantifying potential economic output after clearance, is due to insufficient post clearance data difficult to quantify at macro-level³⁹ but can provide limited insights

³⁹ See annex J and K for more detailed information

allowing for prioritisation between Mine Action related humanitarian and/or development objectives, or to quantify macro benefits/spin-off effects. Savings on medical costs of mine/UXO victims⁴⁰ and directly related quantifiable losses of economic productivity are however more manageable components. A breakdown in those smaller parameters regarding potential economic benefits after clearance allows for a better appraisal of the cost-benefits and can further contribute to task prioritisation⁴¹.

The national development can become the prime objective, despite casualties in minefields outside the prioritised development area. It further underlines the importance and complexity of the MAPA task prioritisation model for mine clearance and the necessary broad consensus it should have, especially amongst donor countries and the Afghan authorities. In this regard the recently created Afghan based Mine Action Working Group has a vital role to play. The efficacy of the MAWG will be vital for the further enhancement of MAPA and smooth transition of the program to the Afghan authorities.

As stated several times in this thesis, strategic planning should allow for change. A considerable but reasonable amount of strategic options should be subject of study and analysis in a way they can incorporate change. Possible strategic options can be considered as a sensitivity analysis towards key parameters, which can be found in the detailed annex part of this thesis. Each of these options – as they are measured in a weighting and ranking model – gives a different outcome pending on the strategic scenarios and assumptions used in the Cranfield University support software (HIGHWAY ®). Noticeable is the big influence of slower mine clearance rates on program cost, human resources requirements and program duration. This simulation of different strategic scenarios allows for a rather simple methodology of analysis and

⁴⁰ See annex I for an illustrative example on how savings on medical costs of mine victims can be translated in terms of socio-economic benefits, not to mention the non-quantifiable benefits of avoiding many tragic accidents to happen

⁴¹ See annex M for an illustrative example on how a breakdown of macro socio-economic benefits can provide additional decision-taking elements for task prioritisation

prioritisation, transparent and easily updated as more reliable data becomes available through the ongoing landmine impact survey. In a very complex operating environment, one benefits from strategic planning procedures, which are easy to comprehend and translate in clear messages towards the Afghan Mine Action practitioners in order to further national ownership of the process.

Finally, the aim should not only be to maximise donor funding by balancing overall priorities to cover both the Mine Action humanitarian imperative and critical security and development objectives, but also to demonstrate a balanced approach within a much broader overarching Afghan humanitarian and development plan. The country will benefit most of an holistic approach in this regard, not from tunnel-vision on isolated objectives.

Annex A - MAPA manual mine clearance rates

Org	ATC	AREA	DAFA	OMAR	Halo
	Manual Clearance - Without Mechanical Prep	Manual Clearance - Without Mechanical Prep	Manual Clearance - Without Mechanical Prep	Manual Clearance - Without Mechanical Prep	Manual Clearance - Without Mechanical Prep
Method					
AP	Y	Y	Y	Y	Y
AT	N	Y	Y	N	Y
UXO	Y	Y	Y	Y	N
# Ops	24	18	24	24	22
# People	35	29	35	32	28
Aggricultural land	500	900	1980	2700	330
Irrigation channels	250	0	1260	360	220
Grazing land	750	600	3030	1423	440
Roads	0	0	3666	0	110
Residential	200	0	516	468	154

The mine clearance rates as depicted in the table above were obtained via a questionnaire to the five tabled Mine Action organisations during the March 2003 strategic workshop at Kabul. The significant spread amongst these different NGO mine action organisations, read ATC, AREA, HALO Trust versus DAFA and OMAR, justifies further analysis. In this regard it is important to mention that well documented and accurate data was obtained from the biggest de-mining organisations such as ATC and HALO Trust, providing about 60% of the MAPA clearance capability, where DAFA and OMAR, providing together approximately 25% of MAPA clearance capability, were obviously more vague in their prognoses and estimates. The very optimistic indices were put in perspective when annual scale performances of both were further analysed. In both cases, extracts from landmine monitor reports were toning down their high indices within an acceptable range of the ATC and HALO Trust ones.

Demining Agency For Afghanistan (DAFA). DAFA conducts mine clearance mainly in the southern and western regions of the country, with its head office located in Kandahar. It employs about 658 people with a 2001 budget of \$3.9 million.^[83] In 2001, DAFA operated with 11 manual clearance teams, four battle area clearance teams, and three mechanical mine clearance teams, clearing about 1.148 million square meters of mine-contaminated area and 3.3 million square meters of former battlefield area. During these clearance operations, 267 antipersonnel mines, 94

antivehicle mines, and 11,069 UXO were destroyed. DAFA states that it suffered damage/loss of equipment worth \$5-6 million dollars during the recent military operations in Afghanistan. With 11 manual clearance teams and 3 mechanical mine clearance teams, the landmine monitor states that DAFA cleared 1,15 million square meters in 2001. The MAPA monthly progress reports mentions a slightly higher number of square meters for 2001: 1,35 million. For 2000, it has been equally reported that DAFA cleared 2,88 million square meters, for 1999, a total of 2,95 million square meters, for 1998 a total of 2,4 million Square meters.⁴²

The lower annual output in 2001 compared to the previous two years can be partly subscribed to the disruption of the program as from October 2001 on, due to the successive military interventions by the coalition forces together with the reported significant destruction of DAFA de-mining equipment. Assuming that the period 1998 – 2001 is more representative, one can assume that an average output over this period for the 11 DAFA teams is approximately 2,395 million square meters.

The mentioned mechanical clearance teams are considered able to perform only mechanical ground preparation, in other words not directly contributing to the cleared land output. Consequently the annual output per manual DAFA team per year is $2,395/11 = 218000 \text{ m}^2/\text{team}$; average output per day (216 working days/year): $1008 \text{ m}^2/\text{day}/\text{team}$.

Due to insufficient post clearance data, further disaggregated data regarding which type of land has been cleared by DAFA is not available. Still being significantly higher than the ATC and HALO manual clearance rates, one can assume that faster clearance in certain southern areas of Afghanistan is aided by less contaminated ground, proportionally less high priority residential area clearance (= very complex and slow) and possible proportionally more area reduction of the area to be cleared of mines, leading in this case to a mixture of mine clearance rates with area reduction rates.

⁴² <http://www.afghan-network.net/Landmines/fn4269> see footnote 84

Important to mention is the fact that HALO teams have 22 de-miners/team (only one de-miner/lane), whilst others (except AREA) have 24 de-miners/team (two de-miners/lane), which logically should be proportionally accountable for 10% less clearance output/team of HALO. In a similar way, a mathematical analysis of the data available for OMAR can provide more realistic data regarding their clearance output.

Organization for Mine Clearance and Afghan Rehabilitation (OMAR). OMAR conducts mine and UXO clearance and mine awareness in various parts of the country, with its head office recently relocated from Peshawar to Kabul and offices in Jalalabad, Kandahar, and Herat. OMAR has 645 employees, with 550 involved in mine clearance and 95 in mine awareness education. It also runs primary education, health care, and rehabilitation projects with a separate staff and budget. In 2001, OMAR operated with ten manual clearance teams, four battle area clearance teams, and three mechanical mine clearance teams, clearing more than 1.9 million square meters of mine contaminated area. During these clearance operations, 1,526 antipersonnel mines, one anti-vehicle mine, and 1,727 UXO were destroyed.⁴³

With ten manual clearance teams, the OMAR annual output over the years 1998, '99, '00 and '01 was respectively 2,75 - 3,5 - 1,87 - 1,9 → leading to an average of $2,5 \text{ km}^2/10 = 250500 \text{ m}^2/\text{team}$; average output per day (260 working days/year): $963 \text{ m}^2/\text{day}/\text{team}$, being very close to the DAFA daily output per team and probably for similar reasons higher than the output of ATC and HALO Trust.

The information of the landmine monitor reports in combination with the MCPA monthly progress reports gives another output: with two manual teams (at the end of 2001 three manual teams), 136294 m² was cleared. This allows for following calculation: $136294/2/220 = 310 \text{ m}^2/\text{team}/\text{day}$.

⁴³ <http://www.afghan-network.net/Landmines/fn4269> - MAPA progress report, December 2001.

In order to facilitate the usage of the Cranfield support software, HIGHWAY®, it is preferable to have one acceptable and defensible average clearance rate in order to allow for a transparent methodology regarding the key parameter for long term strategic planning. Since above calculations already provide one average clearance rate for DAFA and OMAR, it requires additional calculations for the other de-mining organisations. In this regard, these disaggregated clearance rates should be weighed with the currently ranked high priority area to be cleared (189 km² agricultural, 20 km² residential, 5 km² irrigation channels, 39 km² roads and 163 km² grazing land):

- ATC this average output/team/day:

$$[(500*189) + (250*5) + (750*163) + (200*20) + (N/A*39)] / (410 - 39) = 598 \text{ m}^2/\text{team/day}$$

- HALO Trust average output/team/day:

$$[(330*189) + (220*5) + (440*163) + (154*20) + (110*39)] / 410 = 348 \text{ m}^2/\text{team/day}$$

Cross-checking this with their performance of 2001=> 2 503 422 m² with 31 teams^{44[3]}.
2 503 422 / 31 / 232 working days, gives equally 348 m²/team/day

- AREA average output/team/day:

$$[(900*189) + (N/A*5) + (600*163) + (N/A*20) + (N/A*39)] / (410-5-20-39) = 774 \text{ m}^2/\text{team/day}$$

For an over-arching MAPA clearance rate, further weighing - in respect with the number of manual teams of each de-mining organisation - can be applied as follows:

HALO Trust: 35 % of MAPA manual de-mining human resources/employees

ATC: 25 %

DAFA: 16 %

OMAR: 14 %

DDG: 5 %

AREA: 5%

Average MAPA manual team clearance rate:

$$(35\%*348)+(25\%*598)+(16\%*1008)+(14\%*963)+(5\%*310)+(5\%*774)= \mathbf{621 \text{ m}^2/\text{team/day}}$$

Remark: for option 1=> approximately 10% was conservatively subtracted, taking into account more residential clearance in the priority 1 ranking of mine clearance tasks => **550** m²/team/day

Indeed for this option, clearing all priority 1 areas (highest priority) in the timeframe 2002-2007, one can assume that from the 80 km² to be cleared, this will include a high percentage of the residential area (5% of the total previously classified high priority land - 410 km² - to be cleared in Afghanistan) or a significant part of the 20 km² contaminated residential area from the 780 km² total.

Annex B – An example of an operational priority system for MAPA

General:

The nature and extent of the mine/UXO problem in Afghanistan results in many assistance requests being received from a variety of individuals and organisations (government, UN and NGOs). As resources are not available to immediately respond to every request, a process of prioritising requests is applied. Requests for assistance will therefore be assessed and prioritised in accordance with the guidelines described below. It is recognised that circumstances can change significantly and quickly. Therefore Area Mine Action Centres have the flexibility to re-prioritise requests according to local circumstances. Socio-economic impact and community benefit are the primary principles upon which the priority system is based. In general, the number of people to benefit from the mine action work and the immediacy of the benefit, are guiding factors when determining mine action priorities. To ensure efficient local management, effective co-ordination and involvement of the local community, requests for mine action assistance should, as much as possible, be endorsed by local governing bodies/shura.

Priority System:

“**High**” priority areas are defined as those with a **priority of 1 or 2**; “**Medium**” priority as those with **priority 3**; “**Low**” priority are those with a **priority of 4 or 5**.

Priority One

Rehabilitation/Development. Mine Action requests to support rehabilitation/ development projects that are planned to commence immediately clearance activities have been completed. The requesting organisation must provide proof that funds are available for rehabilitation tasks to begin immediately, once clearance is completed.

OR

Repatriation. Mine Action requests to support repatriation of refugees or internally displaced persons (IDP) who are currently returning or will return immediately upon the completion of clearance activities. Evidence must be provided (e.g. by UNHCR or local authorities) that refugees or IDP will return to.

OR

Casualties. Where civilian mine/UXO casualties are occurring at an estimated rate indicating a clear and imminent danger (e.g. more than one victim per month) for the population in a specific village or localised area.

OR Other:

Request to clear areas vital to the population (life saving/life sustaining) and no other alternatives exist (e.g. hospitals, village water supplies/wells). These requests must be endorsed by the local council/shura and benefit the community as a whole.

Areas to be utilised by relief agencies for urgent or essential operations (e.g. IDP/refugee camps, emergency facilities required to support disaster relief operations).

Priority Two

Rehabilitation/Development. Requests where plans for operations have been completed, but where funds are not currently available to undertake the project.

OR

Repatriation: Requests to support repatriation of refugees/IDPs where the return is likely to occur within 12 months of the task being completed.

OR

Casualties: Areas where the estimated rate of civilian mine/UXO casualties indicate a significant danger (e.g. more than one victim every three months) for the population in a specific village or localised area.

OR

Other: Requests that are significant (but not vital) to the economy or general well-being of a community. These requests must be endorsed by the local council/shura and benefit the community as a whole. This may include major economic infrastructure assets (e.g. factories, roads, bridges), community facilities (e.g. schools, mosques, cemeteries), essential agricultural and grazing land, production and commercial facilities.

Priority Three

Rehabilitation/Development. Requests where the project concept has been approved but where detailed plan and or funds, will not be available in the medium term (i.e. 1-2 years).

OR

Repatriation. Requests to support repatriation of refugees/IDPs where the return is likely to occur in the medium term (i.e. 1-2 years).

OR

Casualties. Areas where the estimated rate of civilian mine/UXO casualties indicate a limited but remaining danger (e.g. less than one victim every six months) for the population in a specific village or localised area.

OR

Other: Requests where clearance would make some contribution to the ongoing economic development and physical well being of the population (endorsed by local council/shura).

Priority Four

Rehabilitation/Development. All requests not covered in Priorities 1-3.

OR

Repatriation. All requests not covered in Priorities 1-3.

OR

Casualties. Areas in which no civilian casualties have occurred however the area(s) are within one kilometre of permanent population zones (residential areas, roads, canals or agriculture areas).

OR

Other. Areas where permanent alternatives exist but clearance will improve local conditions or strengthen the economic structure of the area (e.g. clearance of a more direct road between two districts).

Priority Five

All other requests not covered in Priorities 1-4 (e.g. hilltops and mountainsides where the presence of mines does not affect the normal life of the people).

