



Departure of the Devil: Landmines and Livelihoods in Yemen

Volume 1: Main Report

On behalf of the
Yemen Executive Mine Action Centre



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THE SURVEY TEAM

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Acronyms

CTA	Chief Technical Adviser
DFID	Department for International Development (UK)
ERW	Explosive Remnants of War
FAO	Food and Agriculture Organisation of the United National
GICHD	Geneva International Centre for Humanitarian Demining
GoY	Government of Yemen
IFAD	International Fund for Agricultural Development
LIS	Landmine Impact Survey
MAAC	Mine Awareness Advisory Committee
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organisation
NMAC	National Mine Action Committee
NRI	Natural Resources Institute
SFD	Social Fund for Development
ToR	Terms of Reference
UK	United Kingdom
UNDP	United Nations Development Programme
UXO	Unexploded Ordnance
VMAC	Victim Assistance Advisory Committee
YEMAC	Yemen Executive Mine Action Committee
YLSA	Yemen Landmine and UXO Survivors Association
YR	Yemeni Riyal

Currency

\$ = US dollars. \$1= approximately 200 Yemeni Riyals (YR)

Glossary of Local Terms

awkaf	Charitable endowment of property for the benefit, in perpetuity, of a religious or charitable cause.
girba	Terrace
hema	Meaning "reserve" or "preserve"; an indigenous conservation system under customary law in which tribal clans managed and protected rangelands and designated areas for rotational grazing
kadah	Volumetric measure equal to approximately 24kg. (8 containers of 20cm diameter x 25cm height).
libna	Measure of land area, approximately 44m ²
qat	The shrub, <i>Catha edulis</i> , the young leaves of which are chewed to produce a stimulant effect. Qat chewing is an important social activity in the afternoon
uzla	Administrative unit at the level of a sub district, covering several villages



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Executive Summary

Introduction

Over the past thirty years, Yemen has been plagued with a number of conflicts (1962-1969; 1970-1983; and in 1994) that have resulted in a significant and deadly legacy of landmines and Explosive Remnants of War (ERW). A nationwide Landmine Impact Survey (LIS) completed in July 2000 identified 592 mine-affected villages in nineteen out of the country's twenty-one governorates. The LIS recorded a total of 4,904 casualties over the past ten years, of which 2,560 were killed and 2,344 injured.

The landmine and ERW problem has had a serious impact on access to critical resources, blocking access to grazing land, agricultural land and water sources for drinking and irrigation. It has also impeded infrastructure development and the implementation of social development projects in affected communities.

The government of Yemen is committed to the complete elimination of landmines and explosive remnants of war. The National Mine Action Committee (NMAC) was established in June 1998 to formulate policy, allocate resources, and develop a national mine-action strategy. Furthermore, the Yemen Executive Mine Action Centre (YEMAC) was established in January 1999 as the implementing body of the NMAC with the primary responsibility of coordinating all mine-action activities in the country. The aim of the current Strategic Mine Action Plan is to put an end to the suffering and casualties caused by anti-personnel landmines, by the end of March 2009. As of September 2005, over 240 million square meters of affected land have been surveyed, cleared and returned to the local users.

In 2005, the Mid-term Evaluation for strengthening national capacity for mine action in Yemen praised the achievements of YEMAC and NMAC to date, and also recommended that Community Rehabilitation become an integral part of mine action in Yemen in the future.

This study was commissioned by YEMAC and the Geneva International Centre for Humanitarian Demining (GICHD), with the following objectives:

1. To assess the overall socio-economic returns from mine clearance investments
2. To make a preliminary assessment of complementary development initiatives for mine-affected communities
3. To enhance the capacity of YEMAC to conduct future assessments of socio-economic benefits from mine action; assess the community Landmine Impact Scores as a tool for identifying impact and determining priorities for action; advise on how to design and conduct on-going socio-economic surveys relating to ERW; advise on integrating social differentiation within LIS survey protocols, and advise on enhancements to YEMAC's monitoring and evaluation system

Approach

The Sustainable Livelihood approach was used as a basis for obtaining a holistic view of the situation in landmine-affected communities. This approach views people as operating in a context of vulnerability, within which they have access to certain assets (human, social, natural, financial and physical). The levels and utilisation of these assets are influenced by the external political, institutional and legal environment. Together people's assets and the external environment influence households' strategies in pursuit of outcomes that meet their own livelihood objectives.

The use of this framework to assess the impacts of mine clearance helps to highlight the wider context in which the laying of mines and contamination with ERW has affected communities. It encourages integrated thinking about the benefits of demining and the broader development opportunities and constraints. Mines directly block the use of natural and physical assets, removing farmland and grazing from use, obstructing use of roads and access paths, preventing use of strategically placed buildings etc. Yet the effects of mines also impact indirectly on human capital – through injury and loss - and on financial capital through loss of productive assets. Mines may prompt changes in livelihood strategies (e.g. by encouraging migration out of the village for employment). Mine clearance may give rise to contested claims for rights to land. Initiatives to develop community resources crucially depend on the capacity of local governance and leadership.

An important challenge in the task was to clearly distinguish the immediate outputs of mine action (e.g. cleared land, roads and other assets; greater awareness and knowledge of mine risks; survivor support), from actual outcomes (e.g. increased utilisation, higher productivity and changed behaviour) and, ultimately, impacts in terms of sustainable growth and enhanced well-being.

Some of the *indicators* of socio-economic outcomes/impacts that the study assessed were:

- Reduction in the numbers of mine accidents and loss of human and animal life
- Demined land brought back into productive agricultural use
- Productive output and income from cleared agricultural land
- Value of fodder and firewood collected from grazing land
- Value of stone cut
- Investment in new housing on demined land
- Resumed use of demined roads for productive and social purposes

Methods

A participatory survey of 25 reportedly mine-cleared communities was conducted over two missions: a) a short reconnaissance mission to develop the methodology in three contrasting communities, and b) the main survey of a further twenty-two communities in seven governorates (Sana'a, Dhamar, Ibb, Al-Dhale, Aden, Lahij and Abyan). The twenty-five villages (4% of the total landmine-affected villages in Yemen and 17% of those cleared) were selected to represent the different historical

phases of mining; the range of physical environments and agricultural systems, types of assets affected, market proximity, population size and numbers of recent casualties.

A formal questionnaire was not used. Instead a range of participatory rural appraisal techniques was used to discuss the past, present and potential future situation of the communities and their land (with special emphasis on the cleared areas). The methods used reflected the need to understand the viewpoints of different sections of the community. Thus separate meetings were held in each community with community leaders, farmers, women, children and the survivors of landmine incidents.

The survey obtained a mixture of qualitative and quantitative information designed to assess community outcomes from demining. Except where indicated, the social and economic benefits and the opportunities detailed in this report are those given to us by the community members. A further dimension, explored through a gender-differentiated approach, was the level of participation of women, their perceptions of benefits from mine action and their development priorities.

The dependability of findings was enhanced by the ‘triangulation’ (or the comparison and contrast) of information from a variety of sources. The Landmine Impact Survey of 2000 was a useful baseline, giving information on populations at the time of the survey, the size of the suspected mined area(s), the blocked assets and landmine-related casualties.

For the main survey, three survey teams were trained by the consultants. The teams consisted of YEMAC staff and three contracted women with appropriate backgrounds.

The tools used in the survey were:

- a. A comprehensive introduction to provide information on the team, the mission objectives and the potential benefits to the community
- b. A “Time-Line” to understand the situation before, during and after mines were laid
- c. Use of village maps previously drawn up with the villagers themselves, showing the relationship between the village and the mined/cleared areas
- d. A “Community Profile” that listed the social, financial, physical, natural and human assets inside the community, and the relationship between the community and the outside world
- e. A series of focus group discussions with community leaders, farmers (or other natural resource users such as fishermen, nomads or landowners), women, children and landmine incident survivors
- f. Gender analysis
- g. Farming/livelihood system diagrams and Force field diagrams
- h. Participant observation, and a photographic record of the present situation
- i. A team discussion on the results obtained from each community
- j. An evaluation, by the team members, of the methods used

The preliminary findings were presented to YEMAC, government agencies and NGOs immediately after the survey, and their comments incorporated into the report.

Findings of the survey

The findings of the survey are presented below in three sections:

- The impact of demining on communities
- Development opportunities for demined communities
- Considerations for YEMAC

Impact of demining on communities

Enhanced safety and awareness:

It is important to draw a distinction between an assessment of risk based on the presence of mines and on the number of accidents actually occurring, and local perceptions of risk and the behaviour associated with these perceptions.

The evidence from this survey is that clearance is almost completely effective in eliminating the risk of explosion from landmines and UXOs.

When describing the situation before demining, people in the communities talked of their fear of injury and fatalities from mine accidents and of feeling permanently frightened and concerned about the safety of children. **A reduction in this general fear and a feeling of relief was a notable outcome of the demining activity.**

However, factors influencing community perception of risk are complex. Local judgements of risk and the behaviour which follows from these, are not based solely on understanding such evidence, but are influenced by complex emotional responses. Hence, removal of fear is by no means universal, for a number of reasons:

- In those areas where landmines were present for a long period, the fear of land mines is deep rooted (although diminishing)
- Some communities designated as cleared, were reported by the community as not fully demined
- Community members do not have confidence in some parts of the previously mined areas. They use the land cautiously for some purposes (e.g. unsupervised grazing), but are afraid to enter it themselves. In particular they fear to cultivate the land as they feel that there are still landmines at depths lower than the standard clearance depth of 20cm
- Some sections of the community (particularly women) were less involved with the demining teams and with the formal certification of clearance, and therefore remain unaware, or unconvinced, that areas have been cleared.

Trust is a key factor in influencing perception of risk and how communication of information is actually 'heard'. YEMAC has a great advantage in this regard since it has credibility and respect, and might capitalise more on its solid reputation.

Release of productive potential from cleared assets:

Grazing land: Many mined areas were on rangeland used for grazing sheep, goats and cattle. Clearing the land has returned this asset to the community, often in improved condition due to the long fallow it has enjoyed. This has benefited livestock owners, those who work for livestock owners, and those who use locally-produced livestock products.

Village income from herding in Al-Masharih, Al-Dhale governorate

Number of households with livestock = 240

Daily value per household of grazing = 50 YR

Annual value of grazing to Al-Masharih and neighbouring village = 8,760,000

Additional grazing 4 times per month by third neighbouring village = 1,728,000 YR

Total return to the grazing by the three villages = 10,368,000 YR per year
(approximately \$51,840)¹

The safety of women and children has been particularly enhanced by clearance, as they are often the shepherds caring for the livestock. In some villages, women are constrained from grazing and collecting fuelwood by the presence of army camps on the hillsides.

Traditional natural resource management practices, such as *Hema*, are being considered in some villages that have strong, concerned leadership, to reduce the risks associated with open access to fragile grazing land.

In the desert areas in the south, nomads graze their livestock on previously mined land. For settled communities in the south, grazing areas are important to the whole village. In some instances this facility has been taken away by government developments on previous communal grazing land, while in other villages grazing land is still intact and represents a major resource.

Fuel wood and fodder: Wood is still the main cooking fuel in rural areas, although animal dung and butane gas are also used. The cost of wood is that of the labour to collect it, often the job of women and children. The long period of enforced fallow favoured tree growth in mined areas, and has thus provided a rich resource in some areas (particularly the mid-altitude areas such as Al-Dhale Governorate). In communal areas, all families have access to this resource.

The value of fuel wood to some communities is impressive. In Sha'b in Sana'a governorate for example, 250 families depend on wood as their main fuel at a value of 30,000 YR per family per year, giving a **total value to the community of 7.5 million YR per year (about \$37,500)**.

Cut tree or grass fodder can represent a seasonally important resource (e.g. tree browse in the dry season), and a substantial part of the cost of raising livestock. Without access to areas where fodder can be cut, families have to buy in fodder such as alfalfa, which is very costly. Cleared areas provide good sources of fodder.

Stone: Several surveyed villages quarry stone from cleared areas for construction of houses and other buildings. A particular example is Bait Al- Ra'ae in Ibb governorate, see Box 2 below.

Income from stone from cleared area in Bait Al Ra'ae, Ibb governorate

¹ All dollar figures are in US dollars; \$1= approximately 200 Yemeni Riyals (YR)

Approximately two houses are built in the village per year. Approximately half the stone used comes from the cleared area. Thus the following calculation is made on the basis of the building of the equivalent of one house per year.

To build a medium sized house requires about 3000 stones. This is equivalent to 100 tractor loads, each of which costs 10,000 YR. Thus the value of the stone extracted is 1 million YR. Five men at 800 YR per day can extract 15 tractor loads in one day. Thus the labour cost for 100 loads is 26,666 YR. Add to that fuel, tractor hire, hammers etc, and the costs rise to a total of about 40,000 YR.

The net financial benefit to the village is therefore 960,000 YR (about \$4800)

Crop production: Crop production (including qat and grapes) is important for income generation and food security in all villages apart from peri-urban, nomadic and fishing villages. The need to reclaim private cropland was one of the main reasons why villagers demined land by themselves. The risks were high, but then so were the returns. The highest net return comes from qat, which is one of the few crops that is profitable in those areas such as Qa'tabah District in Al-Dhale where water is very expensive.

In several villages in the south, the government, powerful individuals and outsiders with money seem to be the main benefactors from the clearance of the land rather than the village as a whole.

Qat Production in Al-Qafleh

The qat terraces in Al-Qafleh have been established since the land was cleared of mines. Although the landowners are the main beneficiaries, those who pick the crop, transport it and market it also benefit. The whole rural economy benefits from the cash circulating in the rural areas, and there is a booming construction industry building houses for rich landowners

Cost of water = 300,000 YR annually; Cost of labour = 30,000 YR annually.
Fertilizers and pesticides = 200,000 YR annually; Cost of labour = 100,000 YR annually
Total costs = 630,000 YR

There are 20 terraces in the demined area, with a total annual profit of 7.4 million YR (about \$37,000) in good years.

Bee-keeping: Bees can use mined land without hindrance, but commercial production of honey requires that the hives are located close to the source of nectar and pollen. This is assisted by mine clearance allowing better access to meliferous trees and shrubs. Some communities are making excellent incomes from bees.

Income from demined land for nomad family in Ofeini, Abyan governorate

Costs: Household purchases from town. Water free from local wells. No overheads

Sales: One male camel per year (60,000 YR)

24 sheep/goats per year (6000 x 24 = 144,000 YR)

Honey: 700,000 YR per year in good years

Total gross annual income = 904,000 YR (about 4,520\$)

Roads and paths: In Beer Ahmed (Aden governorate) a new tarmac road has been built on previously mined land from the village to Lahij, and in Bait Al-Azani (Ibb governorate) the main road to the District capital at Nadera was cleared of mines. In Al-Heswa (Aden governorate), the fishermen can now take a much shorter route to the sea because of demining. In Am-Jarba near Lahij town, the minefield used to be in the middle of a built-up urban area. Demining has allowed pedestrian and vehicular traffic to move safely through the area. However, in Bait Al-Shawki in Al-Dhale governorate, the most convenient road to Damt is still dangerous due to mines outside the village area. In other cases (such as Mazlb in Dhamar governorate), local people do not have sufficient confidence in the safety of cleared land to start using paths across it, and still *prefer to walk around the mined area*.

Buildings: Clearing land has opened up the potential for building on that land by private or government developments. An extreme example is in the fishing village of Al-Farsi, which has been surrounded by the foundations of 2,600 new houses to be built for the employees of the Aden Refinery Company at a cost of around US\$11 million. This was made possible by the demining of adjacent land.

Recreation areas: Clearing land has allowed an improvement in recreation, particularly for children who can now play in greater safety to the relief of their mothers.

Support to survivors

The Yemeni Landmine/UXO Victim Assistance Programme was established in 1999 as an integral part of YEMAC. The Mid-Term Evaluation of YEMAC² found this Programme to be “one of the most advanced in the world”, with some 1200 victims having been identified and 286 treated medically between 2001 and 2005. In addition, the excellent training centre in Sana’a has assisted men and women survivors to learn new trades so that they can be less dependent on their families and outside assistance.

Our results suggest that, although the Programme is doing some excellent work, its coverage to date is limited. Very few of the survivors we interviewed had received significant help apart from emergency medical care. Women can be particularly affected by disfigurement, which can condemn them to being unmarried throughout their life. There were some excellent exceptions, such as the woman from Bait Al Shawki (Al-Dhale governorate) who has completed a tailoring course at the training centre. Another has been supported by the Centre with a grant to purchase 50 butane gas cylinders as the start of a sustainable income-generating activity.

Impacts on women and children

Significant gender and age differentiation of roles was found in the survey villages, with consequent differences in exposure to risks, as borne out by an analysis of deaths and injuries to women and girls from the Landmine Impact Survey.

² GICHD. 2005. Mid-term outcome evaluation for strengthening national capacity for mine action in Yemen – Phase II UNDP Project YEM/03/010/01/99. Geneva: GICHD

Meetings with women were held in 23 of the 25 villages surveyed. Efforts were made to ensure all age groups were represented and to include women from poorer households. The women described their fear of the mined areas, the restrictions they imposed and the strategies they adopted to minimise risk, such as driving the animals into grazing areas, but not entering themselves. Butane gas replaced firewood where it was too dangerous to collect wood (at least for those able to afford it).

One of the most valued benefits from demining expressed by women was the enhanced feeling of safety and security for themselves and their families. However, some still worry about deeply buried mines: “We are scared to cultivate our lands because we think that the equipment of the de-miners cannot discover mines located deep in the soil. We discovered a mine two years ago while we were doing land preparation. We handed over the mine to the government. We are reluctant to go into the demined areas because of the feeling of insecurity.” (Mazlb)

In other villages, they admit that, although they know the mines have been cleared, they are still not confident enough to use the land. For some, mines have been such a longstanding, ever-present fear that it is hard to imagine the possibility of complete demining.