Annex C - Generating/Simulating possible Strategic Options for MAPA

1. **Strategic Option 1**: Clearance of all High Priority 1 Area in 2003-2007 + domestic funding afterwards – open ending of the program
2. **Strategic Option 2**: Clearance of all High Priority 1 & 2 Area in 2003-2007 + domestic funding afterwards – open ending of the program
3. **Strategic Option 3**: Clearance of all High Priority 1 & 2 Area in 2003-2007 + Medium Priority (Priority 3) in 2008-2012
4. **Strategic Option 4**: Clearance of all High Priority 1 & 2 Area in 2003-2007 + Medium Priority & Priority 4 in 2008-2012
5. **Strategic Option 5**: Clearance of all contaminated area before April 2013 – MBT requirements

Schematic Overview:

Strategic Options	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012 (+)
Option 1	Prio 1	Prio 1	Prio 1	Prio 1	Prio 1	Domestic funding ?	Domestic funding ?	Domestic funding ?		Domestic funding ?
Option 2	Prio 1	Prio 1	Prio 1&2	Prio 2	Prio 2	Domestic funding ?	Domestic funding ?	Domestic funding ?	Domestic funding ?	Domestic funding ?
Option 3	Prio 1	Prio 1	Prio 2	Prio 2	Prio 2&3	Prio 3	Prio 3	Prio 3	Prio 3	Prio 3
Option 4	Prio 1	Prio 1	Prio 2	Prio 2&3	Prio 3	Prio 3	Prio 3&4	Prio 4	Prio 4	Prio 4
Option 5	Prio 1	Prio 1&2	Prio 2	Prio 2&3	Prio 3	Prio 3&4	Prio 4	Prio 4&5	Prio 5	Prio 5

Refining of priorities based on Annex B: Operational priority system for MAPA assistance

- “High” priority areas are defined with a priority of 1 or 2, “medium” priority as those with priority 3, “low priority” are those with a priority of 4 or 5.
- Subcomponents of priority system are based on issues related to rehabilitation/development, repatriation, casualties and other aspects motivated by relief agencies as illustrated in the previous annex

Annex D - Strategic Assumption Contaminated Land:

Conservative assumption used in this thesis is based on HALO empirical data of 10 Provinces (Central and North Afghanistan) as it was obtained in March 2003⁴⁵. In order to be on the conservative side, slightly more weight has been given to high priority 1 & 2:

High Priority 1= 10%
High Priority 2= 15%
Medium Prio 3= 20%
Low Priority 4= 35%
Low Priority 5= 20%

Leading to the following conservative assumption regarding the prioritisation of contaminated land:

High Priority 1=	79 km ²	
High Priority 2=	118 km ²	
Medium Prio 3=	158 km ²	Subtotal=355 km ²
Low Priority 4=	276 km ²	
Low Priority 5=	118 km ²	

This new categorisation of contaminated land, in stead of the 410 km² high priority area and 379 km² low priority area, will in this thesis (especially in the annexes C and E) allow for a more refined and targeted prioritisation system.

⁴⁵ During the visit of the HALO Trust Kabul Office, accurate information was obtained. HALO Trust provided following data based on their prioritisation system and extensive surveys in ten (northern) Afghan provinces:

1a – Emergency: 7,2 %
1b – High: 9 %
1c – Medium: 21,4 %
Low: 37,7 %
Minimum: 24,6 %

Strategic Option 1:

Clearance High Priority 1 Area (Emergency) from 2003 – 2007

Assumptions

STRATEGIC PLANNING ASSUMPTIONS

1. Clearance Rates (Team/Day)

With Mech Prep	Without Mech Prep	
750	550	sqm (Manual)
2700	2500	sqm (Dog)
	500	sqm (Mech)
	1500	sqm (Tech Survey)
	15000	sqm (BAC)

2. Clearance Rate Improvements

Year #	%
02	5
04	3
0	0
0	0

3. Working Times

	Days / Year
Manual	220
Dog	220
Mechanical	220
Tech Survey	220
BAC-EOD	220

4. Initial Team Training Costs (\$ / Team)

	Training	ReTrain Cost	ReTrainTime
Manual	\$ 03200	20 %	5
Dog	\$ 3800	20 %	5
Mechanical	\$ 2900	20 %	5
Tech Survey	\$ 1200	20 %	5
BAC	\$ 3700	20 %	5

5. Initial Team Equipping Costs (\$ / Team)

	Equipping	Re Equip Cost	ReEquipTime
Manual	\$ 117600	20 %	5
Dog	\$ 77000	20 %	5
Mechanical	\$ 157000	20 %	5
Tech Survey	\$ 46000	20 %	5
BAC	\$ 210000	20 %	5

6. Training Time

1 Months

7. Annual Running Costs (\$/Year)

	Running
Manual	\$ 173000
Dog	\$ 101000
Mechanical	\$ 161000
Tech Survey	\$ 76600
BAC	\$ 117600
Mines Awareness	\$ 2500000
Victim Assistance	\$ 500000
Community Marking	\$ 6000000
Project Managment, Administration	\$ 4000000
EOD	\$ 3000000

8. Programme Duration

☐ 3
 ☒ 5
 ☐ 7
 ☐ 9
 ☐ 11

Template Update Test

Strategic Assumptions

HIGHWAY® software is a product development of Cranfield University Mine Action Department. As a computer-based planning tool, it assist managers in developing strategic plans for national Mine Action programmes. HIGHWAY® was developed in 2001 specifically for the programme in Afghanistan. Since HIGHWAY® has a limited flexibility and diversification as a planning tool, a follow-on version was developed by the Cranfield team in 2003, carrying the name FREEWAY®.

HIGHWAY® allows interaction through a set of different screens/windows, requiring all the necessary inputs in order to come up with a yearly and cumulative cost of the strategic option

and output in terms of km² cleared. There are no complex mathematics at the basis of this software programme, which can merely be considered as a user-friendly spreadsheet.

In above ‘Assumptions’ window, a key set of parameters has to be filled in order to set the conditions regarding the clearance performance (=clearance rates multiplied by working days)

Area Summary

Size of Tasks

Manual Clearance	<input type="text" value="40"/>	sq km
Dog Clearance	<input type="text" value="34"/>	sq km
Mechanical Clearance	<input type="text" value="05"/>	sq km
BAC Area	<input type="text" value="051"/>	sq km
Area to Survey	<input type="text" value="60"/>	sq km
Area to mark	<input type="text" value="500"/>	sq km
Mechanical Preparation - Man	<input type="text" value="06"/>	sq km
Mechanical Preparation - Dog	<input type="text" value="06"/>	sq km

and costs of the resources. The programme allows also to bring in the assumption regarding clearance rate improvements (sub-window number 2), due to an assumed improvement of mine detection equipment and increased efficiency of revised clearance methods. After the set of strategic assumptions has been introduced, it comes down to define as accurate as possible the assumed size of the clearance tasks in the ‘Area Summary’ window, depicted left. Next, one has to introduce the required manpower in the ‘Resources’ screen,

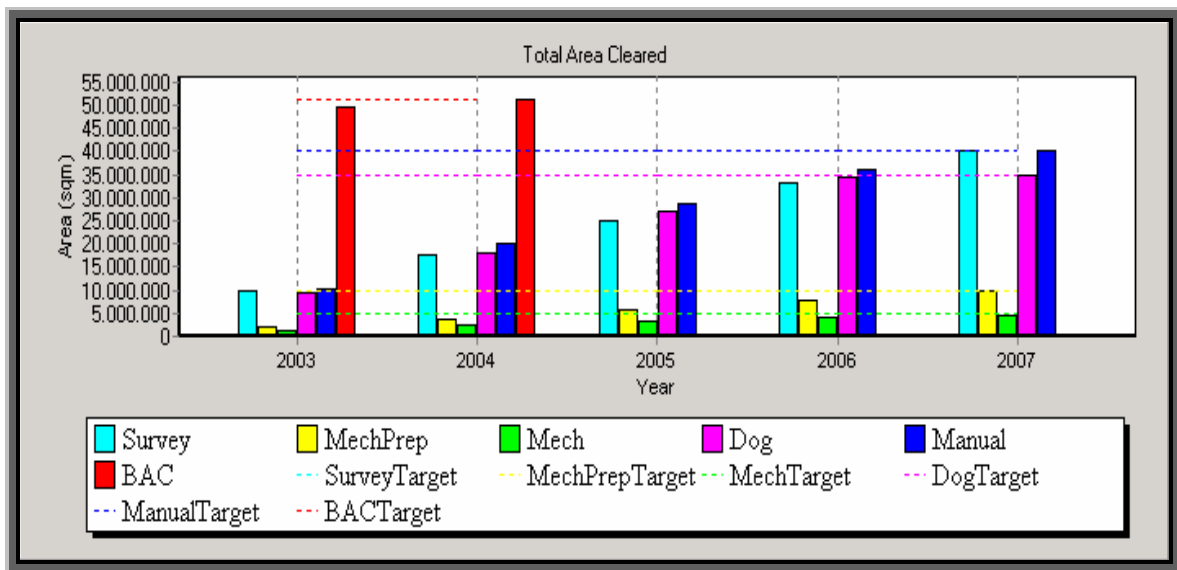
depicted right below, regarding the resources esteemed necessary to clear the area as put in the ‘Area Summary’ window. The different types of clearance and how the tasks will be executed over time are depicted in

next page HIGHWAY® graph: Battle Area Clearance (BAC – red colour), Manual clearance (blue), Mine Detection Dog clearance (pink) and Mechanical clearance (green) each

Resources

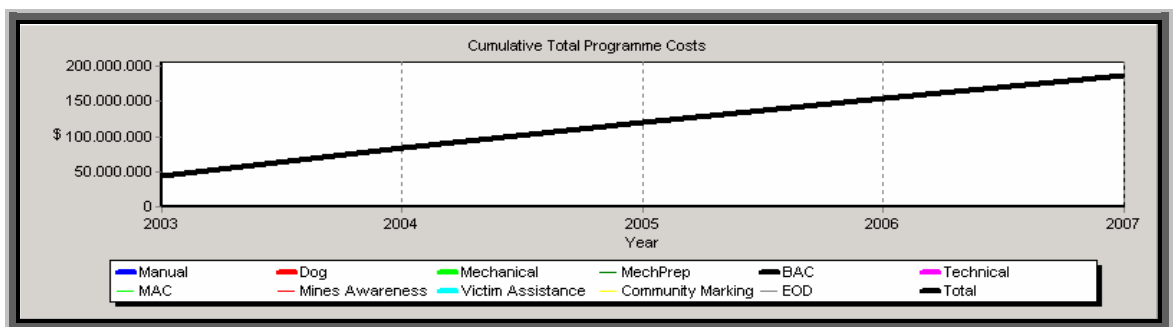
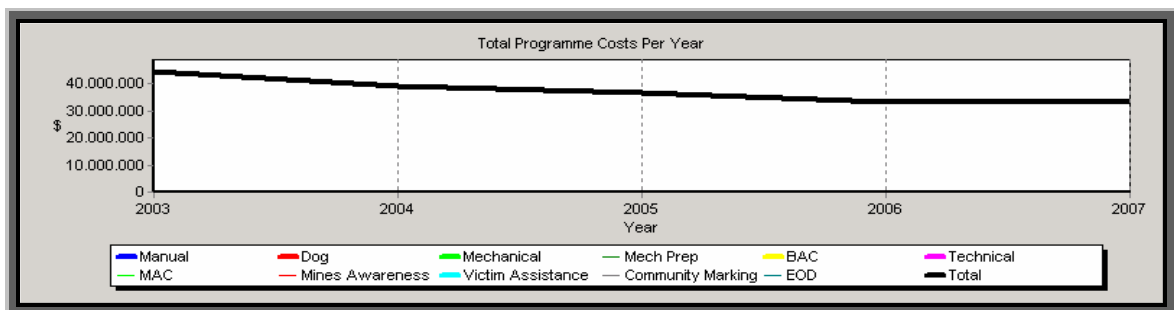
	Current	Year 1	Year 2	Year 3	Year 4	Year 5
Manual Clearance	110	90	80	70	60	60
Dog Clearance	25	17	15	15	12	12
Mechanical Clearance	10	10	10	10	5	5
Mechanical Preparation	17	25	30	30	30	30
Battle Area Clearance	30	15	3	0	0	0
Technical Survey	40	30	22	22	22	22

correspond with a certain amount of km². This is partly an assumption as well, since it is not always possible to determine from the onset which clearance method (manual, mine detection dogs or mechanical) will correspond best with the technical specifics of the area to be cleared.



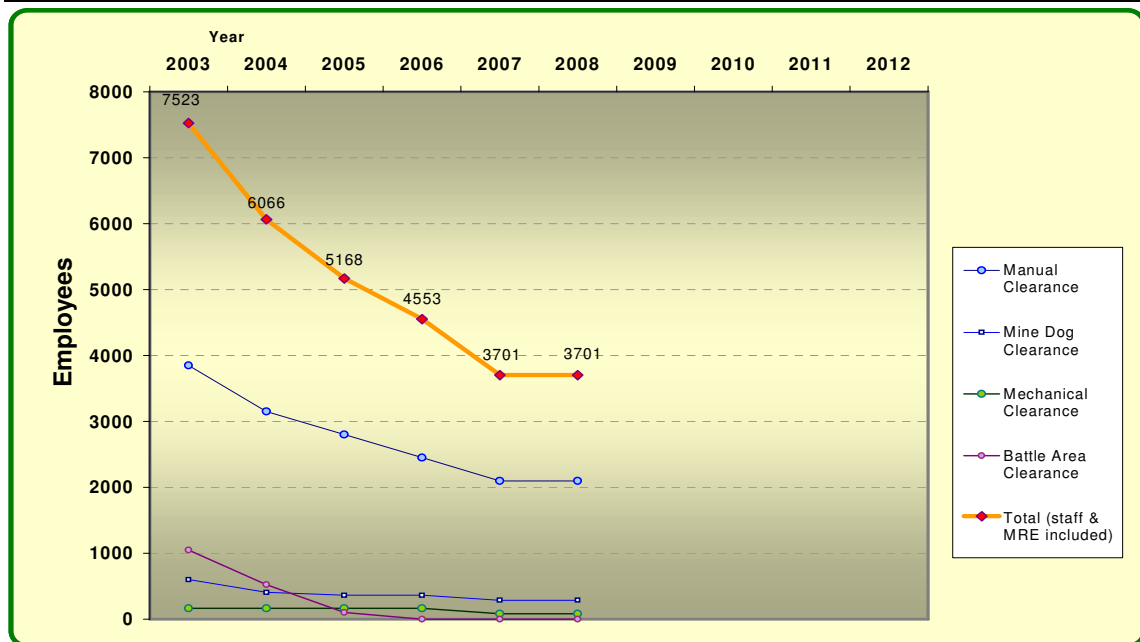
However, following out of post-clearance data, workable baseline data will allow for conservative assumptions regarding km² to be cleared by the above mentioned different landmine clearance methods.

After the completion of these screens, HIGHWAY® provides the outputs in terms of 'Total Programme Cost per Year' and 'Cumulative Total Programme Cost'. As for option 1, the graph below depicts a yearly cost of approximately 40 million US\$/year, which in terms of cumulative costs reaches approximately 200 US\$ over the five year coverage for the execution of the strategic plan related to option 1.



The last table/graph depicted for option 1 is nothing more than a Microsoft Excel-graph, based on the human resources requirements - introduced in above depicted 'Resources' window - to clear the assumed contaminated area as put forward, e.g. for option 1 this entails the clearance of 79 km². As the HIGHWAY® screen only depicts the number of clearance teams, it does not

Total Teams											
Total Teams	# PER TEAM	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
# Manual Clearance Team	35	110	90	80	70	60	60				
# Mine Dog Team	24	25	17	15	15	12	12				
# Mechanical Clearance Team	16	10	10	10	10	5	5				
# Battle Area Clearance Team	35	30	15	3	0	0	0				
# EOD Team	10	30	46	46	30	5	5				
# Mechanical Ground Prep Team	39	17	17	17	17	17	17				
# Technical Survey Team	10	40	30	22	22	22	22				
Total Employees											
Manual Clearance		3850	3150	2800	2450	2100	2100				
Mine Dog Clearance		600	408	360	360	288	288				
Mechanical Clearance		160	160	160	160	80	80				
Battle Area Clearance		1050	525	105	0	0	0				
EOD Clearance		300	460	460	300	50	50				
Mechanical Ground Preparation		663	663	663	663	663	663				
Technical Survey		400	300	220	220	220	220				
Programme Management/MRE		500	400	400	400	300	300				
Grand Total		7523	6066	5168	4553	3701	3701				



graphically present the total requirements in numbers of employees and/or indicate the evolution over time. This allows for an easier assessment of the option in terms of programme expansion, which further translates itself in required training of new employees and breeding programmes of mine detection dogs. It is in this regard important to note that changes in required number of employees or mine detection dogs should be kept within an acceptable margin, in order not to induce significant additional costs (equipment & training) and an unbearable burden on the current mine clearance personnel, mine dog trainers and equipment in order to stay within expansion limitations of the programme.

General assessment of option 1:

This option clearly represents a minimalist version, since Mine Action practitioners cannot consider “the doing nothing option”⁴⁶ as a defensible approach for the most heavily mine-affected country in the world. The mine clearance that takes place during the first five years is focused on highest priority land only, which represents approximately 10% of the total contamination of Afghanistan (basic assumption – see previous annex D). This means that priority 1 land is to be cleared during an emergency phase and spread out over a five year period. The structuring of human resources during the timeframe 2000-2002 to reach approximately 7000, can be abruptly stopped, therefore restructuring (=downsizing) needs to start immediately in order to stay within the boundaries of a continuously decreasing budget. It must be pointed out that the socio-economic benefits are relatively limited. Only those areas are cleared where casualties are occurring at an estimated rate indicating a clear and imminent danger. Many vital areas for rebuilding the economic capacity of Afghanistan remain affected, even with a particular focus on the socio-economic blockages. Of course, this option is most affordable (180 million US\$) if only the set-up and running costs are taken into account, being relatively inexpensive versus the other options and with decreasing demands over time on the donor community. In a similar way it will not meet any particular problems regarding capacity building since it benefits from the efforts and investments in the programme. Since only 10% of the contaminated areas in Afghanistan will be cleared, not all high priority land will be cleared before 2008 and the treaty obligations of the MBT are not met whatsoever. In general, stakeholders needs and expectations are hardly met and high political and security risks remain since the Afghan authorities will continue to face the devastation caused by landmines due to a relatively high number of casualties, blocked roads, contaminated irrigation channels, etc.

⁴⁶ Meaning: NO support from the International Community. Not a realistic scenario, taking into account the Art 6 obligations for States Parties to the MBR to assist mine affected countries wherever possible.

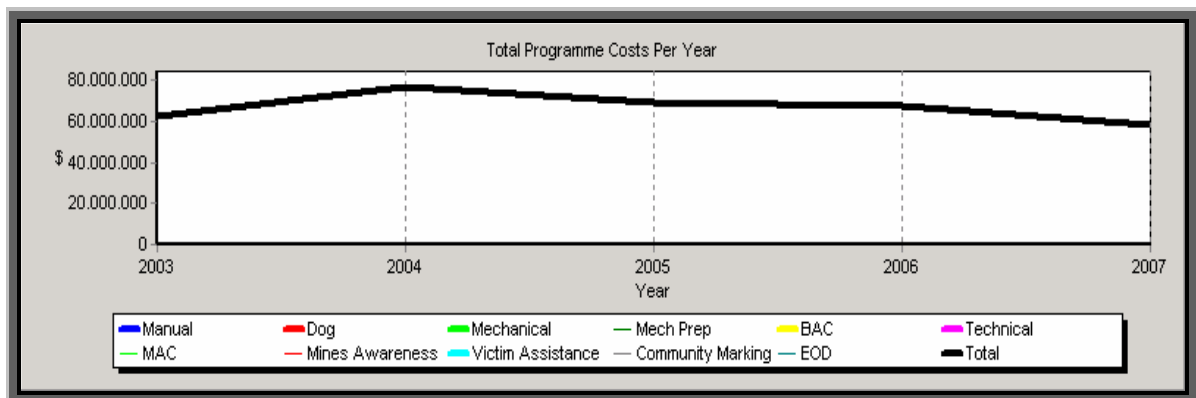
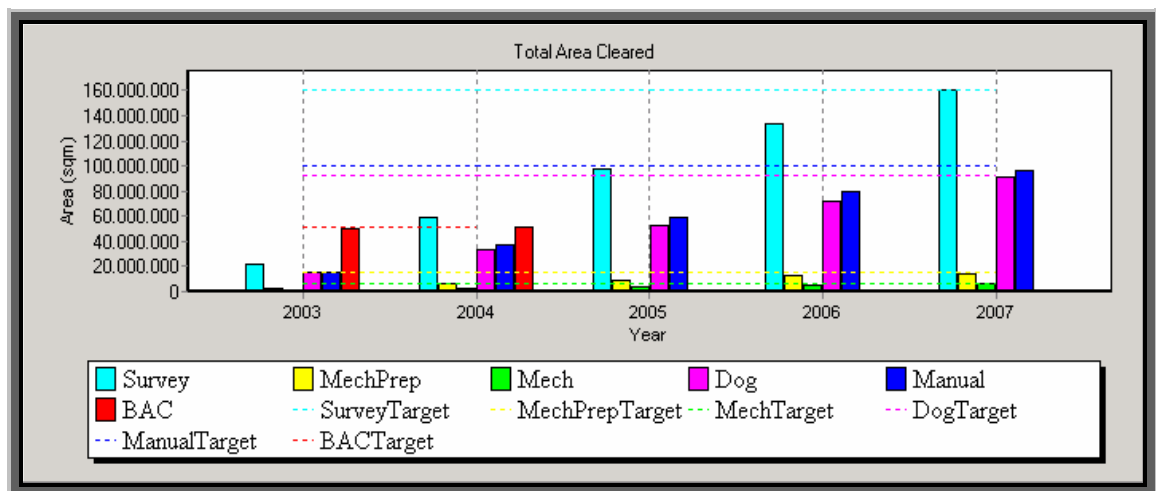
Strategic Option 2:

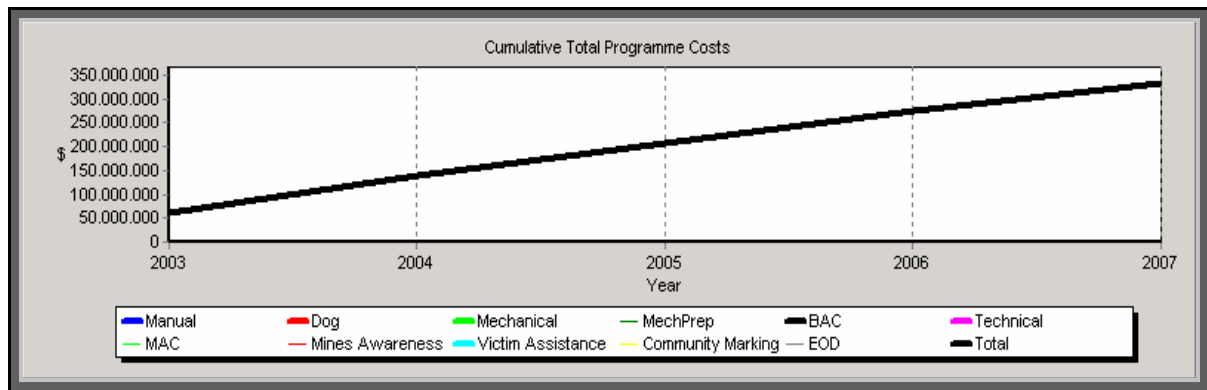
Clearance High Priority 1&2 Area from 2003 – 2007

Area Summary

Size of Tasks

Manual Clearance	<input type="text" value="100"/> sq km
Dog Clearance	<input type="text" value="93"/> sq km
Mechanical Clearance	<input type="text" value="07"/> sq km
BAC Area	<input type="text" value="051"/> sq km
Area to Survey	<input type="text" value="160"/> sq km
Area to mark	<input type="text" value="500"/> sq km
Mechanical Preparation - Man	<input type="text" value="08"/> sq km
Mechanical Preparation - Dog	<input type="text" value="08"/> sq km

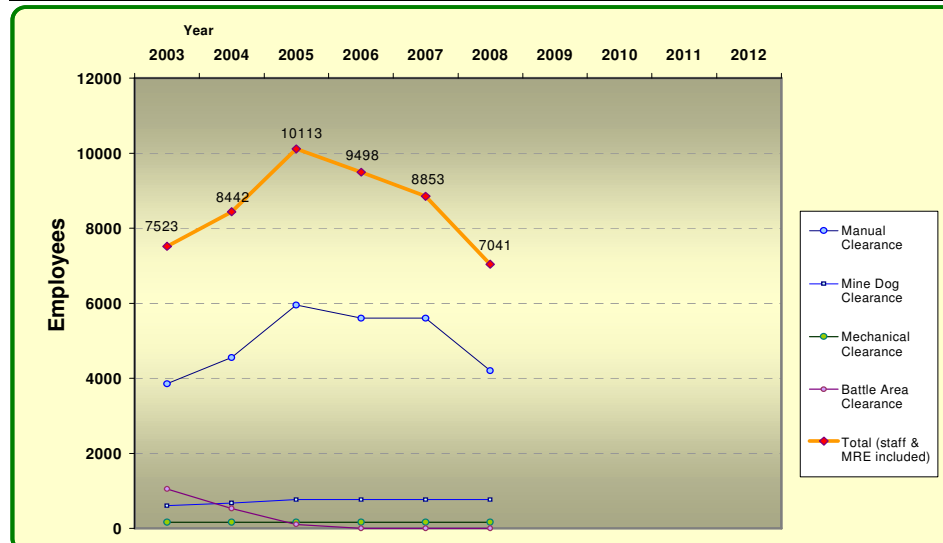




Resources						
	Current	Year 1	Year 2	Year 3	Year 4	Year 5
Manual Clearance	110	130	170	160	160	120
Dog Clearance	25	28	32	32	32	32
Mechanical Clearance	10	10	10	10	10	10
Mechanical Preparation	17	25	30	30	25	17
Battle Area Clearance	30	15	3	0	0	0
Technical Survey	40	70	110	110	100	90

Max Human Resources: 10113 in Year 2005 (Year 2)

Total Teams												
Total Teams	# PER TEAM	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
# Manual Clearance Team	35	110	130	170	160	160	120					
# Mine Dog Team	24	25	28	32	32	32	32					
# Mechanical Clearance Team	16	10	10	10	10	10	10					
# Battle Area Clearance Team	35	30	15	3	0	0	0					
# EOD Team	10	30	46	46	30	5	5					
# Mechanical Ground Prep Team	39	17	25	30	30	25	17					
# Technical Survey Team	10	40	70	110	110	100	90					
Total Employees												
Manual Clearance		3850	4550	5950	5600	5600	4200					
Mine Dog Clearance		600	672	768	768	768	768					
Mechanical Clearance		160	160	160	160	160	160					
Battle Area Clearance		1050	525	105	0	0	0					
EOD Clearance		300	460	460	300	50	50					
Mechanical Ground Preparation		663	975	1170	1170	975	663					
Technical Survey		400	700	1100	1100	1000	900					
Programme Management/MRE		500	400	400	400	300	300					
Grand Total		7523	8442	10113	9498	8853	7041					



General assessment of option 2:

This option focuses on the clearance of all high priority (1&2) land before 2008 in order to alleviate the Afghan society of the most significant harmful effects due to presence or perceived presence of landmines. Consequently, it will provide considerable socio-economic benefits in terms of reduction of mine accidents and restoration of basic economic infrastructure. With a peak of 10113 employees in 2005, this option will clear approximately 25% (basic assumption – see previous annex D) of the total contaminated area in Afghanistan, or approximately 200 km². With 7500 employees in 2003, further capacity building both in terms of human resources and technical equipment, can be considered as feasible without significantly testing expansion limitations. This option can still be considered as relatively affordable (325 million US\$) and only with slightly increasing demands (peaking in 2004) over time towards the donor community. Since only 25% of the contaminated areas in Afghanistan will be cleared, the treaty obligations of the MBT have not been met. In general, stakeholders needs and expectations have been fulfilled to a certain extent, given that all high priority land will be cleared. However, over a rather long timeframe the Afghan authorities and society will continue to endure significant political and security risks.