Women said that demining had brought them freer and safer access to areas for grazing and fuelwood, benefiting those carrying out the herding and fuelwood collection. Other benefits were the clearance of roads and paths, which has improved communications for the community and restored access to the seashore for fishing villages, and for stone cutting and house construction in the mountains. The cleared land also offered potential for leisure activities.

There is a risk of emergence of disputes over land rights and land development decisions following demining, especially where the land has been unused for a long time.

In nearly all the villages, women were aware that certain areas had been demined. The exception were women in some of the villages affected by the 1994 war where people were new to the areas or where mined areas were distant from the village. In several villages women reported that they, or others in their village did not know which areas had been demined nor, in some cases, were they informed that demining was taking place. The fact that survey and demining teams are all male creates a social and cultural barrier to interaction, especially in villages where many of the village men are absent working outside. In other villages, the women reported a very positive community response to the survey and demining teams. Some said their husbands and children helped the teams to identify the locations of the mines (e.g. Al- Qafleh).

Impacts on children: Mine awareness education appears to have been successfully focused on children, through organised campaigns in schools or by training teachers who then passed on the messages. School students helped with distribution of brochures. It was less clear how far women were involved in these sessions.

The most important sources of information for children concerning mined areas and dangers from mines, were from parents, relatives and other community members (mentioned in 16 villages). School teachers were also important, (mentioned in 10

villages). Children in 13 of the villages visited described lectures and demonstrations on mines given by teams visiting the village. The presence of the survey and demining teams had also raised awareness by putting up signs showing the mined and cleared areas, and through informal interaction and cooperation from the village. The use of dogs in mine detection created interest among the children

Children were generally well informed about children in their age group who had suffered mine related accidents. Stories of child casualties were told in six villages, three of the cases had involved children playing with mines.

The children's reports of the negative effects of mines focused on their role as herders of livestock. Several groups reported that they were now able to herd animals in the demined areas, and were also able to move around freely for fuel wood collection. In other villages, children were affected by blocked paths and roads, which restricted their freedom of movement.

Cost:benefit analysis of demining

While the survey was not designed to provide a complete accounting of the economic benefits accruing from mine action, data is sufficient to perform some analyses of costs and benefits. It is clear from these few examples that the economic benefits are very substantial and, in total, exceed the cost of demining. The most straightforward example is from Al-Jafinah, where an investment in demining of about \$125,000 led to an increase in the market value of the land of \$1,225,000. It also created the opportunity for follow-on investments in the range of \$1.25 to \$1.7 million to develop the land for qat and grapes. These follow-on investments led to a further increase of \$2.53 million in the market value of the land.

The economic returns from demining (either alone or in combination with follow-on investments) vary widely among communities, but in some cases are extremely high. The internal rates of return for four communities range from 66.8% to minus 0.4% (weighted average of 19.9%). These are very solid rates of return, and it must be emphasised that they represent only a partial accounting of the benefits stemming from demining – for example, they do not include the important benefits of (i) reduced landmine deaths and injuries and (ii) an enhanced sense of security for residents in these communities.

Based on this very partial accounting, the total benefits stemming from Yemen's demining programme almost certainly exceed the costs by a wide margin.

Development opportunities for demined communities

Pre-requisites for successful development

The successful development of assets freed by demining depends on good leadership in the communities, and the capacity of communities to gather information, to consult different sections of the community, to make informed, socially-responsive decisions, to write coherent, justified, costed, time-bound proposals, and to follow these through

with the degree of financial management and documentation that would be required by donors. These skills are lacking at present in most communities, and this “community empowerment” is seen as both an opportunity for donors, and also a prerequisite for sustainable development at the community level.

Communities were found to vary widely in their social cohesion, and the extent to which there is internal conflict over the ownership and use of freed assets. In some cases the assets are not under the control of the communities themselves (e.g. those communities within the Aden Free Zone area). Some communities (e.g. Bait ‘Oqab and Al Farsi) have functioning community social welfare organisations that could be an effective bridge between external assistance and the community.

Some communities are still not confident about the safety of cleared land. Further inputs might be required to convince all members of the community of the safety of their assets before they will be used fully.

Opportunities to develop freed assets

Development opportunities vary from village to village. It will be necessary to conduct careful development priority-setting exercises in each village that include the needs of all sections of the community, and are congruent with District plans and planning guidelines.

The survey identified a number of potential development areas related to the freed assets that apply across the majority of communities:

- Water collection and storage on cleared land for irrigation and drinking water
- Re-instatement of traditional natural resource management practices and by-laws for cleared grazing land
- Planting of grasses and saplings to enhance the grazing/browse potential of cleared grazing land
- Training of local people as para-veterinarians to combat heavy livestock losses to parasites and disease
- Enhanced crop advisory services and inputs
- Modern bee-keeping methods and equipment
- New terraces and boreholes for irrigation on cleared land (especially for poorer members of the community on communal land)
- Renovation of existing, but unused, crop terraces in cleared land
- Resolution of land disputes over cleared land
- Alternatives to land-based income for bad years. Skills training and employment advice are important for the balanced development and livelihood security, especially where land resources are limited and climatic conditions are marginal.

Development opportunities for landmine-affected communities

The section above deals with opportunities to develop assets that were directly affected by the presence of land mines and UXOs. However, it can also be argued that the development of the whole community has been blighted by the fear and restrictions caused by these munitions, and that they therefore deserve access to wider

developmental opportunities. Priorities expressed by communities during the survey include:

- Educational facilities. Special considerations are needed for girls, the children of nomads and adults who are illiterate or in need of skills training.
- Medical facilities
- Drinking water and water for irrigation of crops for the whole community
- Sewerage systems (especially in the south)
- Support for fishing communities (upgrading of fishing equipment, and fish storage and transport)
- Farmer associations/cooperatives to access government support, credit, machinery and training

Developmental support to survivors

A range of suggestions for additional government and donor support was provided by survivors and other community members. These included the need for a comprehensive survey of the numbers and needs of landmine and UXO survivors, followed up by the provision of training and the resources needed to enable survivors to start small, sustainable businesses (e.g. small shops, mobile trading; fattening livestock, fishing) that reduce dependency on government, community and family, and give self-esteem to survivors. Some survivors need financial assistance to get to hospital. It was emphasised that mental health care needs for traumatised and depressed survivors were sometimes as important as physical health needs. Several survivors have lost limbs, but have not been able to get artificial replacements.

Women's developmental needs

Many of the needs expressed by women are covered above. However, women's broader developmental priorities were strongly oriented towards educational provision - particularly for girls. They want classes beyond the sixth grade in their local school for girls to study without having to travel outside the area. Playgrounds for relaxation and sport were also mentioned. The other most frequent requests from women were for drinking water and electricity supply, road improvement, adult literacy classes, housing schemes and medical centres.

In several villages, women commented on the lack of cooperation between village members. Cooperatives or associations were suggested by some women as a potential solution to these problems in the community.

Considerations for YEMAC

Capacity of YEMAC staff to conduct similar surveys in the future

This study was an important learning experience for YEMAC, and particularly for the seven YEMAC staff directly involved in conducting the preliminary and main surveys. A thorough training was given to the YEMAC staff, as well as three women from outside YEMAC. As a result, staff expressed the opinion that they would be able to plan, conduct and analyse similar surveys in the future. The survey methods were evaluated by the team members, who concluded that the methods worked well as a

whole, providing a clear and comprehensive picture of the socio-economic benefits of landmine clearance within the limited time available.

Landmine Impact Scores as a tool for identifying impact and determining priorities for action

The Landmine Impact Scores were an outcome of the Landmine Impact Survey. They were composite scores intended to combine the potential risk to human life and the potential to release productive assets, into one figure that guides priority setting for mine clearance. A comparison of the scores given to communities at the time of the LIS, and scores calculated on the basis of the actual situation since the LIS, shows that there are some discrepancies. Thirteen of the twenty-five villages show similar scores, seven are scored higher in the post clearance survey and five lower. It was concluded that the LIS scores are a useful guide, but they need to be flexible to take into consideration the importance of locally economically important assets (such as building stone).

Monitoring and evaluation (M&E) in YEMAC

The emphasis of our study was on field assessment of the impact and outcomes of mine action, and therefore a detailed review of YEMAC's M&E and data management systems was not attempted. It was noted that YEMAC appears to have successfully established procedures to monitor and evaluate the technical processes and outputs of mine action. The monitoring questionnaires assess the technical efficiency and effectiveness of the team's operations, but make little or no reference to the social context of the user community. There do not appear to be systematic mechanisms for ensuring that community feedback is elicited and recorded as part of regular monitoring arrangements.

The focus of our study has been on outcomes and impacts of the programme. That is, it is less concerned with issues of the efficiency of the mine action work, albeit important, than with the *consequences* of the actions and the changes brought about for the communities affected. Annual operational targets are set, mainly at the output level; there are no specified outcome and impact targets against which the programme can be evaluated. The stage of handing over of cleared assets to the community appears to be particularly weak. YEMAC information suggests this is done in a 'formal ceremony', yet no reports of such an event were recorded during village discussions.

Main conclusions

The study was successful in assessing the social and economic impacts of demining, and in identifying developmental opportunities, in twenty-five communities.

Beneficiaries of the land and other assets freed by demining are farming, nomadic and fishing families, building developers, private speculators, immigrants, and governmental and para-statal bodies.

There have been no fatal incidents in the survey villages since clearance. Even so about half of all communities are still not using freed assets to their full potential because of perceived danger.

A major factor in changing communities' perception of mine risks will be improving their knowledge of the demining process and its outputs. Women have been less well informed about clearance operation and the status of minefields than men and children, despite their multiple roles in community life.

Based on the partial accounting possible from this survey, it appears that the total benefits stemming from Yemen's demining programme almost certainly exceed the costs of demining by a wide margin.

Clearance has made considerable areas of land available to the whole community for grazing, fuel wood, bee-keeping and fodder collection. This has had major social and economic impact across the whole community. Crop land, water harvesting channels and stone collection areas have also been returned to safe use, to the great benefit of their individual owners. Clearance of roads and paths has enhanced access to land, to neighbouring villages and to markets.

There is considerable potential to increase the productivity of the land-based assets freed by clearance, through improved inputs – including technical support, improved genetic materials, improved water supply and access to appropriate micro-finance and accompanied by environmental monitoring.

In the south, there are problems over land ownership, with powerful influences, including government agencies, annexing land for their own use.

The Yemen Landmine/UXO Victim Assistance Programme was praised by the Mid-Term Review of YEMAC for its medical and rehabilitation work with survivors. However, apart from a limited number of shining examples of survivors being supported to live fulfilling lives, this survey found that few survivors had heard of the Programme or were receiving assistance from it.

The capacity of communities to plan and implement development projects is limited. Building capacity for sustainable local institutions is a developmental opportunity. In some instances this can build on existing local welfare organisations.

The development of the whole community has been blighted by fear and restrictions caused by landmines and UXOs. Where the circumstances merit investment and meet government guidelines, it is therefore legitimate to give priority to requests by mine affected communities for general development initiatives, such as educational and medical facilities, drinking water, irrigation and sewerage facilities, fishing equipment and fishermen associations.

YEMAC staff are now able to plan and conduct similar surveys to the one described here – especially if supported by a local development specialist.

The current study lends qualified support to the LIS impact scoring method as a rapid method to assess a country's land mine problem and set priorities for land clearance.

YEMAC has established procedures to monitor and evaluate the technical processes and outputs of mine action. However, the level of outcomes and impacts is still to be articulated and systematic mechanisms are required for ensuring that community feedback is elicited and recorded.

The report provides justification for the use of in-country and donor funds to support the rehabilitation of assets, landmine/UXO survivors and the overall development priorities of landmine-affected communities

Main recommendations

YEMAC is acclaimed for its effectiveness in mine clearance, awareness raising and survivor support. However, it is not set up to carry out natural resource rehabilitation or social development. To implement the recommendations made below it would need to build that capability within YEMAC, or commission it from elsewhere.

The next stage of the process of rehabilitation of assets and development of landmine-affected communities should concentrate on the prioritisation of opportunities by social group, with quantified benefits, contributions, budgets and timetables.

To enhance the sustainability of development initiatives, the capacity of community leaders and community-based organisations to identify, plan and implement community development initiatives should be enhanced through training and support.

There is a need to ensure good land management practices for grazing areas (often also used for fuelwood, fodder, stone and water collection). In some cases, these can be based on traditional land management systems such as “*Hema*”, and enforced through local bye-laws.

The expropriation of land from community use by private and government interests should be addressed. YEMAC procedures should ensure the participation of communities in decisions about land distribution and use from the start of clearance.

An inventory should be made of all landmine/UXO-incident survivors, and clear guidelines issued on their eligibility for support. All survivors should be made aware of the services and support mechanisms available to them.

There should be dialogue with all sections of the community from the start of clearance through to final handover, with particular emphasis on actively demonstrating that specific areas are cleared. Community liaison volunteers (men, women and children who are selected by the community and paid a small honorarium for ensuring good two way communication between YEMAC teams and all members of the community) should be identified at the start of clearance and kept informed/involved in all the work of the teams, including handover of cleared land. Community concerns about the safety of land for cultivation need to be recognised and addressed. Where necessary, local people should be contracted and paid by YEMAC to carry out first cultivation by appropriate methods to demonstrate the safety of arable land where this is in doubt.

More specific gender-related procedures addressing the UN Gender guidelines are needed at all stages of YEMAC's work, but most urgently to ensure the participation of women in the post-clearance handover process. This is most crucial to encouraging the maximum use of cleared assets and reducing fear.

Consideration should be given to adapting the LIS scoring system to allow different weightings for productive assets by distinct socio-economic region, within a common framework.

YEMAC should incorporate community feedback and the collection of information on outcomes and impacts from mine action into its monitoring system. The first step is to develop a set of indicators which reflect communities' criteria of impact from mine action, including potential negative impacts. These could be subdivided according to different social groups, differentiated for women, men and children. Information on these indicators should be collected on an annual basis from a sample of villages.

Introduction ³

Over the past 30 years, Yemen has been plagued with a number of conflicts (1962-1969; 1970-1983; and in 1994). Altogether, these conflicts resulted in a significant landmine and Explosive Remnants of War (ERW) problem. Combatants laid these landmines arbitrarily and haphazardly in sand dunes and fields and alongside roads without marking their locations. The mines block access to critical resources including grazing land, agricultural land and water sources for drinking and irrigation.

A nationwide Landmine Impact Survey (LIS) completed in July 2000 identified 592⁴ mine-affected villages in 19 out of the country's 21 Governorates. Of those, 14 communities (with a population of 36,000) were high impact, and 578 communities (with a population of 791,400) were considered to have a medium or low impact. A total of 1,078 mined areas were identified with a reported surface area of 923 million square meters, mainly in the central and southern regions of the country. Human suffering and economic loss due to landmines and ERW in Yemen is significant. The LIS recorded a total of 4,904 casualties in Yemen over the past 10 years, of which 2,560 were killed and 2,344 injured. The most frequent victims were farmers and herders. In 2005, 17 landmine and/or ERW casualties were documented in different incidents.

The landmine and ERW problem has an impact on infrastructure development, which is denying people access to economic opportunities. This problem also has the effect of further reducing the already limited, arable land (only 2.6% of the country) and frequently it results in the death or disabling of farmers, herders (often children) and livestock essential for agricultural production and the resumption of basic economic activities. The government is unable to implement social-development projects with these affected communities due to the presence of landmines and ERW.

The government of Yemen is committed to the complete elimination of landmines and explosive remnants of war. On 1 September 1998, Yemen ratified the Mine Ban Convention and, recognizing that the landmine and ERW problem could not be solved unless integrated into a concerted national initiative, started its Mine Action Program later that year.

The National Mine Action Committee (NMAC) was established in June 1998 to formulate policy, allocate resources, and develop a national mine-action strategy. Furthermore, the Yemen Executive Mine Action Center (YEMAC) was established in January 1999 as the implementing body of the NMAC with the primary responsibility of coordinating all mine-action activities in the country. In addition to survey, clearance and mine detection dog capacity, YEMAC has a landmine Survivor Assistance and Mine Risk Education Program. The NMAC has established a Mine Awareness Advisory Committee (MAAC) and a Victim Assistance Advisory

³ The introduction is taken from the Zero Draft of the Post Clearance Socio-Economic Study of Cleared Communities prepared by YEMAC in 2005.

⁴ In 2002 two additional mine affected communities were identified bringing the total of affected communities to 594.

Committee (VMAC) as well as working groups designed to assist with the planning and evaluation of mine awareness and victim assistance activities.

A nationwide LIS was conducted in July 1999 and completed and certified by the United Nations in August 2000. The survey revealed a comprehensive set of socioeconomic data, which serves as a base on which national mine-action plans in Yemen are designed and implemented. The survey concluded that 14 communities were high-, 86 medium-, and 494 low-impacted, with a total of 923 square kilometers polluted.

Yemen completed destruction of its national stockpile of anti-personnel landmines in compliance with Article 7 of the Mine Ban Convention in April 2002. It also developed and approved a landmine legislation law in accordance with Article 9 of the Convention in December 2004.

In June 2004, NMAC revised its five-year (2001-2005) Strategic Mine Action Plan and extended it through 2009. According to the plan, the national vision is to put an end to the suffering and casualties caused by anti-personnel landmines by the end of March 2009.

As of September 2005, over 240 million square meters of affected land have been surveyed, cleared and returned to the local users. As a result, all high impacted communities are cleared (except 4 minefields in which operations ceased due to lack of technology to clear), 124 medium and low impacted communities are declared free⁵. During the operations 87,000 landmines and items of ERW had been located and safely destroyed. Over 500,000 men, women and children received mine-risk education in 333 affected villages. Over 1200 landmine/ERW survivors have been medically checked and supported and more than 16 small income generating enterprises established for the poor survivors in order to reintegrate them socio-economically into the society. Since the completion of the LIS, integrated mine action has successfully reduced the number of landmines and UXO incidents by 80 percent.