Strategic Option 3:

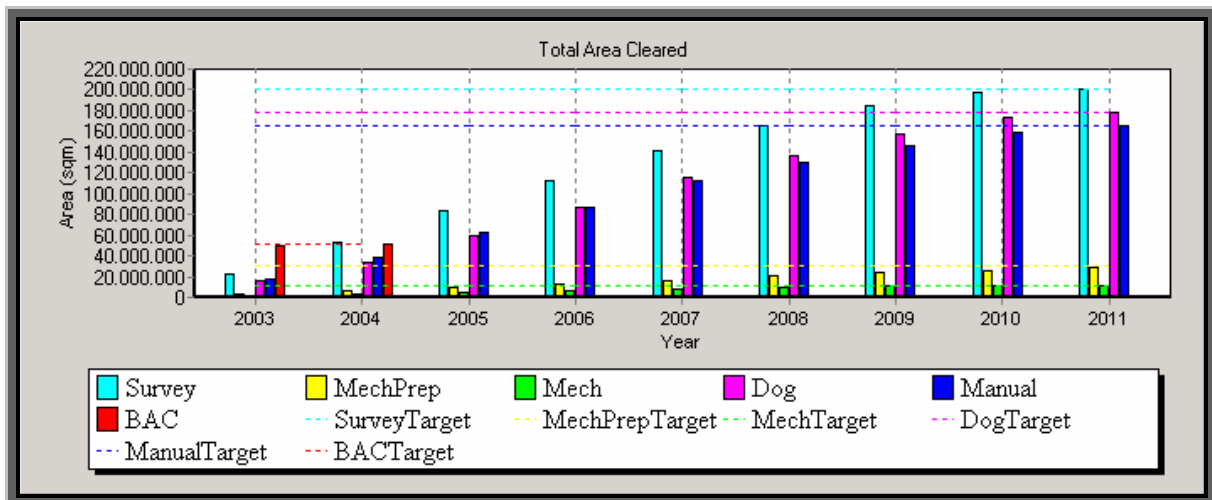
Clearance High & Medium Priority Area from 2003 – 2012

Size of Tasks

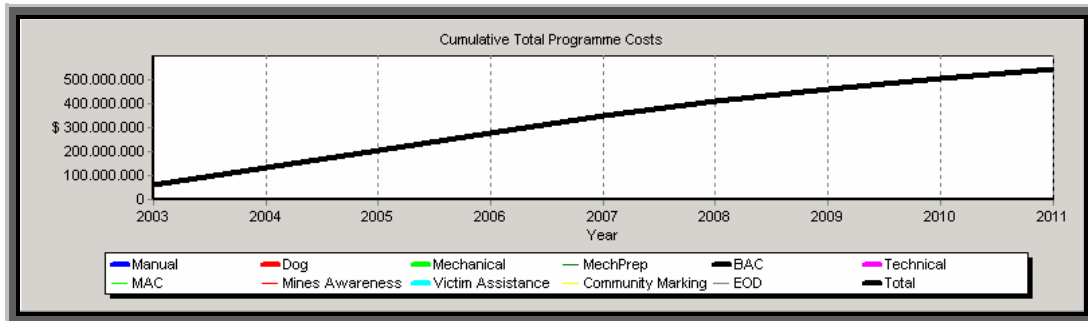
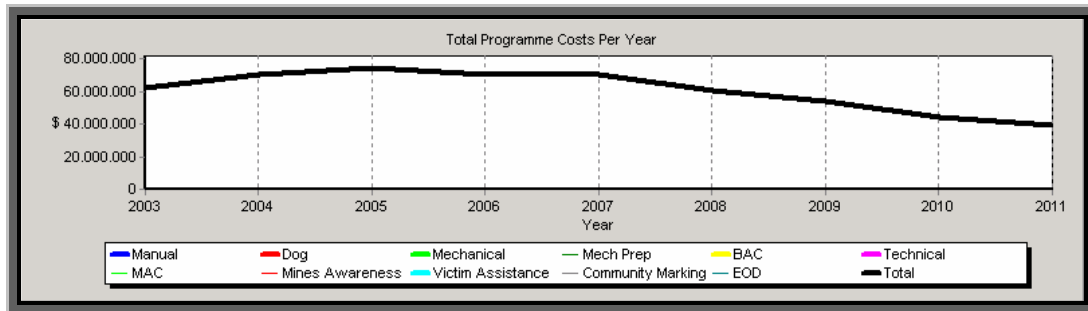
Manual Clearance	<input type="text" value="165"/>	sq km
Dog Clearance	<input type="text" value="178"/>	sq km
Mechanical Clearance	<input type="text" value="012"/>	sq km
BAC Area	<input type="text" value="051"/>	sq km
Area to Survey	<input type="text" value="200"/>	sq km
Area to mark	<input type="text" value="500"/>	sq km
Mechanical Preparation - Man	<input type="text" value="15"/>	sq km
Mechanical Preparation - Dog	<input type="text" value="15"/>	sq km

1. Clearance Rates (Team/Day)

With Mech Prep	Without Mech Prep	
<input type="text" value="750"/>	<input type="text" value="600"/>	sqm (Manual)
<input type="text" value="2700"/>	<input type="text" value="2500"/>	sqm (Dog)
	<input type="text" value="500"/>	sqm (Mech)
	<input type="text" value="1500"/>	sqm (Tech Survey)
	<input type="text" value="15000"/>	sqm (BAC)

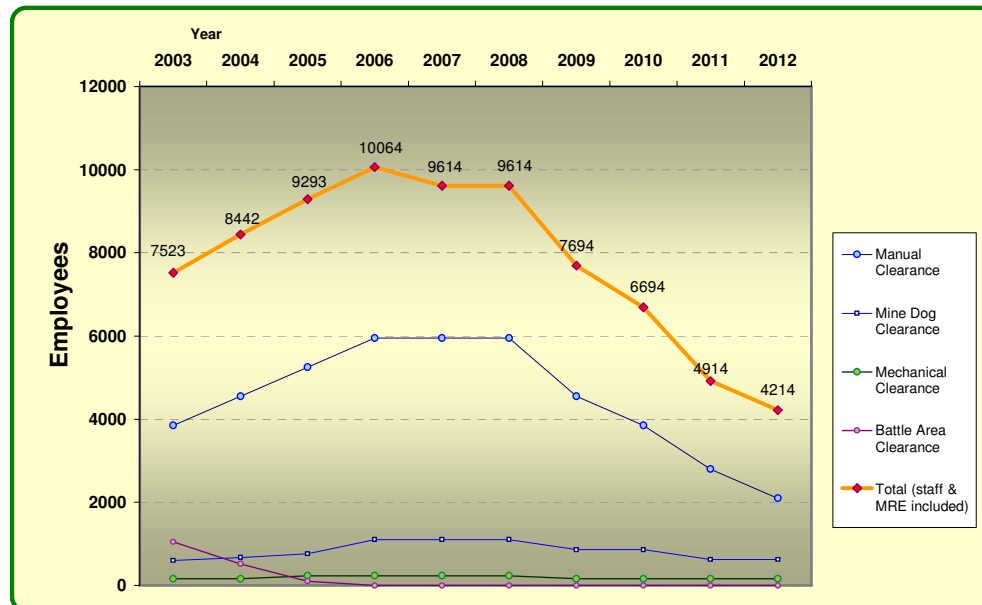


Resources										
	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Manual Clearance	110	130	150	170	170	170	130	110	80	60
Dog Clearance	25	28	32	46	46	46	36	36	26	26
Mechanical Clearance	10	10	15	15	15	15	10	10	10	10
Mechanical Preparation	17	25	30	30	30	30	30	30	20	20
Battle Area Clearance	30	15	3	0	0	0	0	0	0	0
Technical Survey	40	70	90	90	80	80	70	50	40	40



Human Resources: peaking to 10064 in Year 2006

Total Teams											
Total Teams	# PER TEAM	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
# Manual Clearance Team	35	110	130	150	170	170	170	130	110	80	60
# Mine Dog Team	24	25	28	32	46	46	46	36	36	26	26
# Mechanical Clearance Team	16	10	10	15	15	15	15	10	10	10	10
# Battle Area Clearance Team	35	30	15	3	0	0	0	0	0	0	0
# EOD Team	10	30	46	46	30	5	5	5	5	5	5
# Mechanical Ground Prep Team	39	17	25	30	30	30	30	30	30	20	20
# Technical Survey Team	10	40	70	90	90	80	80	70	50	40	40
Total Employees											
Manual Clearance		3850	4550	5250	5950	5950	5950	4550	3850	2800	2100
Mine Dog Clearance		600	672	768	1104	1104	1104	864	864	624	624
Mechanical Clearance		160	160	240	240	240	240	160	160	160	160
Battle Area Clearance		1050	525	105	0	0	0	0	0	0	0
EOD Clearance		300	460	460	300	50	50	50	50	50	50
Mechanical Ground Preparation		663	975	1170	1170	1170	1170	1170	1170	780	780
Technical Survey		400	700	900	900	800	800	700	500	400	400
Programme Management/MRE		500	400	400	400	300	300	200	100	100	100
Grand Total		7523	8442	9293	10064	9614	9614	7694	6694	4914	4214

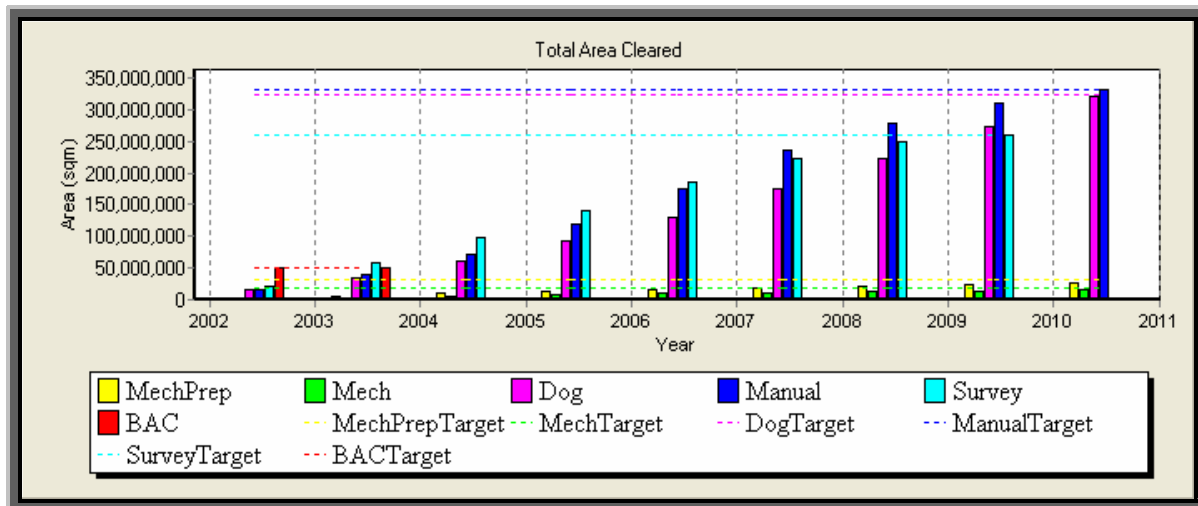


General assessment of option 3:

This option focuses on the clearance of all high and medium priority (1,2&3) land before 2012. Thus it will provide over a ten year period very considerable socio-economic benefits due to the general removal of the negative impact of landmines on the Afghan society. With a peak of 10084 employees in 2006, this option will clear approximately 45% (basic assumption – see previous annex D) of the total contaminated area in Afghanistan, or approximately 355 km². , Having similar expansion rates as option 2, further capacity building both in terms of human resources and technical equipment can be equally considered an option without testing expansion limitations. This option can still be considered as relatively affordable (325 million US\$) with only slightly increasing demands on an annual basis (peaking in 2005). Since only 45% of the contaminated areas in Afghanistan will be cleared, the treaty obligations of the MBT have not been met. Nevertheless, before the MBT deadline of 2013, Afghanistan will be almost free of the impact of landmines. In general, stakeholders needs and expectations are met to a large extent, given that all high and medium priority land will be cleared, but over a relatively long timeframe. The Afghan authorities and society will have to endure less significant political and security risks compared to option 1 and 2, but may face difficulties to maintain a high interest or funding level by international donors over such a long time.