The Mid-term outcome evaluation for strengthening national capacity for mine action in Yemen – Phase II (UNDP project YEM/03/010/01/99) made three recommendations for socio-economic rehabilitation of demined areas, as follows:

Recommendation 1: It is recommended that Community Rehabilitation become an integral part of mine action in Yemen, and be considered the last and essential sixth pillar in this particular programme.

Recommendation 2: It is recommended that YEMAC establish a community rehabilitation planning and coordination competence that would become engaged in pilot assessments / pre-feasibility studies of selected village clusters, culminating in the design of pilot community-based initiatives.

Recommendation 3: It is recommended that the Community Rehabilitation Unit work in close collaboration with GOY, interested donors and the UNDP, with the intent of defining implementation and funding modalities.

⁵ As of May 2006, 130 communities were declared free of landmines (Faiz Mohammad, personal communication)

Objectives of the Consultancy

The overall objectives of the study (see ToR in Annex 1, volume II) were to:

1. Assess the overall socio-economic returns from mine clearance investments through a livelihoods analysis of the landmine impacted communities that are now cleared of mines and other explosive remnants of war (ERW)
2. Make a preliminary assessment of complementary development initiatives for mine-affected communities.
3. Enhance the capacity of YEMAC to:
 - a. Conduct future assessments of socio-economic benefits from mine action
 - b. Assess the community Landmine Impact Scores as a tool for identifying impact and determining priorities for action
 - c. Advise on how to design and conduct on-going socio-economic surveys relating to ERW
 - d. Advise on integrating social differentiation within LIS survey protocols
 - e. Advise on enhancements to YEMAC's M&E system

The first objective addresses the strong perceived need for improved assessment of the social and livelihood impact of mines as well as the economic benefits. The second objective reflects the growing international interest in the development orientation of mine action programmes⁶, integrating the assessment of outcomes and impacts from demining with consideration of communities' developmental objectives and priorities. This was re-enforced by a meeting held with Deputy Heads of Missions from several countries in the Office of the Prime Minister, in which they expressed their interest in supporting development opportunities that could be identified in landmine-affected communities. Subsequent meetings by Ted Paterson (GICHD) with other agencies, including the World Bank, the Social Fund for Development (SFD), the Women's National Committee and CARE International further emphasized the potential for donor support to social and economic initiatives that build on, and enhance the positive impacts of, the demining efforts of YEMAC.

Framework and Approach

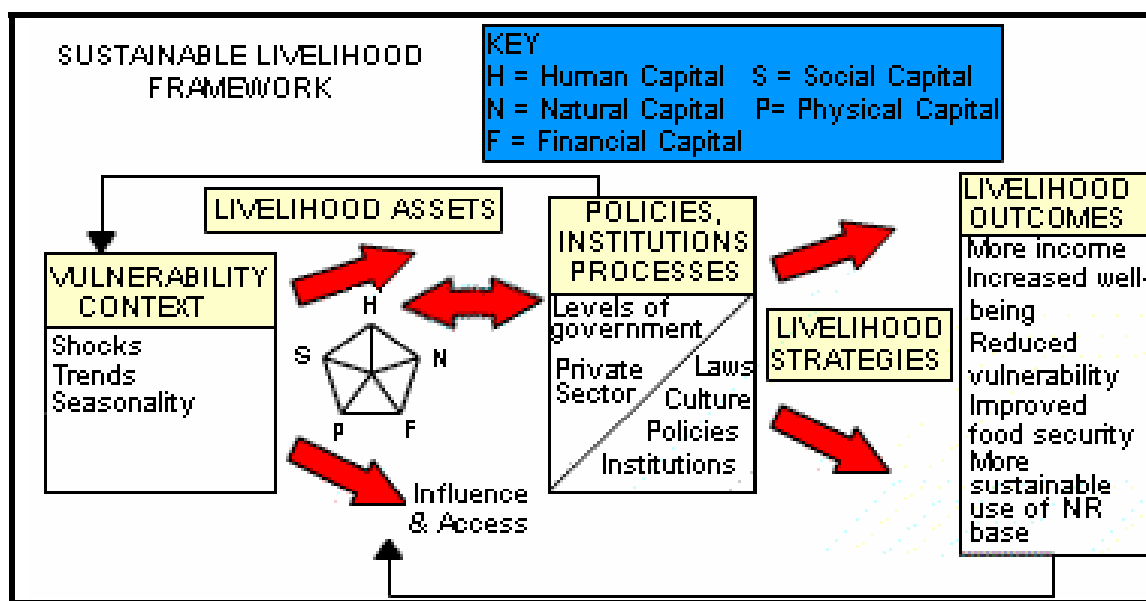
The Sustainable Livelihood Approach was used as a basis for obtaining a balanced view of the situation in landmine-affected communities. This is an holistic (multi-sectoral), people-centred, participatory approach which is well accepted by major development agencies such as DFID, World Bank, FAO and UNDP.

The Sustainable Livelihoods Framework, which is presented in Figure One below, has been developed to help understand and analyse the livelihoods of the poor. Like all

⁶ See the Bad Honnef framework. <http://www.gichd.ch/424.0.html>

frameworks, it is a simplification; the full diversity and richness of livelihoods can be understood only by qualitative and participatory analysis at a local level.

Figure 1- Sustainable livelihoods framework



The framework views people as operating in a context of vulnerability, shown at the left of Figure One. Within this context, they have access to certain assets or poverty reducing factors (human, social, natural, financial and physical capital). The levels and utilisation of these assets are influenced by the external political, institutional and legal environment. Together people's assets and the external environment influence household's livelihood strategies in pursuit of beneficial livelihood outcomes that meet their own livelihood objectives.

The word 'livelihood' can be defined as follows: 'A livelihood comprises the capabilities, assets and activities required for living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base'.⁷

The use of this framework to assess the impacts of mine clearance helps to highlight the wider context in which the laying of mines and contamination with ERW has affected communities. It encourages integrated thinking about the benefits of demining and the broader development opportunities and constraints. Mines directly block the use of natural and physical assets, removing farmland and grazing from use, obstructing use of roads and access paths, preventing use of strategically placed buildings etc. Yet the effects of mines also impact indirectly on human capital – through injury and loss and on financial capital through loss of productive assets. Mines may prompt changes livelihood strategies (e.g. by encouraging migration out of the village for employment). On the processes and institutions side, mine clearance may give rise to contested claims for rights to land. Initiatives to develop community resources crucially depend on the capacity of local governance and leadership.

⁷ Adapted from Chambers, R. and G. Conway (1992).

There are important challenges in this task, in particular, that of clearly distinguishing the immediate outputs of mine action (e.g. cleared land, roads and other assets; greater awareness and knowledge of mine risks; survivor support), from actual outcomes (e.g. increased utilisation, higher productivity and changed behaviour) and, ultimately, impacts in terms of sustainable growth and enhanced wellbeing.⁸ Influences beyond the control of YEMAC contribute to bringing about such impacts. The task of this study is to identify outcomes and impacts as well as simply the immediate outputs produced by mine action, and to trace these relationships and influences.

Some of the potential *indicators* of socio-economic outcomes/impacts and the wider contextual factors that influence them are:

Table 1 – Indicators of socio-economic impact

INDICATORS	LIMITING FACTORS
Reduction in the numbers of mine accidents (outcome) and loss of human and animal life (impact).	Both demining and mine awareness education needed.
Demined land brought back into productive agricultural use (outcome).	For sustainable use, requires that access rights are clear and uncontested and owners are sufficiently confident to use land. Feelings of security would be enhanced with more information on cleared areas.
Productive output and income from cleared agricultural land, both irrigated and rainfed, for different crops (outcome and, if sustained, impact).	Depends on resources for rehabilitation of land, adequate water supply, inputs and markets.
Use of cleared grazing areas. Value of fodder and firewood collected (outcome and, if sustained, impacts).	Increased livestock productivity depends on wider grazing management. Unless common areas are managed there may not be any sustained benefit under an open access system.
Value of stone cut (outcome and, if sustained, impacts).	Benefits depend on land ownership and access rights, as well as demand both locally & in nearby communities
Investment in new housing on demined land (impact).	Benefits depend on land ownership and access rights, and on local power relations. Could result in negative impact through loss of common pool resources.
Resumed use of demined roads (outcome, with many possible impacts (e.g. higher attendance in schools in district centre).	Benefits depend on the availability and affordability of transport, and repair and surfacing of roads.

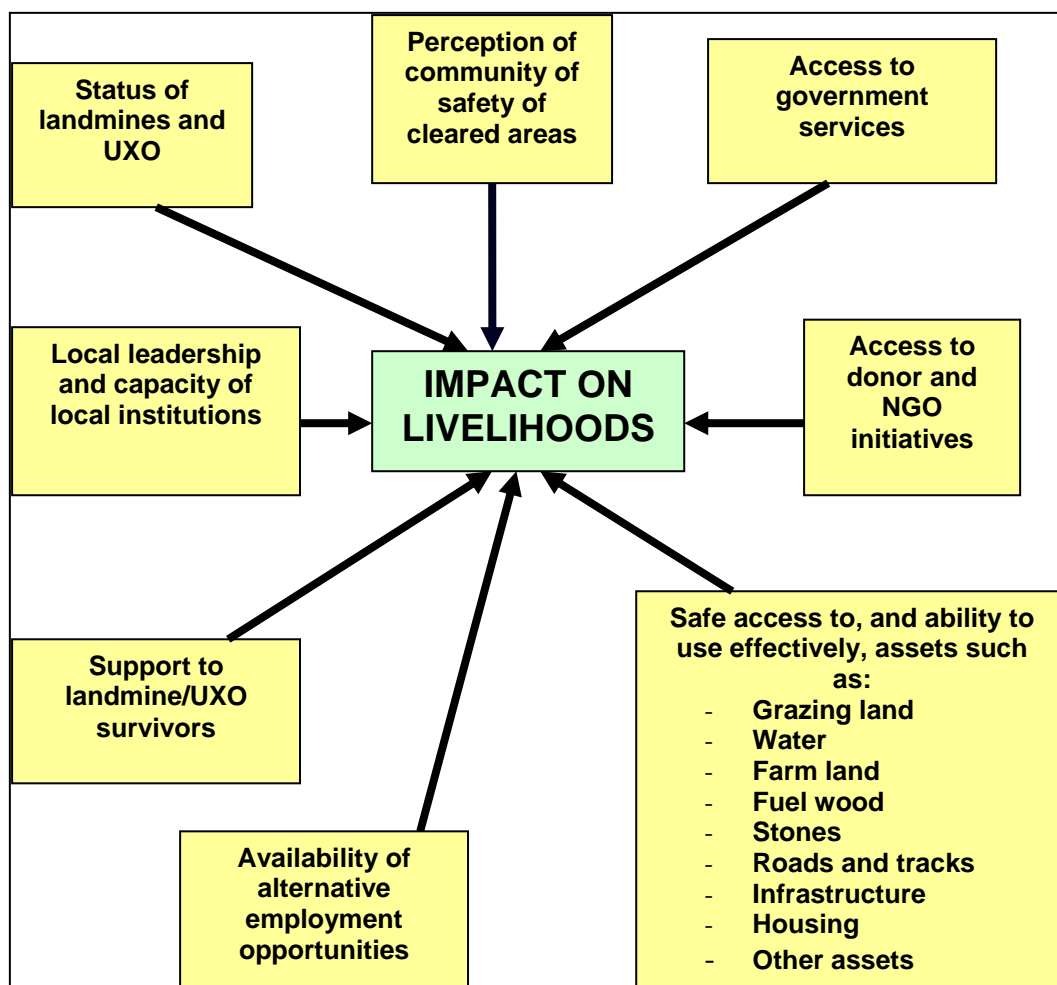
Long term impacts typically depend on a variety of factors in addition to the outputs actually delivered by the mine action programme. The Figure below depicts some of the main influences on impact on the livelihoods of landmine-affected communities,

⁸ For the purposes of this study:

- outputs are the goods and services actually produced by mine action, such as cleared land, MRE sessions, prostheses fitted, etc.
- outcomes are what people/communities do with the outputs, such as plant crops, report landmines to authorities, or resume work
- impacts are the long-term effects due in part to the mine action outputs, both positive (e.g. enhanced wellbeing due to safe access to more land) and negative (e.g. community conflict over the use of cleared land).

which will affect the degree to which mine action outputs such as cleared land lead to sustained benefits for individuals, households, and communities.

Figure 2 - Factors influencing livelihoods in landmine-affected communities



Methods

The overall approach was to conduct a *participatory survey* of 25 reportedly mine-cleared communities over two missions: a) a short reconnaissance mission to develop the methodology in three contrasting communities (see Annex 6 for a summary of findings from this visit), and b) the main survey of a further 22 communities in seven governorates (Sana'a, Dhamar, Ibb, Al-Dhale, Aden, Lahij and Abyan).

A formal questionnaire was *not* used. Instead a range of *participatory rural appraisal techniques* was used to discuss the past, present and potential future situation of the communities and their land (with special emphasis on the cleared areas).

The methods used reflected the need to understand the viewpoints of *different sections of the community*. Thus separate meetings were held in each community with community leaders, farmers, women, children and the survivors of landmine incidents.

The survey obtained a mixture of *qualitative and quantitative* information designed to answer the questions implicit in the ToR. The study was focused on assessing the outcomes for communities in demined areas. While quantitative economic data was included, the main purpose was not to do a cost benefit analysis of the mine action programme as a whole, but to look in detail at the different kinds of outcomes for communities, to help guide setting of priorities for YEMAC and to identify the potential for enhancing benefits from demining. Most of the quantitative data showing benefits were associated with productive assets brought back into use, for which proxy measures of potential market value of production could be imputed – e.g. crop yields on cleared land, value of stone for house building, value of forage etc. Except where indicated, the social and economic benefits and the opportunities detailed in this report are those that were given to us by the community members, rather than those of the survey team members.

Livelihoods Analysis, in the context of this survey, focused on the analysis of access to, and use of, assets and the external environment influencing these assets, firstly, in order to understand the effects of mines and mine clearance and secondly, to identify strategies and activities for improving people's livelihoods. The approach emphasises the understanding of asset-use by different stakeholder groups, exploring how freed assets were used and by whom and how decisions on this were taken.

A further dimension explored was the level of participation of women, their perceptions of benefits from mine action and their development priorities. A gender differentiated approach to impact assessment is important for understanding the differences in experience and priorities between men and women and among women of different socioeconomic groups. In Yemen, female-headed households are over-represented among households in acute poverty; their average income is one third lower than male-headed households. In linking mine action with development initiatives it is important that such disparities are taken into account.

The dependability of findings generated from participatory livelihoods analysis and qualitative techniques is enhanced by the reliance on different sources of information from the community, or 'triangulation', including secondary information from a variety of sources. In our case, this secondary information included the Landmine Impact Survey carried out in 1999/2000. This was very useful as a baseline, giving information on populations at the time of the survey, the size of the suspected mined area(s), the blocked assets and landmine-related casualties.

For the main survey, three survey teams were trained by the consultants over a period of four days (including a full day in the field practicing the methods taught in the classroom). The teams consisted of YEMAC staff and three contracted women with appropriate backgrounds. Details of the training (including a photographic record of the methods used) are given in Annex 4.

The tools used in the village surveys were:

- a. A comprehensive introduction designed to provide information on the team, the objectives of the mission, the potential (realistic) benefits that might come to the community and the methods to be used
- b. A "Time-Line" to understand the situation before, during and after the mines were laid (and how people coped with the mines)

- c. Use of village maps previously drawn up with the villagers themselves, showing the relationship between the village and the mined/cleared areas
- d. A “Community Profile” that listed the social, financial, physical, natural and human assets inside the community, and the relationship between the community and the outside world
- e. A series of focus group discussions with community leaders, farmers (or other natural resource users such as fishermen, nomads or landowners), women, children and landmine incident survivors
- f. Gender analysis
- g. Farming/livelihood system diagrams
- h. Force field diagrams
- i. Participant observation of the situation in the community
- j. A photographic record of the present situation.

The eight men and four women who made up the survey team were divided into three sub-teams who visited 22 villages in seven governorates.⁹ A check on data quality was made through the team feedback processes following the completion of field work in each governorate. At these meetings findings were shared and analysed, and teams discussed any problems and inconsistencies, making adjustments to the methodology and planning for the next governorate. Potential distortions arising from community suspicions were minimised by ensuring clear introductions in the village meetings of the study purpose and team identity. Interviewer bias was checked by sharing of findings within and across teams. The teams emphasised the need to meet people from a wide cross section of the village, not only the better off and articulate.

An overall evaluation of the methods used, the impacts observed and the opportunities identified was carried out by male and female survey members at the end of the main survey. The results of this evaluation, which endorse the individual and collective methods used, are given in Annex 8.

Village Sample

Twenty-five villages (4% of the total landmine-affected villages in Yemen and 17% of those actually cleared) were surveyed, from seven governorates in a line from Sana'a to Aden, representing the main concentrations of mine contamination (see map, page 90). Governorates in the far north, west and east of the country were not selected, and it is possible that findings would have been different from those areas.

The sampling of villages for the study was guided by the need for detailed information on the economic and social impacts of mine action, while ensuring that the range of mine-affected communities (social, physical and political contexts) was represented. Selection was based on criteria relating to factors which influence the incidence and the severity of mine impact and the context of livelihood choices as well as the likely outcomes from the mine action programme. The assumptions are that the impacts of mines and of demining relate to the following;

⁹ Twenty-two villages were surveyed in the main survey in May 2006 in addition to the three villages surveyed in the pilot survey in March 2006.

- The nature of the contamination. The different phases of mining in Yemen under different circumstances of insecurity and conflict, led to different patterns of mining and UXO contamination, e.g. defensive mining around army encampments, mined roads or boundaries to block movement.
- The environment and the physical nature of the mined terrain and its utilisation within the village farming and livelihood system. Agricultural and land use systems vary according to climate, altitude, topography and water availability.
- The specific characteristics of the assets which were blocked by mining. For example, different levels of impacts would be expected from mined areas on hillsides previously used for grazing, firewood collection and building stone; mines around water sources or water channels blocking access to water for domestic and agricultural use; mined coastal areas preventing access to the sea for fishing, and mined infrastructure such as buildings and roads.
- The time frame – the number of years of the community’s experience of living with mines which is likely to affect adaptive behaviour and use of alternatives as well as perceptions of mines and demining.
- Available livelihood options – the extent of options for alternative agricultural activities and non-agricultural employment which are also influenced by degree of access to markets and centres of population and services.