Strategic Option 4:

Clearance of all High Priority 1 & 2 Area in 2003-2007 + Medium Priority & Priority 4 in 2008-2012



Area Summary

Size of Tasks

Manual Clearance sq km

Dog Clearance sq km

Mechanical Clearance sq km

BAC Area sq km

Area to Survey sq km

Area to mark sq km

Mechanical Preparation - Man sq km

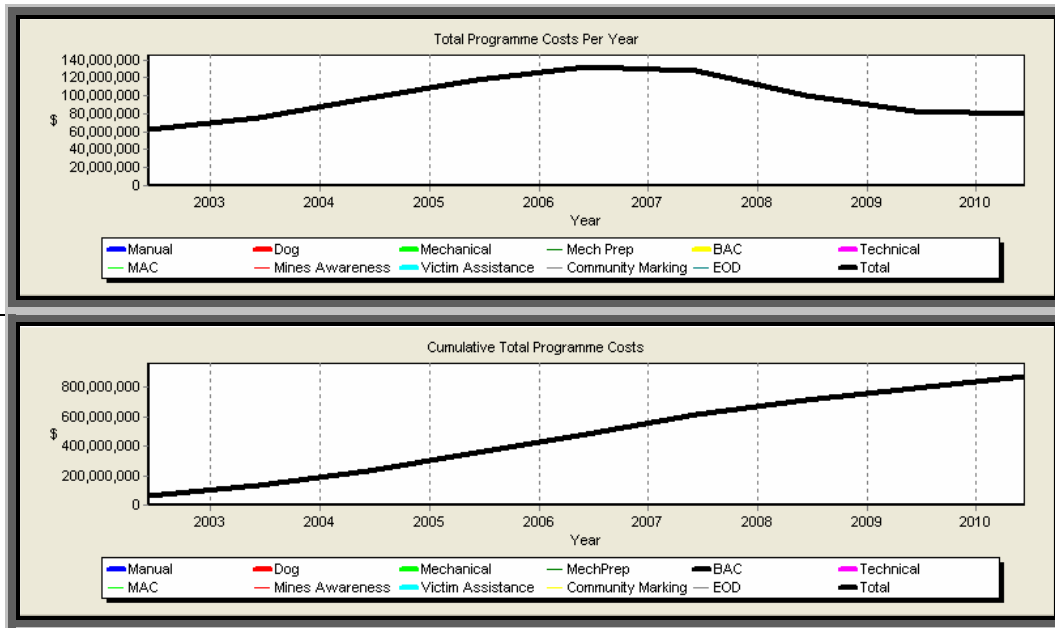
Mechanical Preparation - Dog sq km

1. Clearance Rates (Team/Day)

With Mech Prep	Without Mech Prep	
<input type="text" value="750"/>	<input type="text" value="600"/>	sqm (Manual)
<input type="text" value="2700"/>	<input type="text" value="2500"/>	sqm (Dog)
	<input type="text" value="500"/>	sqm (Mech)
	<input type="text" value="1500"/>	sqm (Tech Survey)
	<input type="text" value="15000"/>	sqm (BAC)

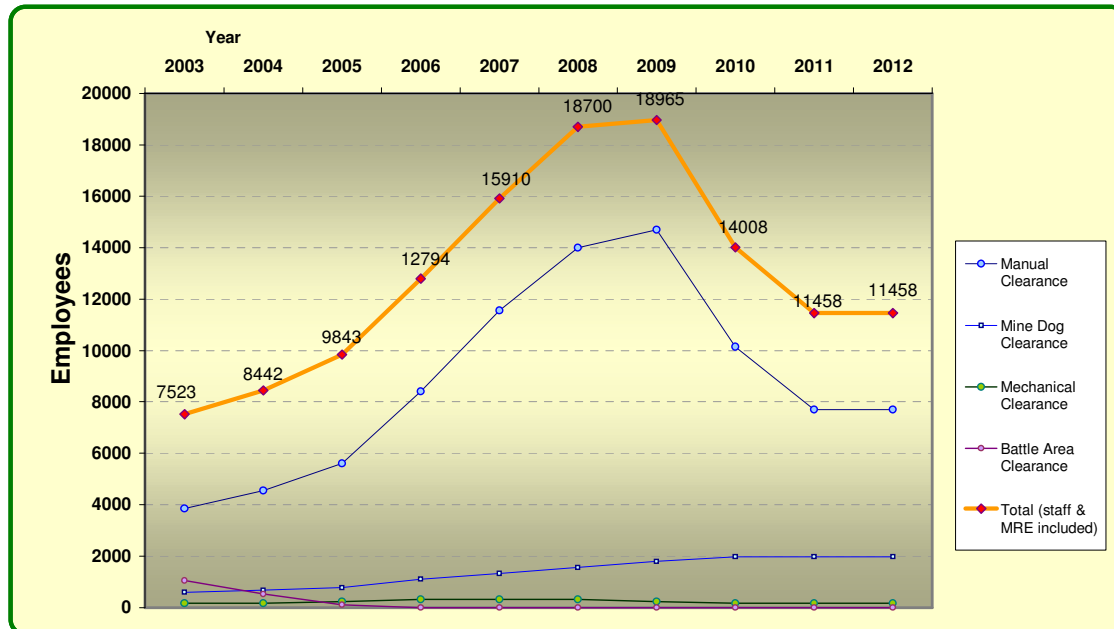
Resources

	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Manual Clearance	<input type="text" value="110"/>	<input type="text" value="130"/>	<input type="text" value="160"/>	<input type="text" value="240"/>	<input type="text" value="330"/>	<input type="text" value="400"/>	<input type="text" value="420"/>	<input type="text" value="290"/>	<input type="text" value="220"/>	<input type="text" value="220"/>
Dog Clearance	<input type="text" value="25"/>	<input type="text" value="28"/>	<input type="text" value="32"/>	<input type="text" value="46"/>	<input type="text" value="55"/>	<input type="text" value="65"/>	<input type="text" value="75"/>	<input type="text" value="82"/>	<input type="text" value="82"/>	<input type="text" value="82"/>
Mechanical Clearance	<input type="text" value="10"/>	<input type="text" value="10"/>	<input type="text" value="15"/>	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="15"/>	<input type="text" value="10"/>	<input type="text" value="10"/>	<input type="text" value="10"/>
Mechanical Preparation	<input type="text" value="17"/>	<input type="text" value="25"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="25"/>	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="20"/>
Battle Area Clearance	<input type="text" value="30"/>	<input type="text" value="15"/>	<input type="text" value="3"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Technical Survey	<input type="text" value="40"/>	<input type="text" value="70"/>	<input type="text" value="110"/>	<input type="text" value="110"/>	<input type="text" value="120"/>	<input type="text" value="130"/>	<input type="text" value="100"/>	<input type="text" value="80"/>	<input type="text" value="70"/>	<input type="text" value="70"/>



Human Resources: peaking to 18965 in Year 2009

Total Teams											
Total Teams	# PER TEAM	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
# Manual Clearance Team	35	110	130	160	240	330	400	420	290	220	220
# Mine Dog Team	24	25	28	32	46	55	65	75	82	82	82
# Mechanical Clearance Team	16	10	10	15	20	20	20	15	10	10	10
# Battle Area Clearance Team	35	30	15	3	0	0	0	0	0	0	0
# EOD Team	10	30	46	46	30	5	5	5	5	5	5
# Mechanical Ground Prep Team	39	17	25	30	30	30	30	25	20	20	20
# Technical Survey Team	10	40	70	110	110	120	130	100	80	70	70
Total Employees											
Manual Clearance		3850	4550	5600	8400	11550	14000	14700	10150	7700	7700
Mine Dog Clearance		600	672	768	1104	1320	1560	1800	1968	1968	1968
Mechanical Clearance		160	160	240	320	320	320	240	160	160	160
Battle Area Clearance		1050	525	105	0	0	0	0	0	0	0
EOD Clearance		300	460	460	300	50	50	50	50	50	50
Mechanical Ground Preparation		663	975	1170	1170	1170	1170	975	780	780	780
Technical Survey		400	700	1100	1100	1200	1300	1000	800	700	700
Programme Management/MRE		500	400	400	400	300	300	200	100	100	100
Grand Total		7523	8442	9843	12794	15910	18700	18965	14008	11458	11458

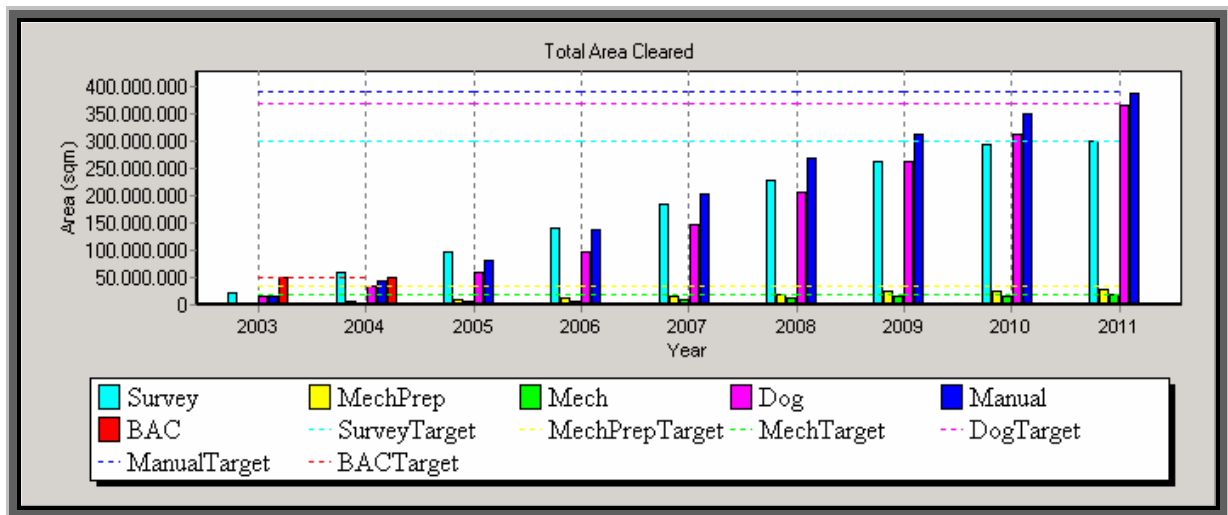


General Assessment of option 4:

This option focuses on the clearance of all high and medium priority (1,2&3) land as in option 3, but starts from 2009 on with the clearance of low priority (4) land till 2012. Thus it will provide very considerable socio-economic benefits at a faster pace compared to the previously assessed options. Since from 2009 on, primarily low priority land will be cleared, socio-economic benefits will only marginally increase since to the general removal of the negative impact of landmines on the Afghan society already took place. However, the faster clearance pace and the vast area of low priority land to be cleared requires significantly higher numbers of mine clearance personnel. With a peak of 18965 employees in 2009, this option will clear more than 80% (basic assumption – see previous annex D) of the total contaminated area in Afghanistan, or approximately 670 km². Having much higher expansion rates as the previous options, further capacity building both in terms of human resources and technical equipment will probably go significantly beyond expansion limitations. This option can hardly be considered as affordable (850 million US\$) and demands significant increases in funding year over year till 2007, peaking at 140 million US\$ that year and only with slightly decreasing demands on an annual basis afterwards. Since 80% of the contaminated areas in Afghanistan will be cleared, the treaty obligations of the MBT are almost met regarding clearance of all contaminated land before 2013. In general, stakeholders needs and expectations regarding the performance of the Mine Action programme are met to a large extent, given that all high and medium and most low priority land will be cleared, but the affordability and achievability requirement both cast their shadow over the positive aspects of this option. It remains very doubtful that the international community will support such an impressive expansion and increase of required funding over time. Especially from 2009 on, when primarily low priority land will have to be cleared, it can be expected that the donor community will look increasingly more to the Afghan authorities and society to support the programme themselves.

Strategic Option 5:

Clearance of all contaminated area from 2003 - 2012



Area Summary

Size of Tasks

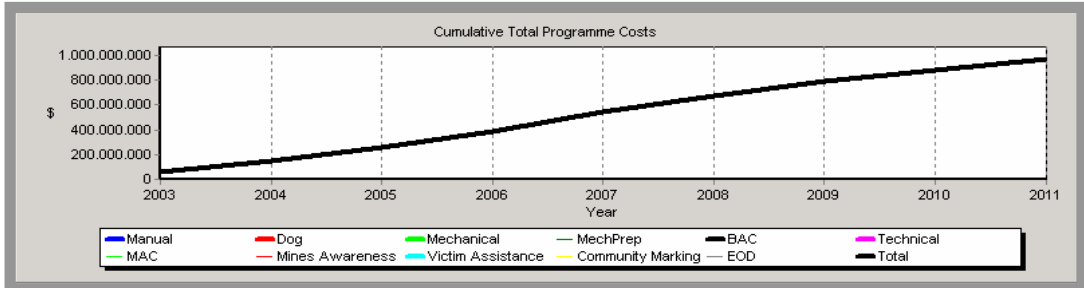
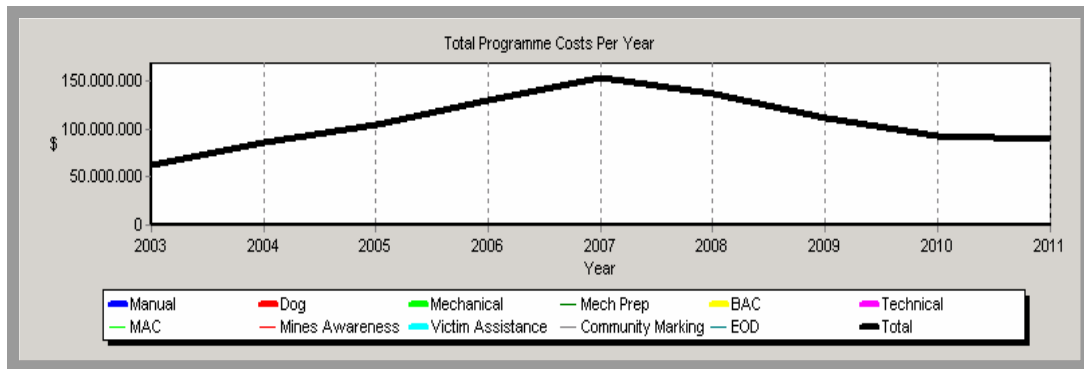
Manual Clearance	<input type="text" value="390"/>	sq km
Dog Clearance	<input type="text" value="370"/>	sq km
Mechanical Clearance	<input type="text" value="020"/>	sq km
BAC Area	<input type="text" value="051"/>	sq km
Area to Survey	<input type="text" value="300"/>	sq km
Area to mark	<input type="text" value="500"/>	sq km
Mechanical Preparation - Man	<input type="text" value="18"/>	sq km
Mechanical Preparation - Dog	<input type="text" value="18"/>	sq km

1. Clearance Rates (Team/Day)

With Mech Prep	Without Mech Prep	
<input type="text" value="750"/>	<input type="text" value="600"/>	sqm (Manual)
<input type="text" value="2700"/>	<input type="text" value="2500"/>	sqm (Dog)
	<input type="text" value="500"/>	sqm (Mech)
	<input type="text" value="1500"/>	sqm (Tech Survey)
	<input type="text" value="15000"/>	sqm (BAC)

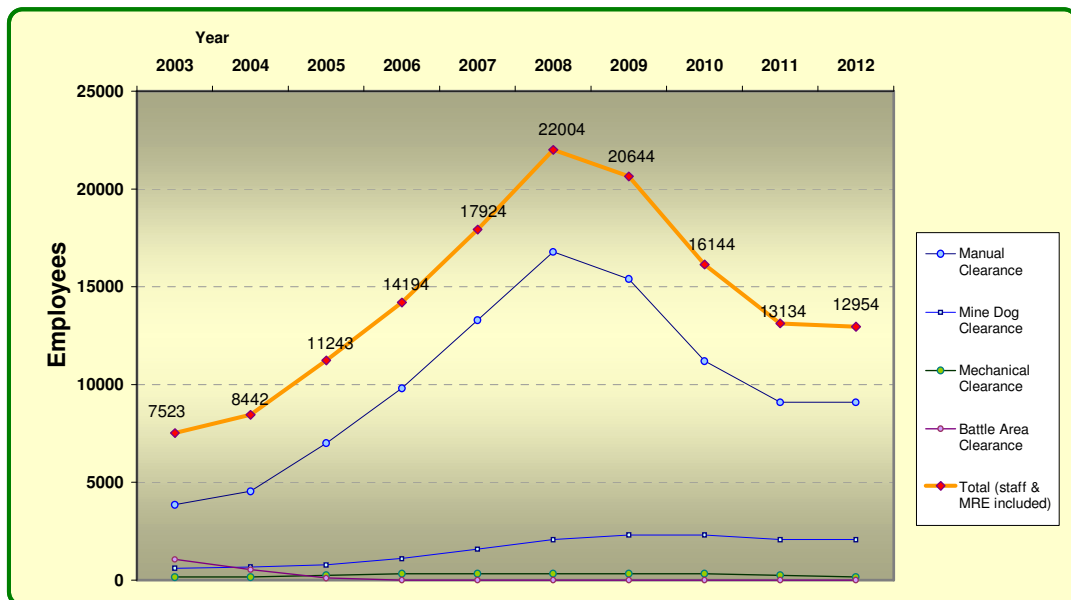
Resources

	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Manual Clearance	<input type="text" value="110"/>	<input type="text" value="130"/>	<input type="text" value="200"/>	<input type="text" value="280"/>	<input type="text" value="380"/>	<input type="text" value="480"/>	<input type="text" value="440"/>	<input type="text" value="320"/>	<input type="text" value="260"/>	<input type="text" value="260"/>
Dog Clearance	<input type="text" value="25"/>	<input type="text" value="28"/>	<input type="text" value="32"/>	<input type="text" value="46"/>	<input type="text" value="66"/>	<input type="text" value="86"/>	<input type="text" value="96"/>	<input type="text" value="96"/>	<input type="text" value="86"/>	<input type="text" value="86"/>
Mechanical Clearance	<input type="text" value="10"/>	<input type="text" value="10"/>	<input type="text" value="15"/>	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="20"/>	<input type="text" value="15"/>	<input type="text" value="10"/>
Mechanical Preparation	<input type="text" value="17"/>	<input type="text" value="25"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="30"/>	<input type="text" value="20"/>	<input type="text" value="20"/>
Battle Area Clearance	<input type="text" value="30"/>	<input type="text" value="15"/>	<input type="text" value="3"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Technical Survey	<input type="text" value="40"/>	<input type="text" value="70"/>	<input type="text" value="110"/>	<input type="text" value="110"/>	<input type="text" value="120"/>	<input type="text" value="130"/>	<input type="text" value="120"/>	<input type="text" value="100"/>	<input type="text" value="80"/>	<input type="text" value="70"/>



Human Resources: peaking to 22004 in Year 2008

Total Teams											
Total Teams	# PER TEAM	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
# Manual Clearance Team	35	110	130	200	280	380	480	440	320	260	260
# Mine Dog Team	24	25	28	32	48	66	86	96	96	86	86
# Mechanical Clearance Team	16	10	10	15	20	20	20	20	20	15	10
# Battle Area Clearance Team	35	30	15	3	0	0	0	0	0	0	0
# EOD Team	10	30	46	46	30	5	5	5	5	5	5
# Mechanical Ground Prep Team	39	17	25	30	30	30	30	30	30	20	20
# Technical Survey Team	10	40	70	110	110	120	130	120	100	80	70
Total Employees											
Manual Clearance		3850	4550	7000	9800	13300	16800	15400	11200	9100	9100
Mine Dog Clearance		600	672	768	1104	1584	2064	2304	2304	2064	2064
Mechanical Clearance		160	160	240	320	320	320	320	320	240	160
Battle Area Clearance		1050	525	105	0	0	0	0	0	0	0
EOD Clearance		300	460	460	300	50	50	50	50	50	50
Mechanical Ground Preparation		663	975	1170	1170	1170	1170	1170	1170	780	780
Technical Survey		400	700	1100	1100	1200	1300	1200	1000	800	700
Programme Management/MRE		500	400	400	400	300	300	200	100	100	100
Grand Total		7523	8442	11243	14194	17924	22004	20644	16144	13134	12954



General assessment of Option 5:

This last option entails the clearance of all contaminated land before the Mine Ban Treaty deadline (April 2013). As option 1 could be considered as the minimalist version, then undoubtedly, option 5 is the maximal version. It should however be noted that it further reinforces the doubts that even in an imaginary very best case scenario this option could ever become achievable, let alone affordable. With an expanding programme cost per year till 2007, peaking by then beyond 150 million US\$, also taking into account expansion limits in the number of required employees, peaking beyond 22000 in 2008, little hope is left that there will ever be a donor community which will meet the requirements of this option. Although the programme performs of course best in terms of socio-economic benefits and security aspects, it might significantly distort a balanced funding versus the requirements of other humanitarian and development sectors in Afghanistan. In this regard, it can be assumed that the deadline of the Mine Ban Treaty will hardly be a driving factor in resource mobilisation when it comes down to finding that reasonable balance versus other sectors with high demands, especially ones the programme enters into the faze of clearing low priority land. Hence, it should be noted that the Mine Ban Treaty allows for an extension of another ten years regarding the deadline for clearance of all contaminated land. The likelihood is very high that for Afghanistan, as one of the heaviest contaminated countries in the world, this extension will be granted without any significant political or other obstacles.

In summary :

Strategic option one: (with manual clearance rates +/- 550 m²/team/day)
clearance of High Prio 1 (**79 km²**) – approximately **200 million US\$**, human resources down from 7000 – non depicted effects of the clearance by domestic funding

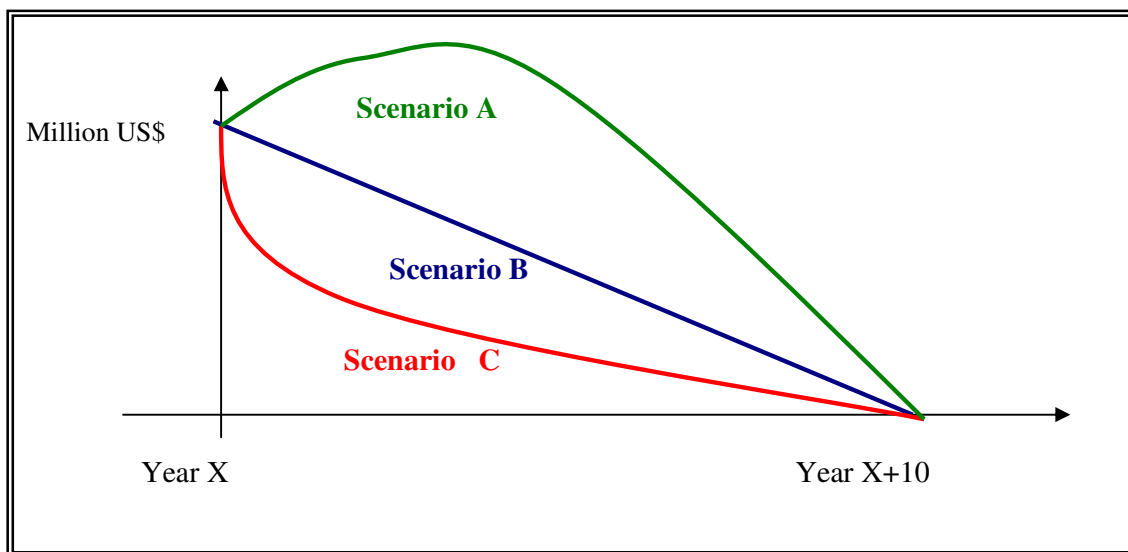
Strategic option two: (with manual clearance rates +/- 600 m²/team/day)
clearance of High Prio 1 & 2 (**200 km²**) – approximately **350 million US\$**, peak human resources requirements: 9250 - non depicted effects of the clearance by domestic funding

Strategic option three: (with manual clearance rates +/- 600 m²/team/day)
clearance of High + Medium (**355 km²**) – approximately **550 million US\$**,
peak human resources requirements: 9400 - non depicted effects of the clearance by domestic funding

Strategic option four: (with manual clearance rates +/- 600 m²/team/day - not further depicted in annex): High + Medium + Low Prio 4 (**670 km²**) – approximately **850 million US\$**

Strategic option five: (with manual clearance rates +/- 600 m²/team/day) complete clearance-MBT requirements (**789 km²**)– approximately **950 million US\$**, peak human resources requirements 22000

Annex F – Possible donor/funding scenarios



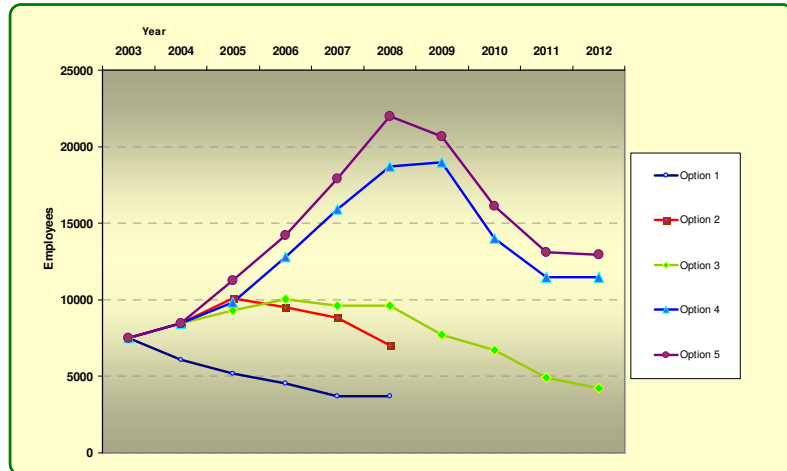
Grosso modo, one can consider three distinct funding scenarios:

Scenario A: donor community is willing to meet increasing funding requirements over time, in order to bring back safety, security and economic viability to Afghanistan. No significant ‘competition’ is expected from other Mine Action programmes (e.g. Angola, Cambodia, DRC, Laos,...) and the MAPA is capable to further elaborate its broad base of funding via DDR budget lines, private donors, domestic funding, etc.

Scenario B: the MAPA will not be able to maintain a high level and/or expanding donor commitment to the programme. As the programme transgresses from the emergency phase to the development phase, donor interest will steadily fade away.

Scenario C: after the emergency phase of the Afghan Mine Action programme, donor interest drops as significantly as the number of monthly landmine related accidents. Competition from other Mine Action programmes is very high and high needs in Iraq quickly draw all attention away from Afghanistan.

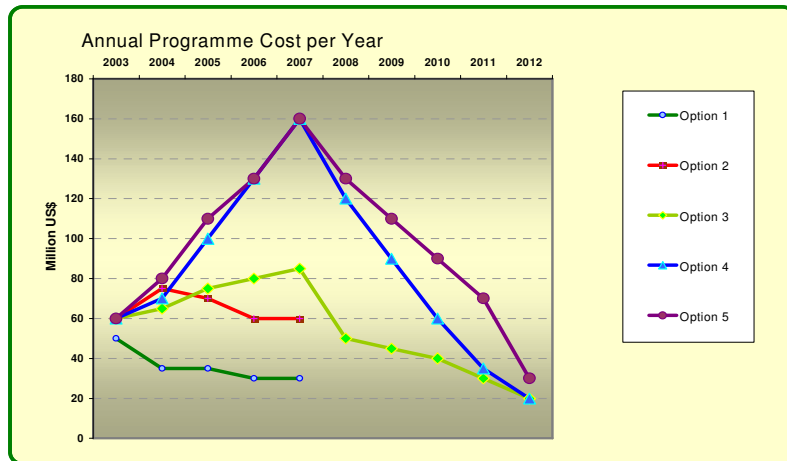
The previously described scenarios can be used in a scoring and weighting exercise of the different strategic options in search for a strategic fit. This can be considered as well as a sensitivity analysis of the strengths and weaknesses of the five options. In the



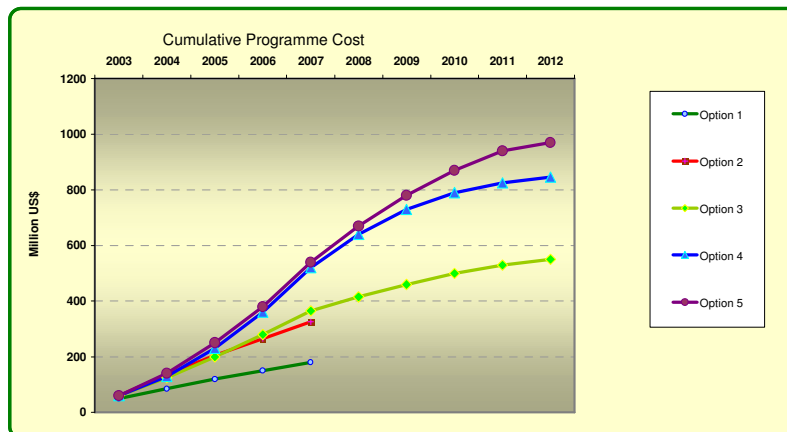
graph depicted left, one can see the requirements in terms of the necessary human resources which reflects itself in the annual and cumulative costs of the programme as depicted in the

graphs below. The high peaks of option 4 and 5 are obvious and will significantly influence the scoring in function of the three different scenarios. Not only is it very unlikely that the donor community

will have the commitment to meet such high and significantly changing demands year after year, expansion limitations, which are addressed in the individual assessments of each option as well, will probably significantly hamper the executability of the large size of the tasks ahead.