The village sample was selected by YEMAC staff using the information from the Yemen Landmine Impact Survey (LIS). The Landmine Impact Survey, completed in 2000, collected information to assess the impact that landmines have had on communities, and to help set priorities for land mine clearance. It constitutes a baseline for comparison with this present study which is focusing on outcomes and impacts arising from mine clearance. Twenty-five villages were chosen from among the 147 villages in which mine clearance work has taken place.

Table 2- Sample size

Village Impact score	High	Medium	Low	Total
Number of mine affected villages identified in LIS	15	84	495	594
Villages cleared by 2006	15	59	73	147
Selected for Impact Study 2006	4	12	9	25

The villages were chosen to represent:

1. different governorates; seven governorates were included
2. different profits and benefits from cleared lands; agriculture, infrastructure development, water, herding, water harvesting and other assets were included
3. different altitude (high/ medium/ low land). Villages were selected from mountainous areas, coastal areas and from mid-altitude
4. different agricultural systems, e.g. irrigated crops (qat producing areas and non qat producing), rainfed cereal production, livestock rearing and fishing.
5. different population size (large/ medium/ small)
6. communities in terms of being closer, medium and far from markets and cities
7. communities having casualties in recent years and those with no or fewer recent casualties
8. LIS community impact category of high, medium and low impacts.

The details are given in Figure 3

Presentation of the findings of the Study

The findings of the reconnaissance and main surveys are presented together, and are reported against headings that closely reflect the Terms of Reference for the mission, as follows:

- A) Assessment of the socio-economic returns from mine clearance investments from the perspective of men, women, and children, including safety and awareness, assets affected and survivor support
- B) Preliminary assessment of complementary development initiatives for surveyed villages and requirements for support
- C) Enhancement of the capacity of YEMAC to conduct future assessments of socio-economic benefits from mine action
- D) Assessment of community landmine impact scores as a tool for identifying impact and determining priorities for action
- E) Advice on enhancements to YEMAC's processes for survey, clearance, awareness/education and survivor support and advocacy, and for its monitoring and evaluation (M&E) system
- F) Estimated costs of landmine clearance and land release compared to the main economic returns to demining for seven selected villages (one from each governorate).

Conclusions and Recommendations are made at the end of each of these sections, and then collated in the main section on Conclusions and Recommendations.

One village from each of the seven governorates covered by the survey is selected for a short illustrative pen-sketch in Appendix 1.

Table 3 - Criteria for village selection

Village and data base reference ¹⁰ .	Dates mines laid	District	<u>1.Governorate</u>	<u>2. Blocked assets according to LIS e.g. Agric, Infra-structure, Grazing</u>	<u>3. Altitude High (>2000m) Med (1-2000m); Low (<1000m)</u>	<u>4. Agri-cultural Zone (main agricultural activity)</u>	<u>5. Village Population Small 500 or under. Medium over 500, under 3000; Large 3000 and over</u>	<u>6 Proximity To Market/ City</u>	<u>7 Recent Casualties ¹¹ (According to LIS)</u>	<u>8 LIS Impact Category</u>	Area shown as suspect in LIS and subsequently released m2 (estimated cost in US\$ in brackets) ¹²	Area actually cleared in m2 (Estimated cost of clearance in US\$ in brackets) ¹³
Sha'san (23/24/1/900)	1963-1967	Sanhan	Sana'a	Pasture, agriculture	High	Irrigated qat Rainfed grain Cattle, goats and sheep	Medium	Close	None recent. 8 killed 4 injured in past	Low	450,000 m2 (\$32,400)	128,068 m2 (\$179,295)
Joab (23/25/21/100)	1963	Bani Bahloul	Sana'a	Pasture, agriculture, water/irrigation and animals	High	Irrigated qat Rainfed grain Vegetables Cattle, goats, sheep	Medium	Close	None recent. 5 killed 4 injured in past	Medium	253,300 m2 (\$18,238)	103,206 m2 (\$144,488)
Sha'b ¹⁴ 23/20/32/1000	1978	Arhab	Sana'a	Pasture, water/irrigation	High	Irrigated qat Cattle, goats, sheep	Large	Close	2 recent killed 10 killed, 20 injured in past	Medium	2,000 m2 (\$144)	12,330 m2 (\$17,262)
Al-Jafinah 23/22/26/400	1963	Bani Hushaish	Sana'a	Pasture, agriculture	High	Irrigated qat, fruit Rainfed grain Cattle, sheep, goats	Large	Close	2 recent killed, 2 injured; 2 killed, 2 injured in past	High	3,500 m2 (\$252)	89,273 m2 (\$124,982)
Bait 'Oqb 23/25/23/100	1964-1967	Khawlan	Sana'a	Pasture, water for animals and drinking	High	Irrigated qat Cattle, sheep, goats.	Large	Medium	None recent. 10 killed, 6 injured in past	Medium	1,102,500 m2 (\$79,380)	200,432 m2 (\$280,604)

¹⁰ For ease of reference, in this table, the English transliterations of Arabic village names in this table are the same as those in the LIS database. Elsewhere, some names are spelt to reflect more accurately the actual pronunciation, e.g. Bait Al-Shawki, Bait 'Oqab, Al Khudad, Ofeini, Amsara.

¹¹ Recent casualties refers to those in the 2 years prior to the Landmine Impact Survey in 1999.

¹² All dollar financial figures are in US Dollars. The cost of releasing land is calculated at \$0.072 per sq m

¹³ Actual clearance cost is calculated on the basis of US\$1.4 per sq m. These cost estimates provided by YEMAC may represent incremental costs only.

¹⁴ For Sha'ab and Al Jafinah, the actual cleared area is greater than the area defined as suspect by the LIS. That is because the suspected areas were underestimated in terms of size at the time of LIS. However, during technical survey, larger areas were marked while the number of suspected areas (locations) remains the same.

Village and data base reference.	Dates mines laid	District	1. Govern or- ate	2. Blocked assets according to LIS	3. Altitude	4. Agricultural Zone	5. Village Population	6 Proximity To Market/ City	7 Recent Casualties	8 LIS Impact Category	Area suspect and released m2 (estimated cost in US\$)	Area actually cleared in m2 (Estimated cost US\$)
Mazlb 20/8/23/400	1981-1982	Wesab Al A'ali	Dhamar	Pasture, water for animals, washing and drinking, agriculture, roads to other villages.	High	Dryland terraces, rainfed grain, vegetables, cattle, sheep and goats.	Small	Far	2 recent killed, 17 killed in past.	Medium	800,000m2 (\$57,600)	16,905 m2 (\$23,667)
Al-Sharaf 20/8/23/401	1981-1982	Wesab Al A'ali	Dhamar	Pasture, water for animals, washing and drinking, agriculture, roads to other villages.	High	Dryland terraces, rainfed grain and vegetables, cattle, sheep goats.	Small	Far	1 recent killed, 11 killed, 2 injured in past.	Medium	54,000 m2 (\$3,888)	4,128 m2 (\$5,779)
Al-Soobah 11/6/21/800	1979-1982	Al Nadera	Ibb	Road to district centre	High	Dryland terraces	Small	Medium	1 recent injured, 1 killed, 5 injured in past.	Low	17,600m2 (\$1,267)	14,400 m2 (\$20,160)
Bait Al-Ra' aee 11/6/27/200	1982-1983	Al Nadera	Ibb	Pasture, agriculture, stones	High	Dryland terraces Rainfed grain, fruit, cattle, sheep goats.	Small	Close	1 recent injured, 8 killed, 2 injured in past.	Medium	8,500m2 (\$612)	4,935 m2 (\$6,909)
Bait Al-Azani 11/6/24/2200	1981-1982	Al Nadera	Ibb	Pasture, agriculture	High	Dryland terraces, rainfed grain and Irrigated qat, cattle, sheep and goats.	Medium	Medium	None recent; 2 injured in past.	Low	30,000m2 (\$2,160)	7,658 m2 (\$10,721)
Al-Masharih 30/6/6/3003-	1979	Al Dhale	Al-Dhale	Pasture, agriculture, water for animals and drinking.	Medium	Rainfed grain, cattle, sheep and goats, camels and donkeys.	Small	Close	2 recent killed, 1 injured; 13 killed, 2 injured in past	High	6,000,000m2 (\$432,000)	342,195 m2 (\$479,073)
Al-Qafleh 30/3/22/100	1982-1983	Qa'tabah	Al-Dhale	Pasture, agriculture, water for irrigation, animals, washing and drinking; road.	Medium	Irrigated qat, grain, mountain grazing, cattle, sheep, goats,	Medium	Close	1 recent injured; 4 killed, 4 injured in past	Medium	640,000m2 (\$46,080)	107,091 m2 (\$149,927)

Village and data base reference.	Dates mines laid	District	1. Govern or- ate	2. Blocked assets according to LIS	3. Altitude	4. Agricultural Zone	5. Village Population	6 Proximity To Market/ City	7 Recent Casualties	8 LIS Impact Category	Area suspect and released m2 (estimated cost in US\$)	Area actually cleared in m2 (Estimated cost US\$)
Habil Al Abdi 30/3/25/2001	1980-1981	Qa'tabah	Al-Dhale	Pasture, fuelwood	Medium	Cattle, goats, sheep.	Medium	Close	1 recent injured; 6 killed, 7 injured in past	Medium	135,000m2 (\$9,720)	84,100 m2 (\$117,740)
Bait Al-Shooki 30/3/25/100	1982	Qa'tabah	Al-Dhale	Pasture, agriculture, roads.	Medium	Irrigated qat Grain, cattle, sheep, goats.	Large	Far	None recent 7 killed, 3 injured in past	High	24,000,000m2 (\$1,728,000)	333,222 m2 (\$466,510)
Al-Heswa 34/4/4/800	1994	Al-Buraiqa	Aden	Pasture, fishing, agriculture.	Low	Irrigated grain, fruit and vegetables. Cattle, goats and camels	Large	Medium	3 recent killed, 1 injured; 1 killed, 2 injured in past	High	160,000m2 (\$11,520)	155,447 m2 (\$217,625)
Al-Farsi 24/4/4/230	1994	Al-Buraiqa	Aden	Pasture, fishing, road.	Low	Fishing Cattle, goats and sheep.	Medium	Close	None recent 3 killed, 1 injured in past	Low	2,000,000m2 (\$144,000)	170,710 m2 (\$238,994)
Amran 24/4/4/160	1994	Al-Buraiqa	Aden	Pasture, water for animals, washing and drinking; road.	Low	Cattle, goats, camels donkeys.	Large	Far	None recent 5 killed, 5 injured in past	Medium	100,000m2 (\$7,200)	97,400 m2 (\$136,360)
Beer Ahmed 24/4/4/110	1994	Al-Buraiqa	Aden	Pasture, agriculture	Low	Irrigated field crops, grain. Goats and sheep.	Large	Close	None recent None past	Medium	21,000,000m2 (\$1,512,000)	249,300 m2 (\$349,020)
Al Mas'abain 24/2/1/500	1994	Dar Sa'ad	Aden	Pasture, agriculture, road.	Low	Rainfed crops. Cattle, goat, sheep.	Large	Close	None recent None past	Low	2,310,000m2 (\$166,320)	67,053 m2 (\$93,874)
Al Khadad 25/11/11/1500	1994	Tuban	Lahij	Pasture, road.	Low	Cattle, goats, sheep.	Large	Medium	None recent 6 injured in past	Low	6,480,000m2 (\$466,560)	63,262 m2 (\$88,566)
Al Jarba 25/11/11/5300	1994	Tuban	Lahij	Housing	Low	None	Medium	Close	2 recent injured; 2 injured in past	Medium	400,000m2 (\$28,800)	53,775 m2 (\$75,285)
Beer Naser 25/11/11/20	1994	Tuban	Lahij	Pasture, agriculture, firewood, housing, road.	Low	Irrigated crops, rainfed grain. Cattle and goats.	Medium	Close	None recent 1 killed, 1 injured in past	Medium	1,430,000m2 (\$102,960)	257,942 m2 (\$361,118)
Ofeani 12/8/8/7600	?	Khanfar	Abiyan	Pasture, agriculture, trees	Low	Desert browse, irrigated grain, cattle, sheep, goats.	Small	Far	None recent None past	Low	1,200m2 (\$86)	2,500 m2 (\$ 3,500)

Village and data base reference.	Dates mines laid	District	1. Govern or ate	2. Blocked assets according to LIS	3. Altitude	4. Agricultural Zone	5. Village Population	6 Proximity To Market/ City	7 Recent Casualties	8 LIS Impact Category	Area s suspect and released m2 (estimated cost US\$)	Area actually cleared in m2 (Estimated cost US\$)
Habeel Al-Braq 12/8/8/101	1976-1994	Khanfar	Abiyan	Pasture, firewood	Low	Cattle, sheep, goats, trees.	Medium	Far	None recent; 1 killed in past	Low	300,000 m2 (\$21,600)	4000,m2 (\$5,600)
Imsara 12/4/4/4700	1950	Lowdar	Abiyan	Trees, pasture.	Low	Cattle, sheep goats.	Large	Medium	None recent; 2 killed in past	Low	32,000m2 (\$2,304)	1,200,m2 (\$1,680)
											Total area released: 67,709,600m²	Total area cleared: 2,570,532m² Total cost of clearance: \$3,598,744
											Total cost for release: \$4,875,091	

A. Assessment of the Socio-Economic returns from mine clearance investments

The benefits and other consequences of mine clearance were assessed with communities using complementary survey methods that yielded quantitative and qualitative information derived from a range of social groups within communities (community leaders, farmers/fishermen, women, survivors, business people, government employees and children). Accounts of all the meetings held in the 25 communities are presented in **Annex 11 of volume II**.

Detailed impact information for each village surveyed is tabulated in **Annex 9 of Volume II**.

In the following account, the returns to demining investments are illustrated by their impact on community (and in some cases, government and private) assets.

A.1. Safety and awareness

The investigation and analysis of perceptions of people in mine affected villages concerning the risks posed by mines and changes after demining, is a complex area. There is a substantial body of research on public perceptions of risk and how risk information is communicated.¹⁵ It is a common finding that the public perceptions of risk and safety are different to risk assessments made by technical and professional bodies on the basis of the data.

It is therefore important to draw a distinction;

- a) between an assessment of risk based on the presence/absence of mines and UXO and on the number of accidents actually occurring, from...
- b) local perceptions of risk and the behaviour associated with these perceptions.

The evidence from the village survey is that the clearance is almost completely effective in eliminating the risk of explosion from landmines and UXOs.

Apart from one “hidden” mine in an abandoned well in Bait Al-Shawki (an explosion occurred when an animal fell into the well) there have been no cases of landmine incidents in any of the survey villages since completion of clearance in those villages.

This provides a very favourable contrast with the fairly long list of incidents between the LIS (1999 – 2000) and the start of clearance (incidents were mentioned by people in Sha’b, Joab, Mazlb, Al-Sharaf, Al-Soobah, Bait Al-Azani, Al-Masharih, Habil Al-Abdi, Al-Khudad, Am-Jarba and Beer Naser). Not all of these had been reported to YEMAC.

¹⁵ Slovic, 1987 and 1999.

The majority of communities where clearance has taken place are extremely grateful to YEMAC for the increased safety that enables them and their families to live and work without fear of the dangers of landmines or UXOs. However, removal of fear is by no means universal, for a number of reasons:

- In those areas where landmines were present for a long period (over 40 years in some cases), the fear of land mines is deep rooted and people are still reluctant to enter the previously mined areas. In most cases the local people say that this fear is diminishing bit by bit.
- Some communities (e.g. Joab in Sana'a Governorate) designated as cleared are were reported by communities as not yet fully demined (only two out of seven minefields in Joab were clear at the time of our survey). Similarly in Sha'b (Sana'a governorate) one area (Jebel Suma'a Al-Rawdha) has yet to be demined. In Al-Soobah, villagers reported that one area and a house were still to be cleared, and in Bait Al-Azani, the remaining area to be cleared from mines is called Jebel Ali Sa'eed (located midway between Bait Al-Azani and Katan villages). Also, in Al-Sharaf, both men and women mentioned an area which was still uncleared.
- The local people themselves have cleared some mined areas as they were desperate for grazing or crop land (e.g. In Joab and Sha'san in Sana'a Governorate and Al-Qafleh in Al-Dhale Governorate). These areas have never been officially recognised as cleared.



The Sheikh in Al-Qafleh demonstrates how he used a garden rake to detect landmines before official clearance started

- Community members do not have confidence in some specific parts of the previously mined areas (e.g. in Sha'san, most of the area is being used, but one gully is still held to be suspect, even though the community has signed to say that it is clear and there have been no casualties).
- Communities are using the land for some purposes (e.g. unsupervised grazing), but are afraid to enter it themselves, and in particular fear to cultivate the land as they feel that there are still landmines at depths lower than the standard clearance depth of 20cm. Mazlb and Al-Sharaf communities in Dhamar Governorate are good examples. They insist that, over time, the soil

has moved and gradually covered the mines so that they cannot be easily detected.

- Some sections of the community (particularly women) were less involved with the demining teams and with the formal certification of clearance, and therefore remain unaware, or unconvinced, that areas have been cleared.



Crop terraces such as these in Al-Sharaf (Dhamar governorate) have not been cultivated after official clearance as farmers believe that there may still be mines covered by soil below the standard clearance depth of 20cms

From the perspective of YEMAC (and all demining programmes), the absence of death and injury after demining, constitutes compelling evidence that risks are removed. However, factors influencing community perception of risk are often different. Local judgements of risk and the behaviour which follows from these, are not based solely on understanding such evidence, but are influenced by complex emotional responses.

One model of perception of risks looks at risk in two dimensions – the extent of **dread** and the extent of **knowledge**, combining both the emotional and the information dimensions.¹⁶ It notes that where dread is high and knowledge is low then the overall risk is perceived as very high.

In the case of mines, the ‘dread’ dimension includes fear of injury and fatalities from mine accidents which are seen as particularly threatening to children. People talked of feeling permanently frightened and concerned about the safety of children before demining. **A reduction in this general fear and the expression of a sense of relief was a notable outcome of the demining activity.**

However, it was the knowledge dimension that was frequently cited in discussions about use of cleared assets, particularly uncertainty over exactly which areas are cleared and the ‘unknown’ potential presence of mines deep in the soil. There were

¹⁶ Dread is assessed according to whether the phenomena is uncontrollable and feared, has global catastrophic potential, fatal consequences, inequitable distribution of risks and benefits, high risk to future generations, is not easily reduced, risks increase, and is involuntary. Knowledge refers to whether risks are known or unknown. i.e. the phenomenon is not observable, is unknown to those exposed, is a new risk, delayed in manifestation, unknown to science. (Fischhoff et al 1978)

gender differences in the expression of these concerns; women and girls expressing more fear and uncertainty than men and boys.¹⁷ Women's access to information through public meetings and written material was also less than men's.

The frequent expression of these concerns is unsurprising given the tendency in situations of high concern for negative information to be emphasised rather than positive. However, it is important that YEMAC addresses the concerns of villagers by further exploring which are the most effective ways of communicating visibly and demonstrably, particularly to women and girls, that specific areas are cleared. Trust is a key factor in influencing perception of risk and how communication of information is actually 'heard'. YEMAC has a great advantage in this regard since it has credibility and respect, and might capitalise more on its solid reputation.

A.2. Assets affected by mine clearance

Grazing

Many mined areas are on hillsides as they protected military camps on the tops of mountains. Before mining, this land was mainly rangeland used for grazing sheep, goats and cattle. Clearing the land has returned this asset to the community, often in improved condition due to the long fallow it has enjoyed. Grazing land benefits those with livestock, those who work for livestock owners, and those who use locally-produced livestock products.



Children and women are often the main shepherds for grazing animals, and therefore those most affected by the clearance of mines from grazing land

Livestock owning families can be as little as 5% of the total families in a community, or up to 100% (as with the nomadic inhabitants of Ofeini in Abyan Governorate). The safety of women and children has been particularly enhanced by clearance, as they are often the shepherds caring for the livestock. In some areas where there is less confidence in the safety of the land, the livestock are taken to the area, and then allowed to roam freely without the shepherd. Before clearance this sometimes led to

¹⁷ A finding noted in other research, e.g. Flynn et al, 1994.

livestock casualties. In Joab, one farmer described how he lost his entire flock in one explosion (25 goats, 10 sheep and 2 cows). Although this was 15 years ago, he still hasn't been able to recover sufficient wealth to buy a single head of livestock.

In some villages, women are constrained from grazing and collecting fuelwood by the presence of army camps on the hillsides. Sha'b in Sana'a governorate is an example.

Much grazing land belongs to the village as common property, especially in the northern governorates. In this case any family from the village can put as many stock as they wish onto the area. In a few villages there is concern that completely free access might lead to overstocking, with consequent soil erosion and degradation of the range quality. Traditional natural resource management practices, such as *Hema*, are being considered in some villages that have strong, concerned leadership (e.g. Bait 'Oqab).

The collective financial value from grazing to the village as a whole was difficult to assess accurately as people were reluctant to divulge the exact number of livestock they owned. However, as an illustration, in Sha'b (Sana'a governorate) about 75% of households (250 households) own livestock. They graze the hillsides every day with an estimated value of the grazing to each family of 200 YR per day (calculated on what they would otherwise have had to pay for bought fodder). The value of the grazing on cleared land is thus 18 million YR per year (approximately \$90,000).¹⁸ In Al-Masharih, the net income is also substantial, as shown in Box 1 below:

Textbox 1 - Village income from herding in Al-Masharih, Al-Dhale governorate

Number of households with livestock = 240
 Daily value per household of grazing = 50 YR
 Annual value of grazing to Al-Masharih and neighbouring village = 8,760,000
 Additional grazing 4 times per month by third neighbouring village = 1,728,000 YR
Total return to the grazing by the three villages = 10,368,000 YR per year (approximately \$51,840)

In the desert areas in the south (e.g. Amran in Aden governorate and Ofeini in Abyan governorate), nomads graze their livestock on previously mined land, and for those communities they are the main beneficiaries of demining.

¹⁸ A more complete analysis of the estimated costs and benefits of demining in various communities is provided in Chapter F.



Nomads use Sesbania and other desert shrubs to raise camels for meat and milk

In other communities in the south, grazing areas are important to the whole village. In some instances (e.g. Al Farsi, Aden governorate) this facility has been taken away by government developments on previous communal grazing land, while in other villages (e.g. Habel Al-Braq in Abyan governorate) the grazing land is still intact and represents a major resource for nomads and settled families in the community, and is even shared with other villages.

Fuel wood

Wood is still the main cooking fuel in rural areas, although animal dung cakes and butane gas are also used. The cost of wood is that of the labour to collect it, often the job of women and children. The long period of enforced fallow favoured tree growth in mined areas, and has thus provided a rich resource in some areas (particularly the mid-altitude areas such as Al-Dhale Governorate). In communal areas, all families have access to the resource.

The value of fuelwood to some communities is impressive. In Sha'b in Sana'a governorate for example, 250 families depend on wood as their main fuel at a value of 30,000 YR per family per year, giving a total value to the community of **7.5 million YR per year** (about \$37,500).



Fuel wood is collected from grazing areas. All members of the community benefit from these areas being made safe and accessible by landmine clearance

Fodder

Cut tree or grass fodder can represent a seasonally important resource (e.g. tree browse in the dry season), and a substantial part of the cost of raising livestock. Without access to areas where fodder can be cut, families have to buy in fodder such as alfalfa, which is very costly. Cleared areas provide good sources of fodder.

Stone

Several surveyed villages quarry stone from cleared areas for construction of houses and other buildings (usually within the village). A particular example is Bait Al-Ra'ae in Ibb governorate, see Textbox 2 below.

Textbox 2 - Income from stone from cleared area in Bait Al Ra'ae, Ibb governorate

Approximately two houses are built in the village per year (people build their houses over a number of years as resources are accumulated). Approximately half the stone used comes from the cleared area (some - of different colours and textures - from outside the village). Thus the following calculation is made on the basis of the building of the equivalent of one house per year.

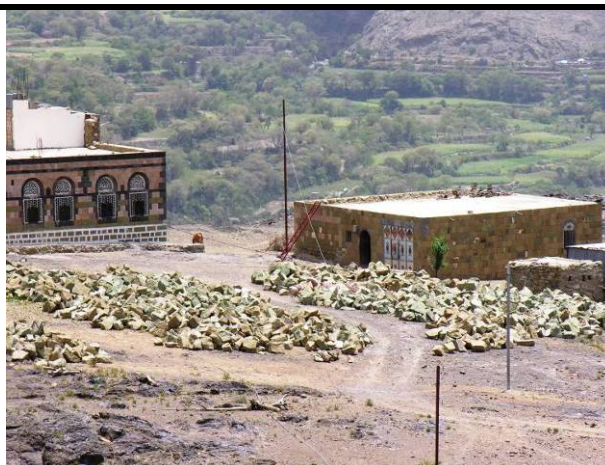
To build a medium sized house requires about 3000 stones. This is equivalent to 100 tractor loads, each of which costs 10,000 YR. Thus the value of the stone extracted is 1 million YR.

Five men at 800 YR per day can extract 15 tractor loads in one day. Thus the labour cost for 100 loads is 26,666 YR. Add to that fuel, tractor hire, hammers etc, and the costs rise to a total of about 40,000 YR.

The net income is therefore $1,000,000 - 40,000 = 960,000$ YR (about \$4800)

However, if that stone had been imported from outside the village, it would have cost 5 million YR. Therefore, by using local resources, they have saved around 4 million YR (\$20,000).

(Note that the value of local stone, and the quantities needed for building a house are consistent with information obtained from Joab village in Sana'a governorate).



Stone worth about 1,000,000 YR from the cleared area in Bait Al Ra'ae ready for building a new house.

Crop production

Crop production is important for income generation and food security in all villages apart from peri-urban villages such as Am-Jarba in Lahij governorate, nomadic communities such as Ofeini in Abyan governorate and fishing villages such as Amran and Al-Farsi in Aden governorate. The impacts of demining on crop production for each of the villages in the survey are summarised in Table 4.

Table 4 - Impact of demining on crop production

Governorate / community	Impact on crop production
Sana'a	
Sha'san	Cleared land provides runoff water for qat, fruit trees and food crops
Joab	Mine clearance gives better access to rainfed crop areas.
Bait 'Oqab	New terraces being established on cleared land for qat and grapes (by those land-owners able to afford the cost of bulldozer hire);
Al-Jafinah (see Box 5)	Returns from planting grapes and qat on approx 1500 libna demined areas by 30 landowning households. Potential net annual income from demined area (grapes /qat) 15,000,000 YR (about \$75,000). Increase in land values of demined area from 1000 YR to 50,000 YR per libna (undeveloped land).
Sha'b	Water run-off from cleared hillsides channelled to downstream lands for irrigation.
Dhamar	
Mazlb	Land not used for crops, as people think mines are still present at deeper levels.
Al-Sharaf	Land is not used for cropping as there is no feeling of security so far.
Ibb	
Bait Al-Ra'ae	Agricultural terraces not being used, because of a lack of confidence in their safety, and the lack of irrigation water
Bait Al-Azani	Very little of the demined area is agricultural
Al-Soobah	Agricultural land freed, but its use is limited because of a lack of irrigation water
Al-Dhale	
Bait Al-Shawki	Insufficient resources to rehabilitate the small proportion of cleared land that is potentially arable

Al-Qafleh (see Box 4)	20 new qat fields have been established on cleared land, with a net income of approximately 7.4 million YR (\$37,000) per year
Habil Al-Abdi	Cleared land is not cropping land
Al-Masharih (see Box 5)	Agriculture - cereals and qat (by 75% of households on 25% of demined area). Return to cereals for the 80 households is 1,440,000 YR per year (\$7200) while that for qat is 18 million YR per year (\$90,000).
Aden	
Beer Ahmed	Much of the cleared land is good agricultural land due to the presence of irrigation water. Some is used by local and immigrant farmers for intensive crop production. Other agricultural land is used by government for housing and other purposes.
Al-Farsi	No crop production
Al-Heswa	Cultivation of crops (fodder production) – by 20 families
Amran	Lack of water constrains arable production
Mas'abain	Land disputes and speculation limit agricultural production
Lahij	
Am-Jarba	No farmers
Al-Khudad	30% of families practice crop production. Income of one family from the cleared land is 765,000 YR per year from livestock and 5,000 YR (net of labour and costs) for cotton (about \$3,850 combined). Problems of disputed land ownership
Beer Naser	Land disputes. Agricultural land being lost to housing
Abyan	
Ofeini	No crop production
Amsara	Demined land is grazing land, not for crop production
Habeel Al-Braq	No crop production

In the highlands, qat, grapes and fruit trees grow where there is irrigation, and cereals and pulses where there is water harvesting or sufficient rainfall. Cereals (wheat, barley and sorghum in the highlands, maize and sorghum at mid-altitude and maize, sorghum and millets in the lowlands) are grown to feed the family, and are of strategic, as much as economic importance. They are sometimes irrigated, but more often rely on rainfall, often supplemented by water that is harvested from hillsides through small channels that are privately owned and maintained. This water can originate from minefields, and is an important resource that has been made more available due to clearance which allows improved access for maintenance of the channels.



These small crop terraces in Joab, Sana'a governorate were in a mined area. Local landowners risked their lives to clear the land

and put a vehicle track to the terraces. The area above the terraces was eventually cleared by YEMAC.

The need to reclaim private cropland was one of the main reasons why villagers demined land by themselves (sometimes using primitive mine detection equipment, such as garden rakes). The risks were high, but then so were the returns.

The highest net return comes from qat, which is one of the few crops that is profitable in those areas such as Qa'tabah District in Al-Dhale where water is very expensive. Box 3 below shows the returns to qat production in newly established terraces on cleared land in Al- Qafleh (Al- Dhale governorate).

Textbox 3 - Qat Production in Al-Qafleh

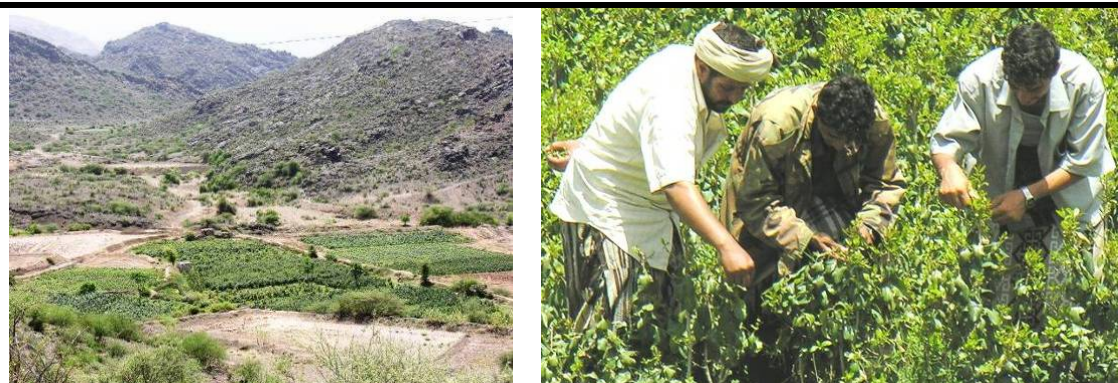
Irrigation for Qat is from wells. The time to irrigate a *girba* is 20 hours.
 The cost of irrigation per hour is 1500 YR. Thus the cost of water is 300,000 YR annually.
 Cost of labour = 30,000 YR annually.
 Fertilizers and pesticides = 200,000- 250,000 YR annually.
 Cost of labour for picking qat= 100,000 YR annually

Total costs = 630,000 YR

The total income from one *girba* of qat is 1,000,000 YR annually.

Thus the profit (net income) from one *girba* is 370,000 YR.

There are 20 *girba* in the demined area, with a total annual profit of 7.4 million YR (about \$37,000, but much less in bad years).



These terraces in Al-Qafleh have been established since the land was cleared of mines, and can be said to be a direct consequence of clearance. Although the landowners are the main beneficiaries, those who pick the crop, transport it and market it also benefit. The whole rural economy benefits from the cash circulating in the rural areas, and there is a booming construction industry building houses for rich landowners.

One village where mines have been cleared from good quality, irrigated crop land is Beer Ahmed in Aden governorate. The land in that village used to belong to the Sultan, but became government land after the revolution. The distribution of the land to individuals is not transparent in Beer Ahmed, or in many other villages in the south (Mas'abain in Aden governorate is an extreme example where local people feel that land is being confiscated by force by one powerful person). In these villages, the

government, powerful individuals and outsiders with money seem to be the main benefactors from the clearance of the land rather than the village as a whole.



Two farmers on newly cleared and cultivated land in Beer Ahmed (Aden governorate). The farmer on the right is a recent immigrant to the village from the north, while the second farmer is a native of the village. They both expect to grow vegetables and other crops for the urban market in Aden city.

In the north (e.g. Bait 'Oqab in Sana'a governorate) there is usually clear land ownership of arable land. The photograph below demonstrates that, with sufficient capital, new terraces can quickly be made on cleared land (in this case for qat production). Bulldozer hire is 8000YR/hour, so poorer members of the community cannot invest in this way without credit, which is difficult to obtain and comes with very stringent conditions.



A bulldozer makes new terraces for qat in Bait 'Oqab (Sana'a governorate). At 8000 YR per hour, this method is too expensive for all but the better-off landowners

In the mid-altitude governorate of Al-Dhale, the cropping potential is high. Textbox 4 gives some of the returns to cereals and qat in the village of Al-Masharih.

Textbox 4 - Estimates of crop production returns for Al-Masharih, Al-Dhale governorate

a) Cereals cultivation

Households cultivating cereals = 80 households

Average yield = 15 kadah. Sale price per kadah = 1800 YR

Total gross income = 2,160,000 YR

Production costs = 720,000 YR

Net income from cereals = 1,440,000 for the village as a whole (about \$7,200)

b) Qat cultivation

Number of households cultivating qat = 240

Average gross income per household = 300,000 YR

Total gross income for all families = 36,000,000 YR

Total annual costs of production (labour, irrigation, chemicals) = 18,000,000

Net income for the village from qat = 18,000,000 YR (about \$90,000)

The benefits from cultivating cleared land in Al-Jafinah (Sana'a governorate) are illustrated in Textbox 5 below:

Textbox 5 - Benefits from cultivating cleared land in Al-Jafinah, Sana'a governorate

30 families have benefited from actually cultivating the cleared land. Not all these families are living in Al-Jafinah – the land was owned and inherited since long ago and the owners currently live in various communities. The land actually planted is approximately 5,000 *libna*.¹⁹ The majority of this was cleared land, although two small sections were previously cultivated.

The cost of the land BEFORE demining was 1000 YR per *libna*, but after demining it increased to 50,000 YR.

The cost of developing 1 *libna* is around 50,000 YR for qat and 65-70,000 YR for grapes. Grapes are more expensive to establish than qat because of the need for supports and trellising. Cuttings were taken from their own fields. Both grapes and qat begin to yield in the third year after establishment, coming into full production within five years.

The selling price of the developed land is around 150,000 YR per *libna*.