Strategic Options	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Option 1	50	35	35	30	30					
Option 2	60	75	70	60	60					
Option 3	60	65	75	80	85	50	45	40	30	20
Option 4	60	70	100	130	160	120	90	60	35	20
Option 5	60	80	110	130	160	130	110	90	70	30



Strategic Options	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Option 1	50	85	120	150	180					
Option 2	60	135	205	265	325					
Option 3	60	125	200	280	365	415	460	500	530	550
Option 4	60	130	230	360	520	640	730	790	825	845
Option 5	60	140	250	380	540	670	780	870	940	970

Annex G – Scoring and weighting of strategic options in search for a strategic fit

Criteria for evaluating the strategic options		Weighting (%)	Option 1	Option 1 (weighted)	Option 2	Option 2 (weighted)	Option 3	Option 3 (weighted)	Option 4	Option 4 (weighted)	Option 5	Option 5 (weighted)
Socio-economic benefits:	community	20	1	0,20	3	0,60	3	0,60	5	1,00	5	1,00
	regional	10	1	0,10	3	0,30	3	0,30	5	0,50	5	0,50
	national	10	1	0,10	3	0,30	5	0,50	5	0,50	5	0,50
Affordability:	setup costs	5	5	0,25	5	0,25	5	0,25	1	0,05	0	0,00
	running costs	10	5	0,50	3	0,30	3	0,30	1	0,10	0	0,00
Capacity building:	human skills	10	5	0,50	3	0,30	3	0,30	1	0,10	0	0,00
	technology	5	5	0,25	3	0,15	3	0,15	1	0,05	1	0,05
International treaty obligations (Mine Ban Treaty)		15	0	0,00	1	0,15	3	0,45	3	0,45	5	0,75
Stakeholders needs and expectations		15	1	0,15	3	0,45	3	0,45	3	0,45	5	0,75
Totals (scoring)		100		2,05		2,80		3,30		3,20		3,55
Risk management:	political	30	1	0,30	3	0,90	5	1,50	3	0,90	3	0,90
	security	40	1	0,40	3	1,20	3	1,20	5	2,00	5	2,00
	funding	30	5	1,50	3	0,90	1	0,30	1	0,30	0	0,00
Totals (risks)		100		2,20		3,00		3,00		3,20		2,90
Strategic fit:	Scenario A	15	5	0,75	5	0,75	3	0,45	3	0,45	3	0,45
	Scenario B	70	5	3,50	3	2,10	3	2,10	3	2,10	1	0,70
	Scenario C	15	3	0,45	3	0,45	1	0,15	1	0,15	1	0,15
Totals (strategic fit)		100		4,70		3,30		2,70		2,70		1,30
Grand Totals				8,95		9,10		9,00		9,10		7,75

Sensitivity Analysis - increasing likelihood scenario A

Strategic fit:	Scenario A	70	5	3,50	5	3,50	3	2,10	3	2,10	3	2,10
	Scenario B	15	5	0,75	3	0,45	3	0,45	3	0,45	1	0,15
	Scenario C	15	3	0,45	3	0,45	1	0,15	1	0,15	1	0,15
Totals (strategic fit)		100		4,70		4,40		2,70		2,70		2,40
Grand Totals				8,95		10,20		9,00		9,10		8,85

Sensitivity Analysis - increasing likelihood scenario C

Strategic fit:	Scenario A	15	5	0,75	5	0,75	3	0,45	3	0,45	3	0,45
	Scenario B	15	5	0,75	3	0,45	3	0,45	3	0,45	1	0,15
	Scenario C	70	3	2,10	3	2,10	1	0,70	1	0,70	1	0,70
Totals (strategic fit)		100		3,60		3,30		1,60		1,60		1,30
Grand Totals				7,85		9,10		7,90		8,00		7,75

Annex H - Assumptions Preliminary Strategic Planning (September 2002)

The 'conservative' assumptions, objectives and limitations made during early MAPA strategic planning sessions (2002) are as follows:

Assumptions

- Stable security environment – viable government institutions will be developed
- UN Mine Action coordination in the short term
- International Community will support program expansion to accelerate mine and UXO clearance of high priority areas
- Funds for mine action will come from multiple sources (Donor Governments, World Bank, Asian Development BANK, USAID...)
- All mine action components will be covered – victim assistance integrated into broader community and public health programs
- Rehabilitating vital infrastructure and reconstruction will make large-scale mine clearance a higher priority
- Suspected mine contaminated area = 800 km² (high + low impact area)
- Suspected battle area contamination = 500 km² (high + low impact area)

Objectives & Limitations

- Data of the World Bank funded Socio-Economic Impact Analysis of Mine Action in Afghanistan (SIMAA) of 2001 used as a reference
- Concept of comparison: Future Value of benefits – Future Costs
- Main objectives:
 - better understanding of the socio-economic effects due to an acceleration of the mine clearance activities of MAPA
 - follow up of the information provided by strategic planning tools (Cranfield University-Highway)
 - balance cost-benefits with cost-efficiency
 - analysis oriented towards key stakeholders, especially Donor Governments, addressing the future potential of the programme more than the past achievements
 - improve the transparency and predictability of the MAPA funding requirements
 - socio-economic oriented prioritisation of mine and UXO clearance activities
- Limitations: lacking of accurate data => compensated by more conservative assumptions
 - no best-case scenario's, neither worst-case scenario's
 - detection and predictability of trends in stead of exact calculations

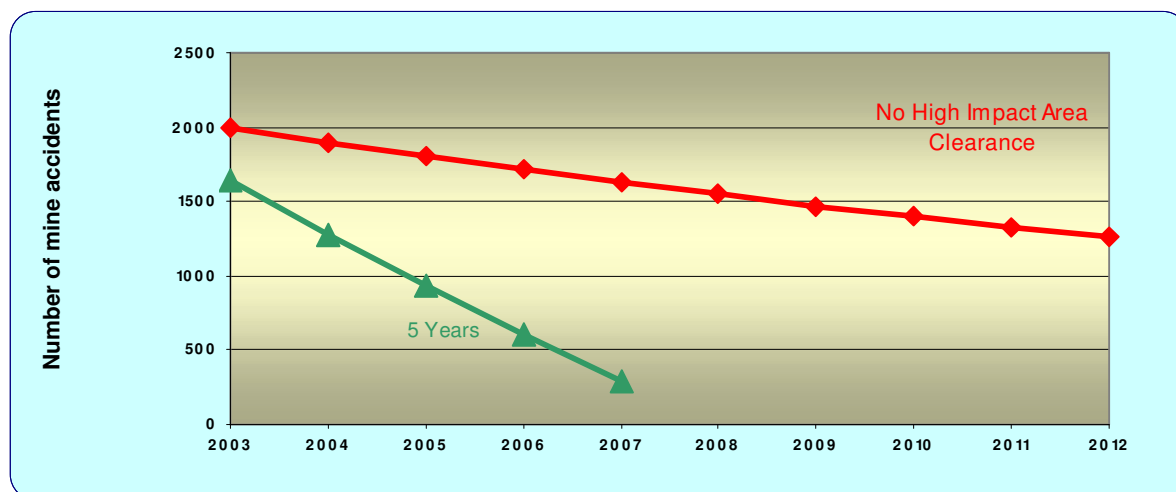
Annex I - Simulation of socio-economic impact through the reduction of mine/UXO victims

Updated estimate (based on recent assessments): 150 victims/month (previous estimate 250)

A weakness of MAPA is that, despite nine years of operations, with considerable archival documentation and on-going data gathering mechanisms in relation to mines and UXO, it does not have a comprehensive understanding of the human death and injury rate country-wide. It has been very challenging, if not impossible, to find the exact number of landmine victims in Afghanistan as systematic records have not been kept by any source. The MCPA⁴⁷ general surveys of 1993 and 1997/8 have led to estimates of daily accident rates, but these are based on extrapolations and not hard data. MCPA collects data during survey work, the ICRC collects information from certain clinics and hospitals, Handicap International and SCF-US collect data during their programmes, but the overall effort is piecemeal and unscientific. This evaluation considers this a weakness in MAPA's otherwise comprehensive approach to mine action. A more detailed and scientific collection of data concerning actual rates of death and injury could be of significant value for prioritisation and targeting as well as providing a baseline from which future progress could be judged. The evaluation finds that despite having a high quality of survey information, MAPA continues to operate with a weak overall understanding of casualties in terms of numbers and location. The purpose of the graph below is indicative in the sense that it gives a strategic insight on an estimation of a number of mine victims which could be avoided by clearing the 410 km² before 2008 compared to no mine clearance at all, with other words the immorally 'doing nothing' option. Even in case of the latter, one can assume a digressive trend⁴⁸ over time, due to spontaneous kinds of mine risk education and marking of mine fields.

⁴⁷ Acronym for the Afghan NGO: Mine Clearance and Planning Agency

⁴⁸ Byrd, William and Gildestad, Bjorn. *The Socio-Economic Impact of Mine Action in Afghanistan* (SIMAA). December 2001 assumes 5% annual reduction in the number of mine accidents through Mine Risk Education & Marking



5 year high impact clearance versus NO clearance: avoiding **11300** mine/UXO accidents and approximatively 131 million US\$ in medical costs⁴⁹.

High impact area entails the 410 km² of mine fields to be cleared as stated in Chapter II, §2 of this thesis.

Options	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Estimated Total
No Mine Clearance	2000	1900	1805	1715	1629	1548	1470	1397	1327	1260	16051
5-Year High Impact Clearance	1635	1274	931	605	296						4742

Potential Socio-Economic Impact of MAPA											
Reduced Mine Accidents due to MAPA	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total:
	365	626	874	1109	1333	1548	1470	1397	1327	1260	11308
Economic Loss for a Mine Victim: x 9021 US\$	9021	9292	9570	9857	10153	10458	10772	11095	11428	11770	GDP per capita estimated at 200 US\$ Assumption of 3 % annual growth
Estimated Mine victims	241	413	577	732	880	1021	970	922	876	832	
	2171968	3837703	5518998	7217059	8933114	10681513	10451860	10227145	10007262	9792106	
Economic Loss for a Fatal Casualty: x 11663 US\$	11633	11982	12341	12712	13093	13486	13890	14307	14736	15178	
Estimated Casualties	124	213	297	377	453	526	500	475	451	429	
	1442864	2549432	3666336	4794378	5934374	7095856	6943295	6794014	6647943	6505012	
Avoided Economic Loss in US\$	3614832	6387135	9185334	12011438	14867488	17777369	17395155	17021159	16655205	16297118	131212233
Avoided medical costs & economic loss (Million US\$)											131
Estimated people saved from mine/UXO accidents =											11308

⁴⁹ Based on methodology of the World Bank funded study of Byrd, William and Gildestad, Bjorn. *The Socio-Economic Impact of Mine Action in Afghanistan* (SIMAA). December 2001

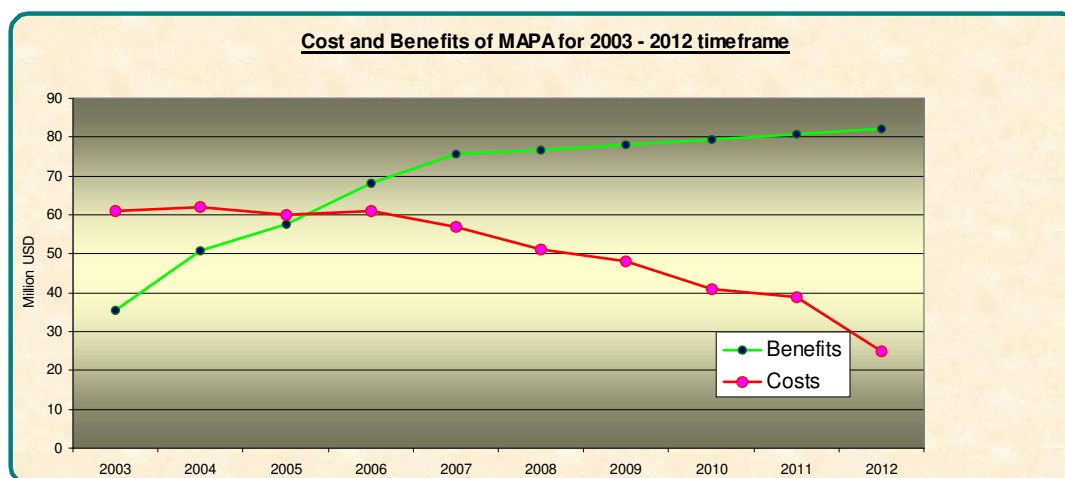
Annex J – Example of an estimation of economic benefits of MAPA for 2003 - 2012⁵⁰

Potential Socio-Economic Benefits of MAPA 2003-2012											
5 km ² high priority	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	3% growth/year
Economic benefit/km ²	336000	346080	356462	367156	378171	389516	401202	413238	425635	438404	
km ² of irrigation channels cleared	1,5	3	5	5	5	5	5	5	5	5	
Future Value	504000	1038240	1782312	1835781	1890855	1947580	2006008	2066188	2128174	2192019	Total M US\$:
Economic benefits due to clearance of irrigation channels =											17
170 km ² high priority	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	3% growth/year
Economic benefit/km ²	112000	115360	118820,8	122385,4	126057	129838,7	133733,9	137745,9	141878,2	146134,6	
km ² of agricultural land cleared	34	68	102	136	170	170	170	170	170	170	
Future Value	3808000	7844480	12119722	16644418	21429688	22072578	22734756	23416798	24119302	24842881	Total M US\$:
Economic benefits due to clearance of high prio agricultural land =											179
Livestock savings/km ²	2441	2392	2344	2297	2252	2206	2162	2119	2077	2035	2% drop per year (=3% growth - 5% drop accident rate)
Net output value/km ²	1682	1732	1784	1838	1893	1950	2008	2069	2131	2195	
agricultural/grazing/roads = 580 km ² gradually cleared	62	104	176	260	370	410	450	490	540	580	
Future Value	255626	428963	726664	1075208	1533504	1704112	1876832	2051994	2272007	2453288	Total M US\$:
Economic benefits due to recovery of grazing areas & decreased loss of livestock =											14
Economic benefit/km ²	261000	261000	261000	261000	261000	261000	261000	261000	261000	261000	
km ² of roads cleared	8	17	24	31	39	39	39	39	39	39	
Future Value	2088000	4437000	6264000	8091000	10179000	10179000	10179000	10179000	10179000	10179000	Total M US\$:
Economic savings due to recovery of roads & transportation system =											82
Residential Area Parameters	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Economic benefit/km ²	3000000	3090000	3182700	3278181	3376526	3477822	3582157	3689622	3800310	3914320	
km ² of residential area cleared	7	7	3	2	1						
Future Value	21000000	21630000	9548100	6556362	3376526	0	0	0	0	0	Total M US\$:
Economic recovery of residential area =											62
Cost per refugee/year	60	66	73	80	88	97	106	117	129	141	3% growth
Refugees/IDPs due to mined residential area	70000	30000									
Reintegration the Afghan society		35000	85000	100000	100000	100000	100000	100000	100000	100000	
Average per capita GDP (=200 USD)	200	206	212	219	225	232	239	246	253	261	
Future Value	4200000	9190000	18035300	21854540	22510176	23185481	23881046	24597477	25335402	26095464	Total M US\$:
Economic benefits due to the return of Refugees & IDPs =											199