¹⁹ 1 Libna = 44 m²

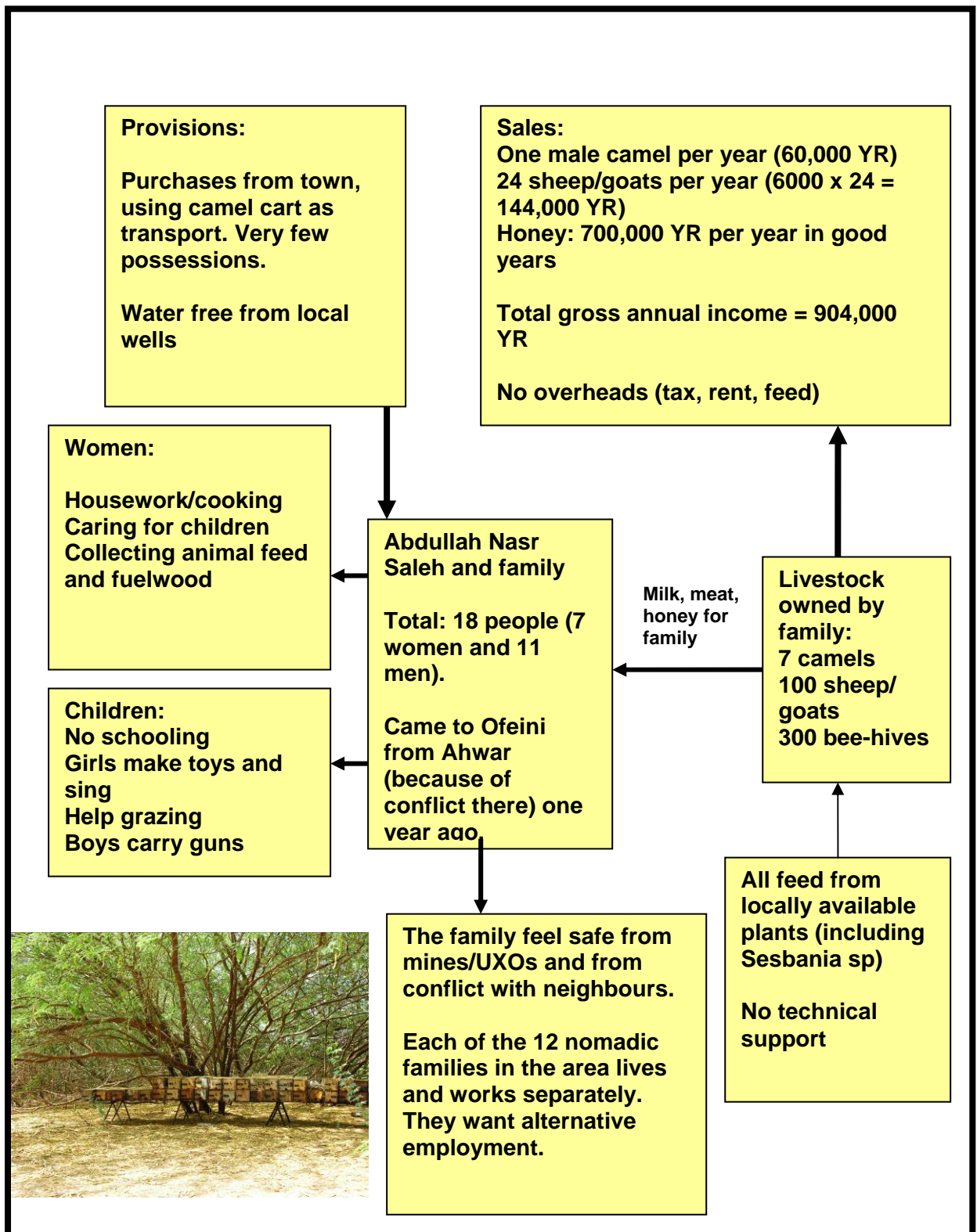
Production costs (mainly irrigation) are higher for qat than for grapes. Diesel costs for irrigation were reported as high and rising; 10,000 YR per year per *libna* for qat and 5,000 YR for grapes. One *libna* of grapes can provide a gross annual income of 10,000 YR and 1 *libna* of qat, 20,000 YR. Of the annual gross income, around 80% is needed to cover production costs, leaving a 20%-30% net margin; however this is also needed to cover capital maintenance and replacement.

Net annual income per *libna* is around 2,000 YR for grapes and 4,000 YR for qat.

Bee-keeping

Bees can use mined land without hindrance, but commercial production of honey requires that the hives are well located close to the source of nectar and pollen. This is assisted by clearance allowing better access to meliferous trees and shrubs. Some communities are making excellent incomes from bees, as demonstrated in Figure 3, which shows the income (dominated by honey production) gained by one nomadic family living in Ofeini in Abyan governorate.

Figure 3 - Livelihood diagram for Abdullah Nasr Saleh and family, nomads living in Ofeini, Abyan governorate, Yemen. 25th May 2006



Roads and paths

Minefields frequently blocked the most convenient access to land, neighbouring villages, the sea shore or parts of the community. In Beer Ahmed a new tarmac road has been built in previously mined land from the village to Lahij, and in Bait Al-Azani (Ibb governorate) the main road to the District capital at Nadera was cleared of mines. In Al-Heswa (Aden governorate), the fishermen can now take a much shorter route to the sea because of demining.

However, in Bait Al-Shawki in Al-Dhale governorate, the most convenient road to Damt is still dangerous due to mines outside the village area. In other cases (such as Mazlb in Dhamar governorate), local people do not have sufficient confidence in the safety of cleared land to start using paths across it, and still prefer to walk around the mined area. In Am-Jarba near Lahij town, the minefield used to be in the middle of a built-up urban area. Demining has allowed pedestrian and vehicular traffic to move safely through the area.



The demined area in Am-Jarba (Lahij governorate) clearly showing tracks made by people and vehicles crossing the area

Buildings (for community, private individuals and government)

Clearing land has opened up the potential for building on that land. Instances where this has already happened include Beer Ahmed (Aden governorate), where private housing is being built for sale, a government housing scheme is being established as part of the Aden Free Zone development, and the University of Aden is establishing a new campus. Similarly in Al-Farsi (Aden governorate), the Aden Refinery Company is building 2,600 houses for employees at an estimated cost of \$11 million (\$6 million for construction and \$5 million for facilities) next to a cleared minefield.

Building is not always a positive experience, as this account from Beer Naser (Lahij governorate) shows: “After demining, the area witnessed an intensive investment in construction of houses and business premises such as warehouses, stores, fenced areas and complexes. Our lives changed forever. Instead of the rural type of living, we found ourselves in the centre of an urban centre and could not open our doors any

more. Range lands vanished and were transferred into construction sites. Land disputes erupted and cases of killing and shooting became daily issues”.



The original fishing village of Al-Farsi in Aden governorate has been surrounded by the foundations of 2,600 new houses to be built for the employees of the Aden Refinery Company at a cost of around US\$11 million

Recreation

Clearing land has allowed an improvement in recreation, particularly for children who can now play in greater safety to the relief of their mothers.

Overview of change in asset status

The above discussion has covered the range of assets which were affected by the presence of mines, resulting in loss of production and income. Figures 4 and 5 below show the number of surveyed villages which reported significantly or moderately affected assets and the extent to which these assets were brought into productive use after demining.

Figure 4 - Productive losses due to mines.

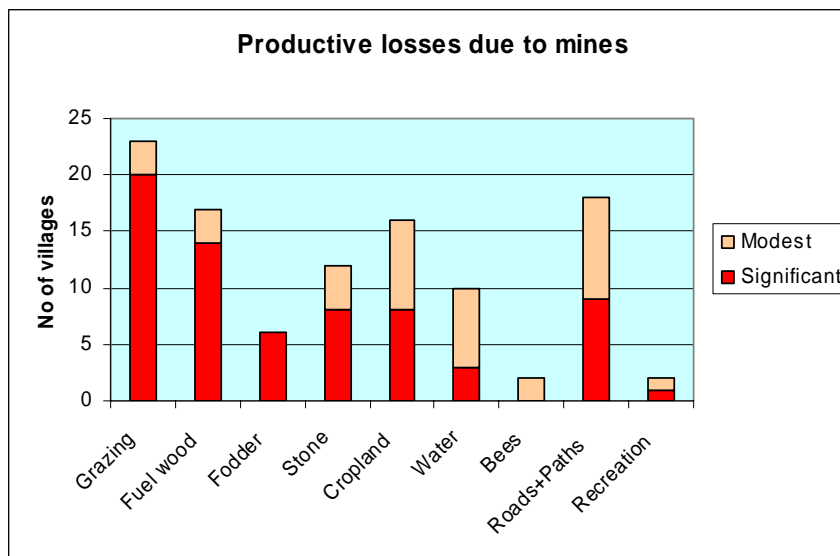
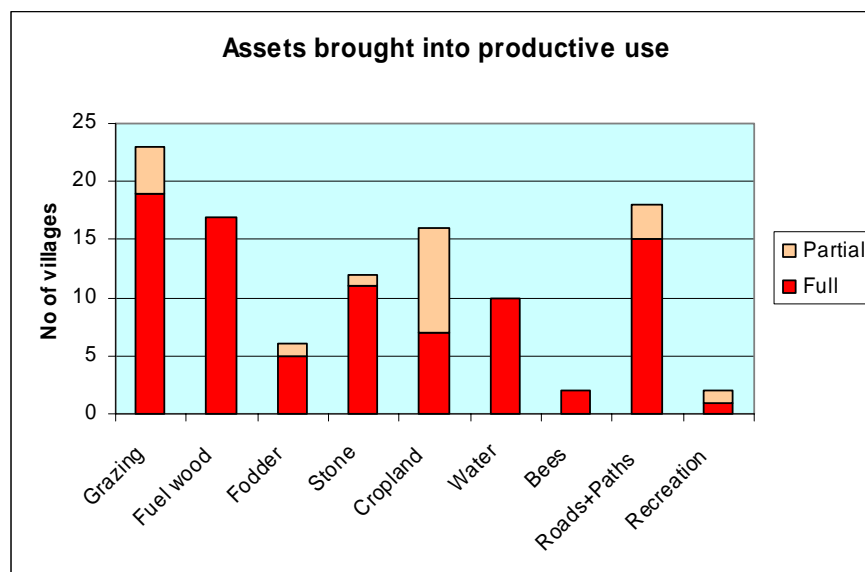


Figure 5 - Assets brought into productive use after demining**Notes:**

The partial use of cropland is attributable in some cases to fear of using the land and in others, to low rainfall, resource constraints or land disputes.

Access to irrigation water sources and water harvesting structures was addressed, but problems of water supply remain in many villages (see sections B2 and B3).

A.3. Support to survivors

The Yemeni Landmine/UXO Victim Assistance Programme was established in 1999 as an integral part of YEMAC operations to identify and assist survivors medically and with their re-integration into society. The Mid-Term Evaluation of YEMAC²⁰ found this Programme to be “one of the most advanced in the world”, with some 1200 victims having been identified and 286 treated medically between 2001 and Feb 2005. YEMAC has a plan to cover all areas in Yemen. In addition, the excellent training centre in Sana’a has assisted men and women survivors to learn new trades so that they can be less dependent on their families and outside assistance, and have greater pride in their own achievements as contributors to society.

Our own results (Table 5) suggest that although the Assistance Programme is doing some excellent work, its coverage to date is limited. Survivors were interviewed in almost all the 25 villages surveyed, as reported in Annex 11. Very few had received substantial help apart from emergency medical care (which they had to pay for in most instances).

Table 5 - Support from YEMAC to survivors in surveyed villages

Governorate /	Type of support reported by survivors
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²⁰ GICHD. 2005. Mid-term outcome evaluation for strengthening national capacity for mine action in Yemen – Phase II UNDP Project YEM/03/010/01/99. Geneva: GICHD

community	
Sana'a	
Sha'san	YEMAC promised compensation ²¹ , but nothing forthcoming
Joab	No support from YEMAC. Women survivors had no knowledge of the survivors' association
Bait 'Oqab	No support from YEMAC
Al-Jafinah	No support from YEMAC.
Sha'b	No survivors met.
Dhamar	
Mazlb	No survivors in village
Al-Sharaf	No support to survivors. The survivor could not read the mine information materials she was given as she is illiterate
Ibb	
Bait Al-Ra'ae	No survivors interviewed
Bait Al-Azani	No support from YEMAC to survivors
Al-Soobah	Safe movement
Al Dhale	
Bait Al-Shawki	Support for artificial limbs, tailoring training and start-up of butane gas business
Al-Qafleh	No support given
Habil Al-Abdi	Artificial leg (1) No support received (2 &3)
Al-Masharih	No support received (twins) Artificial limb was too heavy. (Mariam) Family receives 1000 YR/month from Social Welfare Fund
Aden	
Beer Ahmed	Income from social fund of 3000YR/month
Al-Farsi	No support, no knowledge of survivors association.
Al-Heswa	No support given
Amran	No support given
Mas'abain	No survivors in the village
Lahij	
Am-Jarba	Hospital care (paid for by father of survivor)
Al-Khudad	No survivors
Beer Naser	No survivors in village
Abyan	
Ofeini	No victims in the community
Amsara	No landmine survivors
Habeel Al-Braq	No survivors in village

There were some excellent exceptions, such as the woman from Bait Al Shawki (Al-Dhale governorate) who has completed a tailoring course at the Yemeni Landmine/UXO Victim Assistance Programme training centre and is now employed in an executive capacity by that Centre. Another survivor in the same village has been supported by the Centre with a capital grant to purchase 50 Butane Gas cylinders as the start of a sustainable income-generating activity.

²¹ There is no policy of compensation in YEMAC or the government. (Pers. Comm. YEMAC). The father of the survivor in Am-Jarba was reimbursed by NMAC.

Most survivors had not heard of the Yemeni Landmine/UXO Victim Assistance Programme, and are managing the best they can without adequate medical or psychological support. This suggests that there needs to be greater awareness created of the Programme and its work, and greater donor/government support for the Programme so that it can respond to the demands that would result from such an awareness creation activity²².

Some cases were particularly wretched, such as those in Al-Masharih. One woman (see photo below) lost a leg and hand, while a man (see photo below) sustained injuries to the head and stomach. He is emotionally disturbed, and has to be restrained by leg shackles. As in many cases, the families of these victims have also suffered, having had to look after them for the last 25 years. The family of the woman receives 1000 YR per month from the Social Welfare Fund.



Survivors from Al-Masharih (Al Dhale governorate). They were injured about 20 years ago, and have had to be looked after by their families.

The account of Fathia Abdulla from Joab in Sana'a governorate is fairly typical:

“I was herding my animals on Herwe hill 13 years ago. The mine exploded among the animals. Four died and I was injured in my leg. I still suffer and feel pain when I walk or stand on it. My body was badly affected and deformed as a result of the explosion. After the incident, nobody helped. When I grew up I got married to a person who was much older than me. Nobody wanted to get married to an injured woman. I do not know of any organization helping mine victims. Nobody provided me with any assistance”

Some survivors come from fairly well-off families, or have a strong mental attitude that enables them to live a fairly normal life (Textbox 6 below). Others become depressed, or are too poor to be able to travel to hospital for medical care, or pay for artificial limbs.

Women can be particularly affected by disfigurement, which can condemn them to being unmarried throughout their life.

²² YEMAC notes that it costs \$150,000 per year to address the needs of 100 survivors.

Textbox 6 - Case study of Aliah Ali Saleh Mohsen – a divorced female survivor from Sha’san, Sana’a governorate

Aliah was 15-years old when she was collecting fuel wood on a hillside which was later demined. She heard a sudden explosion. When she recovered she realized that she lost her left leg. She did not faint. She realized what was going on. People asked her to drink some water. They believe drinking water helps to prevent the victim from dying. She was rushed to the Al-Thawra Hospital in Sana’a. Aliah also had burns in different parts of her body because her clothes caught fire after the explosion. The burns were severe and complicated her situation further. Upon arrival at the hospital, Aliah saw several more severe cases than her case. She thanked God for the harm she suffered from. “It could have been worse”, she said. Her father played a vital role in helping her recover. He took care of all the costs such as medical treatments, purchase of an artificial leg and repair of the artificial leg when repair is required. Aliah’s father used to warn her not to go to that part of the hill to collect fuel wood. But she ignored the warning. That is why she was to blame for the incident.

The only external support she got was treatment from the hospital and 10 YR from President Al-Hamdy. No training was given to her. The victim knew about “YEMAC”. She said that they came to her six months ago and promised compensation such as an artificial leg. She told them that she wants one of the red cars as compensation for her leg. “That was a joke”, she said. So far she has received no compensation.

Aliah has created a small savings group. She collected 200,000 YR when her turn came. With that money she was able to launch a small business in the village. She expanded her buying and selling in the village to the extent that she was able to construct a small and beautiful house. Her nephew helped her. She sold all her gold and generated 200,000 YR. She deposited this amount in the NCB as fixed deposit to benefit from the interest rate generated. However, the Bank is now closed because of bankruptcy.

Aliah is surviving with a high morale and good spirit for the past 26 years.

A.4. Gender roles and exposure to mine risks

Men, women and children have different roles and responsibilities in their social, productive and domestic lives which influence their exposure to the risks from land mines and how they are affected by them. Thus, in exploring the impact of demining on women and children, their specific patterns of work and use of assets was investigated. In addition, in discussions of development priorities, the influence of social and cultural norms was taken into account; for example, those relating to interaction with ‘outsiders’, since these influence women’s access to information and ability to participate.

UN Gender guidelines for mine action programmes²³ pose important questions to guide planning and implementation of “more efficient, effective and culturally appropriate mine action programmes”. They relate to four of the main areas of mine action – clearance, mine risk education, victim assistance and advocacy. For example, they ask whether information collection was comprehensive and representative; whether the process for prioritisation of areas for clearance takes into account the needs of adults and children and men and women; whether information was collected from men and women on land rights and projected use of cleared land and whether there is equal access to benefits and opportunities. They suggest that mine risk education (MRE) should ensure all individuals have access to culturally appropriate forms of MRE that addresses the activities putting them at risk. The guidelines also cover access to emergency and other care for those injured.

The LIS study, 2000, gives a picture of the incidence of mine related accidents by gender and age and the activity that put them at risk. Twenty-four percent of the victims of landmines were female (although it is likely there was some underreporting). Children under 15 constituted 37% of the casualties; compared with young adults aged 15-30 (33%), or those over 30 years old (30%). Just over a quarter of the child victims were girls. The most risky activity for both sexes was herding, which also had the largest number of fatalities. Other than herding, the pattern of accidents for women and girls includes those suffered while carrying out household work and collecting food and water, whereas men and boys have more accidents while tampering with mines, farming and other unspecified activities.

The discussions with women covered an exploration of the different responsibilities of men, women and children, with a view to understanding how their respective activities related to mine risks. While the degree of participation of men and women in agriculture varies from region to region and village to village, women are heavily involved in the basic activities of looking after livestock, planting, weeding, thinning, manuring crops, harvesting, processing and storage. Crop production and livestock rearing are the main productive activities of women.

Men are responsible for land preparation; carrying out the ploughing using animals or tractors. In qat producing areas, their involvement in agriculture is higher; indeed in some areas the women reported that qat cultivation was the sole responsibility of men (Al-Qafleh, Habil Al Abdi). Men, women and children work together in the more labour intensive activities associated with irrigated production. In remote areas of rainfed agriculture, such as Al-Sharaf and Mazlb, women do more of the agricultural tasks since there is higher male out-migration for wage labour.

Herding is carried out by girls, boys and women. Women collect forage, feed and water animals (cows) and milk cows. Where the community is specialised in animal rearing or are semi-nomadic, men play a great role in livestock management (Ofeini). Men also manage bee hives.

²³ Gender Guidelines for Mine Action Programmes. United Nations Mine Action Service, February 2005.

Household tasks are carried out by women and girls and in some areas, boys help in collection of water for the household. Women and girls are responsible for collection of fuelwood, for preparation of meals; for looking after children and washing clothes.

The gender and age distribution of these tasks is consistent with the patterns of casualties.

Table 6 - Gender Division of labour in 3 villages.

Type of work	Al-Sharaf (Cereal crop)	Bait Al-Azani (Irrigated cereal and Qat)	Habil Al-Abdi (Irrigated cereal and Qat)
Remove stones	Women		
Plough	Men		Men, boys or hired labour
Break clods	Women		
Make lines	Men		
Manure	Women	Women and men	
Fertiliser application		Men and women	Men,
Sow/planting	Women	Women	Men, boys or hired labour
Make bunds to trap run off or irrigation water	Women	Men	Men or hired labour
Thinning	Women		
Weeding	Women	Women	
Spraying		Men	Men and boys
Irrigation		Men	Men and boys
Guarding crops (qat)		Men (overnight)	Men
Harvesting	Women	Men and women (hired labour or machine)	Women or hired labour (cereals); Boys (qat)
Threshing	Women	Women	Women or hired labour
Winnowing	Women, girls, boys		
Cleaning and storage of crops	Women	Women	Women or hired labour
Delivering to market			Men and boys
Herding/grazing livestock	Women	Girls and boys	Boys and girls
Collecting grasses/feeding animals	Women	Women	Women or hired labour
Watering animals	Women	Women	
Milking	Women	Women	Women
Fetch drinking water	Women, girls	Boys and girls	Boys (with donkey)
Collecting firewood		Women	Girls
Cooking and general housework	Women and girls	Women and girls	Women and girls

In some villages, labour is hired for some of the agricultural tasks, particularly weeding, harvesting and herding animals. In areas of intensive agriculture, orchards and vegetable production provide wage labour for men and women (e.g. Habeel Al-Braq; Al- Khudad). Boys and girls also undertake paid labour when out of school. The wages of hired agricultural labour range from 700-1000 YR per day. Agricultural labourers are often drawn from the 'Akhdam', a marginal and social excluded group, originally of African origin, which constitutes the country's largest and poorest minority. For example, in Al-Masharih village they are employed as herders and agricultural workers.

In villages where agricultural land is limited and rates of landlessness are higher, the livelihood strategies are different. Alternatives for men include sharecropping or alternative employment in the military, in construction, or as drivers of cars, tractors or trucks. Some travel further afield for labour, for example to Aden, Sana'a or Saudi Arabia. In some coastal communities, fishing plays an important part in the livelihoods of households (Al Farsi, Al Heswa, Amran).

A.5. Women's perceptions of impacts of demining

Meetings with women were held in 23 of the 25 villages, with between six and 20 women attending each meeting. Efforts were made to ensure all age groups were represented and to include women from poorer households. The discussion explored women's perceptions of the changes brought about by YEMAC's work, starting with the situation before demining and the current status. The discussion then focused on the assets affected by mines and released by demining, examining whether the assets had been brought into use, by whom and with what economic and social benefits. The women's knowledge of and involvement in the different activities of YEMAC – survey, clearance, education/awareness, victim support – was explored. Finally, women's ideas for further developing the freed assets and other potential development initiatives for their village were invited.

Mine impacts and strategies of adjustment

Women gave detailed descriptions of the fear created by mines, the stories of friends and relatives who had been killed or injured in mine related accidents, the livelihood impacts of the mines and the strategies they adopted to minimise risk.

The mining of agricultural land affected production of both food and cash crops;

“We lived with the mines in a permanently frightened state, and we were forced to buy the grain and other foods we needed instead of cultivating crops.” (Al Sharaf)

“After planting of mines we could not go to the wadi... areas planted with qat were planted with mines. Therefore, we were not able to enter qat plantations” (Al Masharih).

“The mines took areas out of cultivation. People who had other lands concentrated there; others had to buy cereals from the market” (Bait Al Azani)

The mining of rangeland affected animal grazing. In some villages, women stopped using rangeland for grazing and firewood collection altogether (e.g. Al-Masharih, Habel Al-Braq). This was possible where other range areas or fodder sources were available. In other villages, the rangelands were used with caution; herding practices changed and animals were driven into the mined area for unaccompanied grazing.

“We leave the livestock to go into these areas for herding and we monitor them from a distance. Although this was risky for animals, we managed to keep the animals by that way because of scarcity of clean (without mines) rangelands in the area”. (Mazlb).

“We used to let the animals enter the (mined) area and we watch them from a distance. We lost lots of animals because of mine explosions.” (Habil Al -Abdi)

“The herder used to send animals to the mined area and monitor them from a distance. Red signs were posted to show that the area is closed.” (Amran)

The mining of rangeland also created hazards for fuelwood collection. Women in several villages explained that, despite the expense, they had changed to using butane gas for cooking because of the dangers of accessing firewood.

“Most households in the village own gas stoves. This is mainly because parents were worried about the safety of their children in areas planted with mines. Therefore they gave up the use of fuel wood. Instead, they purchased gas stoves.” (Al- Qafleh)

However, it was noted that very poor households use only firewood (Bait Al-Azani); an example of how mine risks have a differential impact on the poor.

The mining of roads and tracks has important effects on constraining mobility, affected those needing to travel to and from the village and the provision of external services and access to resources outside (e.g. the seashore for fishing). In the latter case, people tried to walk on stones in the affected areas or take alternative longer roads to reach to coast. Villages where roads were mined with anti-tank mines were particularly affected. (e.g. Habil Al-Abdi; Al -Heswa, Beer Naser).

There were some examples of mining of other assets which disrupted social and cultural obligations. In Mas’abain village, mines were placed in the village cemetery.

“Despite the mines we used to bury our loved ones who die, in the same cemetery. This is because of the wishes of the loved ones - they want to be buried near their relatives.”

In some of the villages in the south of the country, people recounted the effects of the 1994 war, which in some cases forced them to flee their areas (Al-Khudad, Am-Jarba) or blocked access to water and grazing and made people dependent on external supplies (Amran, Al-Heswa).

“Because of the war, water pipes to houses were destroyed. We continued like this for about a year after the war. During this period, the nomads were fetching water from mined fields to the village across the coastal zone. Water cost 1000 YR for a barrel

per day... and one camel load (of fuelwood) cost 1200 YR, enough for 20 days for a household with 10 members.” (Amran)

Attempts to use land before demining were sometimes undertaken, with dangerous consequences; “A school was built in the mined area. An explosion killed four labourers around the school and a truck hit a mine. The wheels exploded but the driver escaped injury.” (Beer Naser)

Impacts of demining

One of the most valued benefits from demining expressed by women was the enhanced feeling of safety and security for themselves and their families. This was expressed in 12 of the 23 villages where discussions with women took place, including the three ‘high impact’ villages.

“The demining of the area is a great relief to us and to our children. We feel safe and calm after an ordeal, which affected our lives for the past decade.” (Al Jarba)

The absence of explosions since demining was an important confidence builder. Another important benefit emphasised was the saving of lives of innocent people.

However, the women in seven villages, including some of those who said they felt more secure, talked of the limitations to their confidence. They questioned whether the areas were really completely clear of mines. In several villages, they cited the depth of the mines (partly as a result of heavy rainfall and soil erosion) which they suspected put them beyond detection (e.g. Bait Al-Azani, Mazlb, Al- Sharaf).

“We are scared to cultivate our lands because we think that the equipment of the deminers cannot discover mines located deep in the soil. We discovered a mine two years ago while we were doing land preparation. We handed over the mine to the government. We are reluctant to go into the demined areas because of the feeling of insecurity.” (Mazlb)

In other villages, they admit that, although they know the mines have been cleared, they are still not confident enough to use the land. For some, mines have been such a long standing, ever-present fear that it is hard to imagine the possibility of complete demining.

“Despite the demining, we are still feeling scared going across the demined area. It could be that this feeling of fear has accumulated from before and will fade away with time.” (Am- Jarba)

“If all areas are demined, we will consider this a sign of departure of the devil.” (Sha’san)

There were some villages where the women said that parts of the village land had not yet been demined (e.g. Sha’b; Joab, Al-Soobah, Bait Al-Azani, Al- Sharaf).

For these reasons, the use of the demined resources was not as great as it could be.

“Most demined lands are not cultivated because we are not confident about clearing of mines.” (Sha’san)

“We would not go to Herwe hill for herding or fuelwood cutting even if there was gold in the hill. Our lives are not cheap. We are not sure that the area is demined completely. The fuel wood and fodder in Herwe are the best in quality, but we cannot go there because of mines. We do not believe that the area is completely demined.” (Joab)

Use of resources after demining

The general findings on assets released by demining have been discussed above. Here the particular perspectives of women are presented. Noteworthy was the willingness of women to discuss sensitive issues concerning control and access to the demined resources compared with the information shared in the more public domain of the men’s discussion groups. Their detailed contribution was on agricultural uses of land - particularly herding, forage and fuelwood collection.

Women said that demining had brought them freer and safer access to areas for grazing and fuelwood, benefiting those carrying out the herding and fuelwood collection, particularly women and children and families with livestock.

“Two months ago, we were told that this area was cleaned from mines. After this, we started feeling safe and secure. We started herding our animals without fear for the animals and for ourselves. After demining we allowed our children to herd animals on their own.” (Al- Qafleh)

“We were grazing sheep there before, but were losing a lot of animals before the clearance. Now we don’t lose sheep.” (Bait Al- Azani)

“After demining, every body returned to collecting fuel wood because of its quality and because of the high cost of butane gas.” (500 YR/container – Al- Qafleh)

The main factor limiting the benefit from demined grazing areas was identified as limited grass growth, attributed both to drought in the last few years and to the lack of water infiltration because terraces could not be repaired and maintained.

“Although the livestock have benefited from the increased grazing area, the benefit is not great as before the mines were laid. There were more grasses then. The damage to the structures and absence of cultivation has reduced water infiltration and so the grass growth is poor.” (Al- Sharaf)

Other benefits cited by women were the clearance of roads and paths which has improved communications for the community and restored access to the seashore for fishing villages (e.g. Al-Heswa); stone cutting and house construction. The cleared land also offered potential for leisure activities.

“After demining we found an area for recreation and dancing.” (Amran)

Ownership and access issues

The women's discussion groups indicated that in general, access to the demined grazing land was not problematic. Herding on range land was generally open without the landowner's permission, although there was one case where permission was required (Al-Khudad), and others where access for animals has been curtailed since demining (Mas'abain). Fuelwood and fodder collection is almost always permitted by landowners.

Rights to stone cutting belong to the landowners, but in several cases, they had given permission for other people to use (e.g. in Al-Soobah where 31 families benefited). Similarly, some landowners granted permission for house construction (Habil Al-Abdi).

There is a risk of emergence of disputes over land rights and land development decisions following demining, especially where the land has been unused for a long time. While these do not relate directly to demining, land clearance increases the value of land and creates the context for the emergence of dormant disputes or new competing claims. The situation is clearer in the Northern Governorates where private freehold accounts for 85% of the land and owner cultivation is the predominant system.²⁴ However, in the south, different phases of land reform and land nationalization have created a complex situation, especially since the decision to return the land confiscated in the 1970s to its former owners. Particular problems were identified in villages in Tuban district, Lahij governorate and in Al-Buraiqa in Aden governorate.

“After demining, we started facing problems related to land disputes. The value of land increased dramatically and original owners started coming back from outside the country and claiming the land. Sometimes the sons or grandsons appeared suddenly and submitted papers claiming the ownership of land in the area.” (Beer Naser)

The perceived problems related both to areas which are government land and areas claimed by private individuals.

“The demined area belongs to the government. The government established housing projects there. We do not benefit anything from the demined area.” (Al-Farsi)

“The villagers used to use this area for construction. However, there are still disputes between the village members and the government. The government wants to construct a big housing project for the academic staff of the education college. On the other hand, the village members want to have their own housing plans for expansion.” (Am-Jarba)

“The demined area was the property of the community. Now the land appeared to be the property of individuals who trade with the land. The land is being sold to anybody who pays. Some land was sold to people from outside the village.” (Al- Heswa)

²⁴ M. Rihan and M. Nasr, 2001.

For some villages, private investment in construction removed grazing resources and increased dependency on the market for purchased fodder, even forcing a reduction in animal numbers (Beer Naser), while in others it removed agricultural land and other amenities (Mas'abain).

“We are now squeezed among buildings and business premises. We do not have access to rangelands; neither can we collect fuel wood. Demining from our perception was of no value with respect to herding and fuel woodcutting. Those who benefited are the landowners especially, the Sheikh.” (Beer Naser)

Knowledge of mine locations and cleared areas

Discussions with women also explored their knowledge of the demining process including YEMAC and its activities; knowledge of which areas were demined and their participation in the handover process. Secondly, their actual information on mines and ERW through training and awareness events.

In nearly all the villages, women were aware that certain areas had been mined. The exception were women in some of the villages affected by the 1994 war where people were new to the areas or where mined areas were distant from the village (Ofeini; Amsara).

In several villages women reported that they, or others in their village, did not know which areas had been demined (Sha'san, Joab, Al-Sharaf, Bait Al-Azani, Bait Al-Ra'ae) nor, in some cases, were they informed that demining was taking place.

“There are people in the village who still do not know that the hill was demined.” (Sha'san)

“We did not [know] when the area was demined. However, when we started seeing soldiers going up and down the hill and we started seeing herders with their animals moving around in the area, we realized that the area was demined.” (Sha'b)

“The surveying teams first came about six years ago. Then they came two years ago with their equipment and they demined the area. They dug big holes all over the place and then left. We were not told whether the area was safe or not and we do not know where exactly the demined areas are.” (Al-Sharaf)

This arises from the lack of information reaching women on the demining process and their lack of interaction with the survey and clearance teams. This is particularly of concern as, without information, women still remain scared of mines and are not empowered to take informed decisions on the use of resources which could benefit them.

“We do not know from where the deminers come from. We think they must be representatives of the government. We pray for their safety because they do a good job and at the same time a dangerous job for us.” (Joab)

“There was fear and suspicion of the deminers. Some were considered kidnappers. Some [people] thought they were looking for diamonds. Later we heard from our

husbands that these people will demine the area surrounding the village.” (Al-Jafinah)

The fact that survey and demining teams are all male creates a social and cultural barrier to interaction, especially in villages where many of the village men are absent working outside.

“We realized the work of de-miners when we heard explosions. We understood later that these explosions were from collected mines. We couldn’t ask about the de-miners or from where they came.” (Mazlb)

“We did not interact with the demining teams or YEMAC. The deminers came and did their work without telling us where the demined areas are. It is not appropriate for women to go after men to ask for information.” (Al-Sharaf)

“We did not know why they were coming and going to and from the village. We did not know if the area was demined or not. Because whenever they come they do not talk to us or explain what they are doing in our village.” (Bait Al-Ra’ae)

In other villages, the women reported a very positive community response to the survey and demining teams. Some said their husbands and children helped the teams to identify the locations of the mines (e.g. Al- Qafleh).

“Two months ago a team from YEMAC came after the area was surveyed, and signs were put on the mined area. They demined the whole area in the middle of the village. When the demining team came to the village, we provided all kinds of help to make their mission a success.” (Am-Jarba)

In some villages, written information was provided, but because of high rates of illiteracy, not many women could understand it. The extent to which women were informed on the demining process was also dependent on social relationships within the village, the extent to which the village leaders took the initiative to encourage information sharing and the flow of information from men to women, girls and boys.

Women were aware through observation that the signs posted by the survey and clearance teams were significant, but not all knew the meanings.

“They used to dig in posts coloured red or white. We did not know what these colours mean. Therefore we kept on feeling scared from the areas planted with mines.” (Bait Al-Ra’ae)

“The demined areas are those areas which were painted with white paint. After demining the white signs were signals of demined fields ... The signs with red (x) used to scare us. These signs are warnings of mined areas.” (Mazlb)

In some cases, information increased concerns. The women in Al-Sharaf and Mazlb were worried that the de-miners equipment only detected mines to a depth of 20 cm, whereas they believe the mines in their area are deeper than this.

“What we need is to dig the land to a depth of two metres and demine the area. This is important in order to cultivate the land and grow crops in it.” (Mazlb)

“We heard that mines can remain in the soil for hundreds of years and still explode.” (Habil Al-Abdi)

Mine Awareness education

Mine awareness education appears to have been successfully focused on children, through organised campaigns in schools or by training teachers who then passed on the messages (e.g. Sha’san, Bait Al-Azani, Al-Heswa, Amran, Mas’abain, Beer Naser). School students helped with distribution of brochures. It was less clear how far women were involved in these sessions.