Overview of the Cumulated Potential Benefits 2003 - 2012 (M illion U S \$)	
A voided mine/U X O accident costs	131 U S \$
R educed refugee costs	199 U S \$
R ecovery agricultural land	179 U S \$
R ecovery irrigation channels	17 U S \$
R ecovery of grazing areas - livestock	14 U S \$
R ecovery of roads	82 U S \$
R ecovery of residential area	62 U S \$
T O T A L	684 U S \$

⁵⁰ It is important to note that these calculations are based on the clearance of all contaminated land before 2013, taking into account the Mine Ban Treaty deadline. These economic benefits merely serve as an illustrative example, based on the methodology of the SIMAA study. More accurate post clearance data can provide more reliable data in this regard and limit the number of assumptions

Annex K - Estimation of potential benefits of cleared land to date



Total cleared land to date= 240 km² (clearance efforts between 1990- 2002):

-150 km² agricultural land => 150 x 100.000 US\$/year = 15 Million US\$/year

-3 km² irrigation channels => 3 x 330.000 US\$/year = 1 Million US\$/year

-7 km² roads => 7 x 260.000 US\$/year = 1,8 Million US\$/year

-60 km² other/grazing land => 60 x 4000 US\$/year = 0,2 Million US\$/year

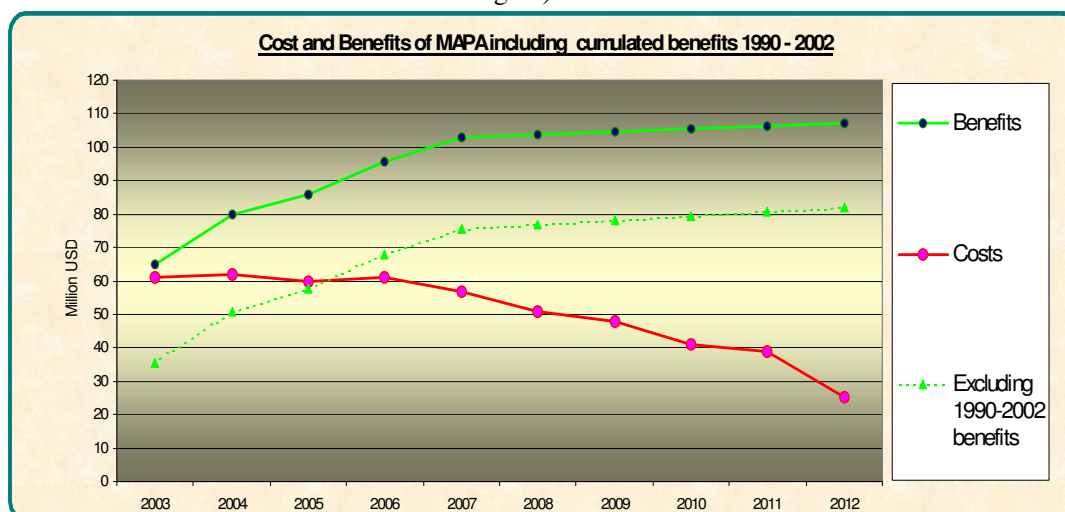
-20 km² residential areas => 20 x 3.000.000 US\$/km² = 60 Million US\$

⇒ Total estimated economic benefit of returned land = **18 Million US\$/year**

⇒ Estimated reduction in mine victims = 240 x 5 victims/km²/year =
1200 victims/year => (800x9000)+(400x11700)= **12 Million US\$/year**
(assumption: decreasing with 5% per year as from 2002)

⇒ Recurrent total annual benefit⁵¹ approximately = **30 Million US\$/year**

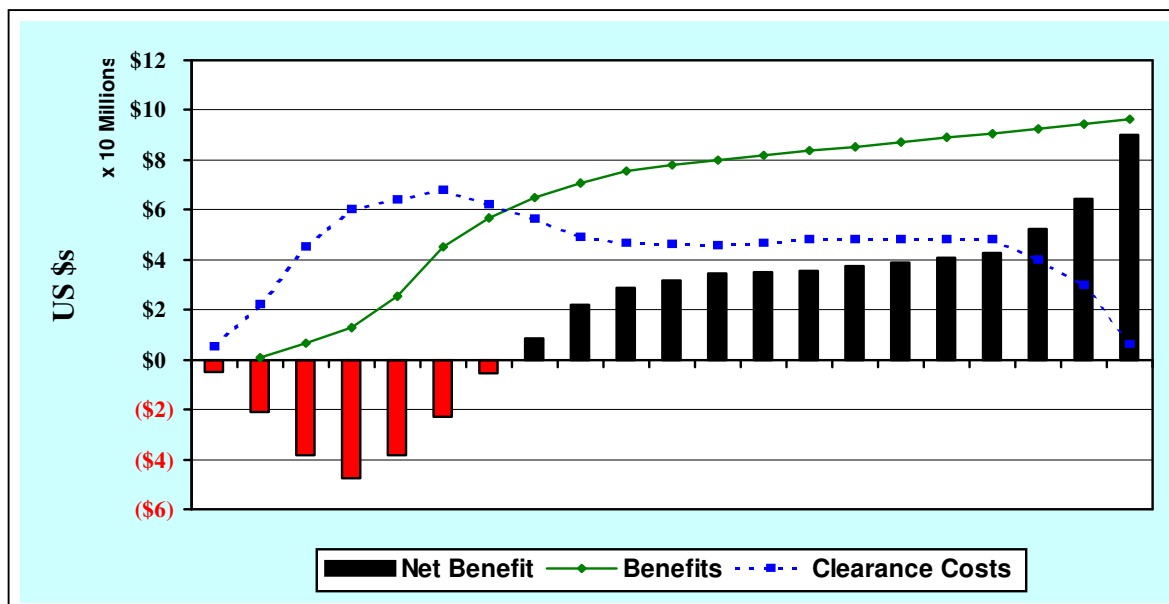
(+ 60 Million US\$ single return of cleared residential area + reduction in mine victims over the period 1989-2002 and benefits due to return of refugees)



⁵¹ Based on methodology of the World Bank funded study of Byrd, William and Gildestad, Bjorn. *The Socio-Economic Impact of Mine Action in Afghanistan* (SIMAA). December 2001

Annex L - Cost-benefits of a Mine Action programme (macro-level)

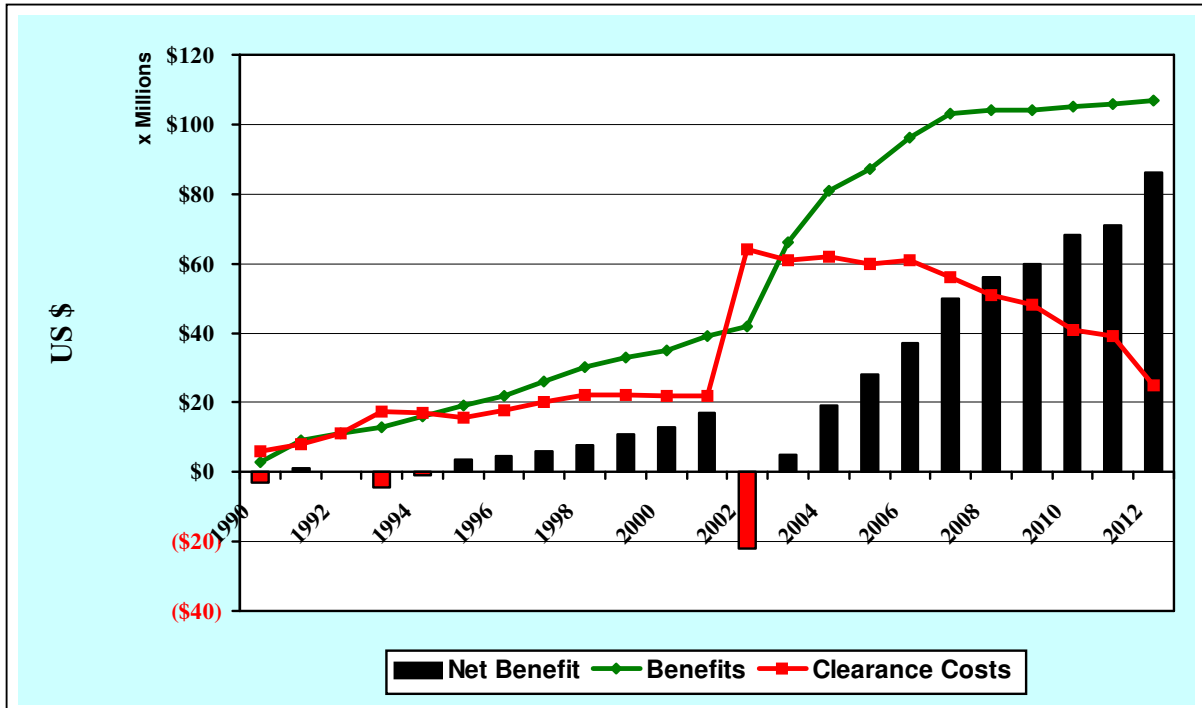
The below graphic presentation depicts a theoretical example of what could be the profile of the build-up of costs and benefits of a Mine Action programme. Initially the investments and



upfront payments of de-mining equipment and other mine action activities outweigh the socio-economic benefits. In the beginning, high priority clearance is taking place with consequently the most considerable socio-economic benefits. This causes the cumulative effect of these benefits to rise quickly. After several years a break-even is reached on an annual basis versus the costs, so many more years later a break-even could be reached versus the total program cost. Based on a wide variety of general assumptions⁵², the benefits versus costs profile of the MAPA appears to be quite different. The rather modest initial investments and cost of the program, versus the immediate and significant benefits, due to the massive return of refugees after vital roads, villages and high fertile agricultural ground were cleared, provide for a better cost-benefit ratio programme. In this regard, it should also be underlined that costs of the

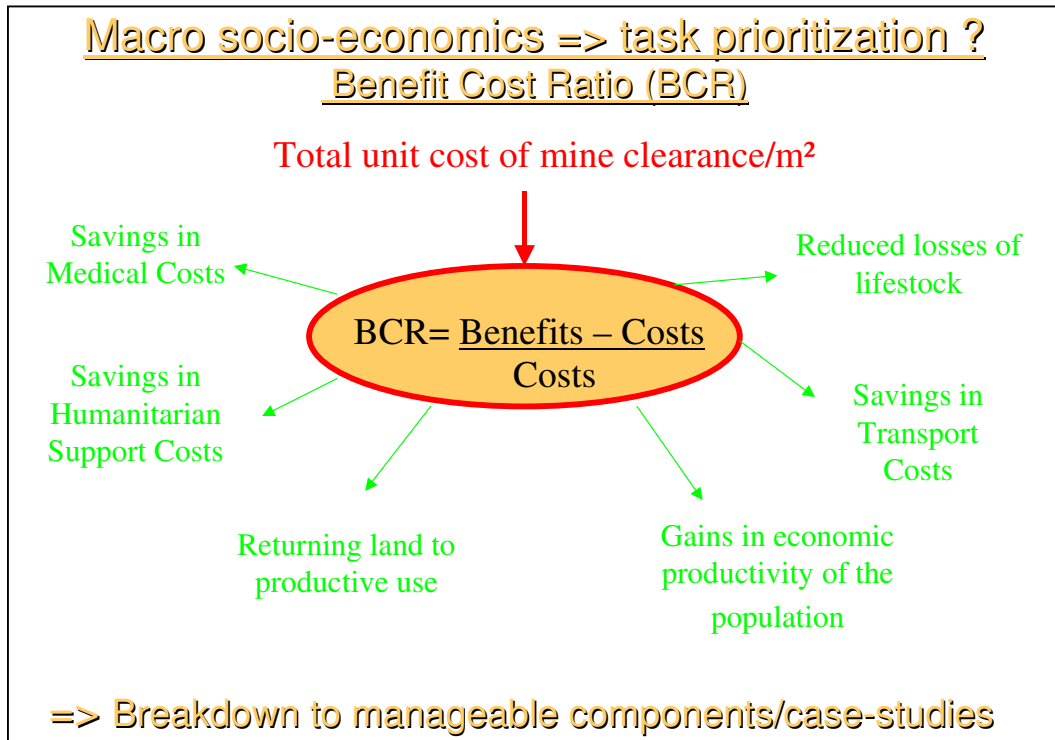
⁵² See previous annex K for the strategic assumptions and calculations of the socio-economic benefits for the 1990 – 2002 timeframe and the cumulative effects on the potential socio-economic benefits for the timeframe 2003 – 2012 in terms of regained agricultural land, residential area and most important avoided medical costs of anti-personnel mine related accidents

programme were always amongst the lowest possible on a global scale, due to the very high degree of national ownership (during many years a very limited number of international experts for the management of the programme), in combination with the low wages of MAPA personnel



(illustration: average 150 US\$/month for MAPA de-miners). Due to inflation economic growth⁵³ and inflation, wages could rise rather quickly. It is however rather difficult to predict that this would lower the net benefits, since due to economic growth and inflation, economic benefits might increase simultaneously with the costs of the programme.

⁵³ See annex J for consideration of a very modest growth factor (3% per year) in calculating/estimating the economic benefits of MAPA over the time span 2003-2012



- Task 1 = 1.000.000 m² agricultural land
Unit cost Mine Dog Clearance = 0,3 US\$/m²
Economic benefits agricultural land at Present Value = 360.000 US\$/km²
- Task 2 = 1.000.000 m² grazing land + road
Unit cost Manual Clearance = 0,7 US\$/m²
Economic benefits grazing land at Present Value = 30.000 US\$/km²
Economic benefits clearing road at Present Value = 200.000 US\$

No reported mine/UXO accidents – equal risk assessment/ ranking

- BCR Task 1 = (benefit – cost)/cost = (360.000 - 300.000)/300.000 = **0,2**
- BCR Task 2 = [(30.000 + 200.000) – 700.000] / 700.000 = **- 0,6**
- Task 1: with Manual Clearance?
 - BCR = (360.000 – 700.000)/700.000 = **- 0,5**
- Task 2: clearance with Mine Detection Dogs?
 - BCR = (230.000 – 300.000) / 300.000 = **- 0,2**

Conclusion: In above illustrative example, task 1 should be given priority for better Benefit/Cost ratio considerations. It should be noted that the effects of changing the clearance tool remains to be verified, however, it did not provide a better ratio in this example.

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