“We did not have any knowledge on mines except information given to our children at school.” (Sha’san)

In a few villages, the approach, according to the women, seems to have been very comprehensive.

“Mine awareness teams arrived in the village three years ago. They gave lectures and hung posters on the dangers of mines. They showed samples of different mines. They stressed that if anybody found a mine or a strange explosive device, he or she should report that immediately. The teachers cooperated with the awareness team in organizing additional lectures and house-to-house visits to show households the types of mines and their potential danger.” (Mas’abain)

“When deminers came, the entire village welcomed them and provided all the assistance required. We hung the poster in different parts of the village and organized meetings in school for public awareness on the dangers of mines.” (Beer Naser)

A.6. Children and the impacts of demining

The major topics for discussion with girls and boys were their sources of information on mines, the changes in their lives before and after demining, their perception of risks and security and how their behaviour is affected. Meetings with children were held in 22 villages; seven meetings with girls, six with boys and 14 with mixed groups. The age range was from eight to 15 years old. Many of the meetings were held in the village school.



Children talk about their knowledge and experience of mines during a meeting in the primary school, Bait Al-Azani Village.

Children's sources of information on mines

The most important sources of information for children concerning mined areas and dangers from mines, were from parents, relatives and other community members (mentioned in 16 villages). School teachers were also important, (mentioned in 10 villages). *"We are continuously warned at school and at home not to pick up any metal objects to play with."* (Sha'b village).

Children in 13 of the villages visited described lectures and demonstrations on mines given by teams visiting the village. The children were consistent in mentioning that they were:

- given information on mines through lectures from the mine awareness teams in school or in the village
- shown examples of different types and shapes of mines
- given pamphlets and posters to display around the village showing different types of mines
- warned against playing with strange objects *"We were told not to play with strange metallic objects or unknown materials."* (Boy, Al- Qafleh village)
- told to report any finding of a mine or similar object to the de-miners in the area, the military or a police station. Several examples were given by children who followed this advice. *"I was working in my father's field. I noticed an object while I was making a fence from thorny branches to prevent animals from entering our field. I called my father about this object. It appeared like a mine. My father called an officer who called military persons to come and take it away."* (Boy, Al- Soobah)

Additionally, one group said they were told how to get out of a mined area *"They told us if we entered a mined area, we should return in the same direction and should step on the same foot prints."* (Boy, Habil Al-Abdi)

Clearly, where awareness-raising had taken place, the children had understood and retained the information. The presence of the survey and demining teams had also raised awareness by putting up signs showing the mined and cleared areas and through informal interaction and cooperation from the village. The use of dogs in mine detection created interest among the children; *"there are mines in the soil and the dogs sniff these mines before they are lifted by de-miners"* (boy in Mazlb).

Several children said that they and others in the village supported the awareness raising work by sharing information about the dangers of mines (Al- Soobah, Habil Al-Abdi, Al-Heswa).

In two villages, (Al-Heswa, Am-Jarba), girls mentioned that women team members had held separate meetings to talk to women and girls about mines. *"Two years ago, a team of two women came to the village and asked for a meeting with women. The meeting was on awareness raising about the dangers of mines. They also showed us the different types of mines and the way we should deal with these mines in case we found them."*

Table 7 shows the mine information sources reported by children in discussions in the villages. Fourteen of the villages visited had received a targeted awareness campaign. The villages visited constitute a relatively small sample of the villages covered by awareness campaigns. However, the important issue is raised that if awareness campaigns take place in villages, it cannot be assumed that girls necessarily participate, especially if the meeting takes place in a school which they do not attend. There were three villages (Al-Qafleh, Al-Farsi, Al-Khudad) where boys participated in awareness campaigns and girls did not. The positive examples of women's awareness building teams are an indication of the efficacy of a targeted approach to reaching girls and women.

Table 7 - Children's sources of information on mines as reported in meetings.

	No awareness/ no reported source of information	Parents/ relatives only	Parents/relatives/ school only	Participated in awareness Campaign
Girls groups (7)	2	2	2	1
Boys groups (6)		2	1	3
Mixed groups (14)	1 (girls only)	3	1	9 + 1 (boys only)
	3	7	4	14

Children were generally well informed about children in their age group who had suffered mine related accidents. Stories of child casualties were told in six villages, three of the cases had involved children playing with mines.

It is interesting that in the same villages where awareness campaigns created good knowledge among children, women were not necessarily informed nor had interacted with the awareness team. The importance of parents and relatives in providing information suggests that improving the awareness of women on mine risks could have beneficial impacts on both them and on children, and on girls in particular.

Impacts of demining on children

The children's reports of the negative effects of mines focused on their role as herders of livestock. They described how they avoided mined rangelands, or left animals to graze unattended in the mined areas; "*when we herd our animals and they go into mined areas, we just let them till they come back on their own.*" (Sha'san) Several groups reported that they were now able to herd animals in the demined areas, in some cases, usually together with an elderly relative. They were also able to move around freely for fuel wood collection; "*After demining, we are able to move around freely, we are able to herd animals, collect fuel wood, and go for recreation.*" (Al-Qafleh)

In other villages, children were affected by blocked paths and roads which restricted their freedom of movement; "*Whenever we used to go anywhere, we used to walk on the tracks of cars in the road to avoid contact with mines.*" (Al-Soobah) Freedom of movement was mentioned specifically as a benefit in seven villages.

There were also important recreational uses of the demined area. This was mentioned in seven villages. In Amran village children said, "*we go to the demined areas to dance in weddings*" (girls); "*we play football in the demined areas*" (boys).

In two villages the mined areas were far from the village or far from grazing areas (Al-Farsi, Habel Al-Braq) and therefore there were few changes perceived by children following the demining.

Children's perception of risks

As a result of the awareness campaigns, children's understanding of the dangers of mines increased their fear of mines and encouraged avoidance behaviour. However, in some cases, this was slow to change after demining took place. The children's discussions evoked a range of sometimes contradictory views on this, some saying they felt secure and expressing confidence to go into cleared areas and others saying they are still too scared. This latter view was more pronounced among girls and was further exacerbated where some areas were still awaiting demining, or where the children were unclear which areas have been demined.



Girls in Sha'san village explain their feelings about the demined areas; “We still feel scared to go into demined areas. We feel the demining might not be complete. Although our parents tell us the land is demined, we still find people who tell us that demining is still not over. We get scared and do not enter the demined areas.”

A.7. Conclusions and recommendations

There is considerable variation between villages, in terms of their size, remoteness, infrastructure and services, educational and medical facilities, leadership, local institutions, occupations, topography, vegetation, land and livestock ownership and land use. Some villages are almost totally dependent on agriculture, while others have over 50% salaried employees (the major divide is between highland/mid-altitude villages and those in Aden/Lahij, which have a more urban character).

Recommendation 1 - Based on the methodology of the current study, adopt a system of socially-differentiated, gender-sensitive impact assessment of demined areas and integrate it into joint work plans and the information system.

A major factor in changing community perceptions of mine risks will be improving their knowledge of the demining process and its outputs. Awareness of the status of clearance by community members is patchy. In some cases communication between demining teams and the community has been good, but in other cases has been confined to formal meetings with village leaders, leaving others in the community unsure or even unaware of the situation. In some places there is distrust of the safety of cleared land, particularly for cultivation purposes. In some reportedly cleared communities, there is still ongoing active clearance of minefields.

Recommendation 2 - There should be dialogue with all sections of the community from the start of clearance through to final handover, with particular emphasis on actively demonstrating that specific areas are cleared. Community liaison volunteers (men, women and children who are selected by the community and paid a small honorarium for ensuring good two way communication between YEMAC teams and all members of the community) should be identified at the start of clearance and kept informed/involved in all the work of the teams, including handover of cleared land. As part of the required procedures for monitoring the work of the YEMAC clearance teams, records should be kept of team interactions with the community throughout demining, with specific details of the handover process of cleared assets and any demonstrations of safety (also see Section E, below).

Community concerns about the safety of land for cultivation need to be recognised and addressed. Where necessary, local people should be contracted and paid by YEMAC to carry out first cultivation by appropriate methods to demonstrate the safety of arable land where this is in doubt.

A lot of cleared land is now available to the whole community for grazing, fuel wood and fodder collection. This has had a major social impact, as livestock ownership varies between 5% to 100% of households, wood is still the main source of fuel in rural areas, and fodder is seasonally important in livestock keeping systems. The economic value of grazing, fuel wood and fodder can be considerable to the village.

Recommendations 3 - There is a need to ensure good land management practices for grazing, the use of fuel wood, water harvesting and quarrying of stone. In some cases these can be based on traditional land management systems such as “Hema”, and enforced through local bye-laws.

Military camps on or near grazing lands should be relocated where practically possible as they disturb grazing and fuel wood collection by women and children

The different roles and responsibilities of men, women and children need to be taken into account at all stages of interaction with communities concerning mines. Responses from women’s groups reveal the extent of their at-risk behaviour that is linked to their roles in the household. There are opportunities for women’s and girls’ interests to be better addressed in YEMAC work through enhancing their participation and access to information. The survey and clearance process did not systematically interact with women, nor was post-clearance information systematically passed on to

them. The process of signing-off by local council leaders was not mentioned by the women consulted. Information sharing has not been adequate to inform or convince women that their area has been rendered safe.

Recommendations 4 - More specific gender related procedures addressing the UN Gender guidelines are needed at all stages of YEMAC's work, but most urgently to ensure the participation of women in the post clearance handover process. This is most crucial to encouraging the maximum use of cleared assets and reducing fear. YEMAC should continue to encourage greater involvement of women and girls in MRE and awareness campaigns by recruiting more women's awareness teams and by extending the house-to-house approach.

Stone for building is a considerable economic asset to some communities. Land clearance has made this asset safely available.

Crop production is now carried out on cleared hillsides and on wadi land with considerable direct impact on land-owning community members, and indirect benefits to those who provide labour or services to landowners. In some villages, terraces that were under cultivation before mining have not been brought back into cultivation due to concerns over their safety. Hence the recommendation above of assisting with first cultivation. In other places, new terraces are being established in newly cleared land – often for grapes or qat. In the south, there are problems over land ownership, with powerful influences (private individuals, parastatals such as the Aden Free Zone, and government departments) annexing land for their own use. In some places the value of land has gone up 50-fold following clearance, with a further three-fold increase after the land is planted to a high value crop such as qat or grapes.

Recommendation 5 - The expropriation of land by private and government interests should be addressed. YEMAC procedures should ensure the participation of communities in decisions about land distribution and use from the start of the de-mining process.

Bee-keeping is popular in some communities and brings in a good income.

Recommendation 6 - Modern 'bar hives' should be introduced to improve yields and ease the extraction of honey.

Roads and paths have been cleared to the benefit of the community, although there are some roads – often outside the immediate vicinity of the village – that have still to be cleared. These may not have been recorded in the village based mine survey work.

Recommendation 7 - Clearance priorities should be identified with communities. Teams should operate within village boundaries. Where "linear contamination" (landmines between villages) is a problem, then this should be fed back to YEMAC programme planning. However, it is acknowledged that this will only be dealt with in exceptional circumstances because of resource limitations.

The clearance of land has made possible the construction of housing and other buildings by local people and outside private/government interests. In the south, this has led to considerable loss of community assets, such as grazing or arable land.

Recommendation 8 - Local councils should be encouraged to ensure that planning of construction on cleared land should include the views of local residents

Land clearance has made playing and sport safer for children.

Recommendation 9 - Permanent play/sport areas should be designated for children

The Yemen Landmine/UXO Victim Assistance Programme was praised by the Mid-Term Review of YEMAC for its medical and rehabilitation work with survivors. However, apart from a limited number of shining examples of survivors being supported to live fulfilling lives, this survey found that few survivors had heard of the Programme or were receiving assistance from it²⁵. This suggests that there needs to be greater awareness created of the Programme and its work, and greater donor/government support for the Programme so that it can respond to the demands that would result from such an awareness creation activity.

Recommendation 10 -

- **An inventory be made of all survivors and the development of clear guidelines on their eligibility for support from various sources**
- **Survivors are made aware of the services available**
- **Medical care (physical and mental) is available for all survivors, regardless of when the landmine or UXO accident happened - including support with transport and other costs incurred by survivors when they attend hospital**
- **Continue and expand the provision of support for survivors to start their own small businesses and be independent of external assistance**
- **In needy situations, assistance be given to the families of survivors who have difficulty caring for them.**
- **Revise the existing eligibility rules of the Victim Assistance Programme to ensure that different categories of survivors and types of disability can be included.**

²⁵ YEMAC is working with the Ministry of Social Affairs to register all the survivors.

B. Preliminary assessment of complementary development initiatives for surveyed villages and requirements for support

The survey teams asked different groups from each community (community leaders, farmers/fishermen, women, survivors, girls and boys) about the potential for improving their livelihoods, from the assets freed through demining, and for the community as a whole. The full accounts of all meetings for each community are contained in **Annex 11**.

Information on opportunities is available in tabulated form for each surveyed village by social grouping in **Annex 10**.

The relevant factors affecting rural development in Yemen are presented first, followed by the range of development initiatives suggested by different social groups.

B.1. Factors affecting the potential for successful development in landmine affected communities

The successful development of assets depends on a number of factors:

The leadership of the community, which – especially in the northern governorates – is often very autocratic (by the sheikhs). The capacity of communities to plan, to gather information, to consult different sections of the community and to make informed, socially-responsive decisions is very limited. Also limited is the ability to write coherent, well-justified, costed, time-bound proposals, and the ability to follow these through with the degree of financial management and documentation that would be required by donors. These limitations are partly the result of undeveloped community management structures, and partly a lack of training in planning, financial management, proposal writing, etc. This “community empowerment” is an opportunity for donors, and also a pre-requisite for sustainable development at the community level. The lack of capacity is manifested in most villages by a lack of community plans. Exceptions to this were in those villages with strong community Associations (e.g. Bait 'Oqab in Sana'a governorate and Al-Farsi in Aden governorate).

The social cohesion of the community. This is often a consequence of two circumstances: firstly a shared origin (ethnic/geographic) across the population of the village, and b) good leadership by the sheikh, with a clear hierarchy between sheikh, sub-sheikhs and community members. For example, good social cohesion was noted in Bait 'Oqab in Sana'a, while not far away in Joab the impression was that the village was divided into different fractions following different sheikhs.

The presence of a local Association/Welfare Organisation that can prepare proposals and coordinate the implementation of plans. As mentioned above some communities already have local Associations. In the case of Bait 'Oqab, this is a charitable organisation which receives monthly contributions from the better-off members of the

village. This is used for community projects (e.g. the building of the new mosque) or to assist the poor and needy in the community.

In Al -Farsi, it is a social welfare fund that receives contributions from within the community, but also actively seeks funding from outside (e.g. from donors such as the World Bank small projects fund, or from industry such as the Aden Refinery Company). Community members, such as poor fishermen, can take out short-term loans against the fund to cover difficult times or to purchase inputs.

The confidence of the community in the safety of the assets. As noted in the previous section, there are still some minefields to be cleared in a minority of the reportedly cleared communities. In addition some communities, or sections of communities, are still very wary of the cleared areas, and are therefore not using the land fully (e.g. for crop cultivation). The confidence of communities can be improved through communication and demonstration by YEMAC to all sections of those communities (men, women and children).

The remoteness of the community and its access to markets and inputs. Some communities (e.g. Mazlb and Al-Sharaf in Dhamar governorate) are in remote locations, making the marketing of products more difficult and costly. In contrast, other villages are in an excellent situation to make full use of urban markets (e.g. all those near to Sana'a, Aden or Lahij).

The financial capacity of the community or its access to investment finance. Some villages in the south and the north have a proportion of wealthy, powerful households that are able to take any opportunities that freeing of assets present, and there is a real danger of the benefits being appropriated by these households (as in Mas'abain). However, the majority of households are struggling to make ends meet, and unable to invest in new enterprises. A common constraint voiced by community members across all locations was the difficulty in obtaining credit, especially from formal institutions such as Banks. The conditions imposed by these institutions make them inaccessible to the poor. It may therefore be preferable to think about alternative forms of credit, such as group savings and credit schemes. Something like this has already started with the Social Welfare Association in Al-Farsi.

The presence of donor or government projects or support activities. If there is a donor project in the area (e.g. The IFAD Dhale Rural Development Project in Al-Dhale governorate), then certain development opportunities can be covered by linking with that project. However, development should be balanced between economic, institutional and social development, and between different sections of the community (young and old, men and women, poor and better-off, land-based and non-land based). Thus the presence of such a project should not disqualify the affected communities from other opportunities.

The extent to which the community is in control of its assets. In the south, government owns much of the land and the community has less say in how cleared assets are used/distributed, making good representation on the local Council a priority as many community members feel disenfranchised (e.g. in Beer Ahmed in Aden governorate).

B.2. Development opportunities for the cleared land

The completion of mine clearance, and the improvement of community confidence in the safety of cleared land

A minority of communities²⁶ reported that they still have un-cleared minefields within the community area. In some cases this may be due to lack of information on what has actually been cleared; in others, the mined area described was not included in the original LIS and therefore not on the YEMAC schedule for clearance. Others, such as Bait Al-Shawki in Al-Dhale have mines blocking a major trading route (to Damt) outside the community boundaries. Many other communities are still not convinced that all mines have been removed. In some cases the limited extent of communication with the community by survey teams, demining teams and awareness-education teams has left at least some members of the community (often women and children) not fully aware of the work carried out or the safety status of the land. Only when all members of the community are convinced of the safety of their assets will they be used fully and effectively, with long-term investment of cash, organisation and labour.

Removal of military encampments

It may be impractical to remove or re-locate existing military camps, but it is important to recognise that they have a considerable influence on the activities that can be undertaken in their vicinity. Removal would enable water harvesting, grazing and fuel collection in and around the present camp area, particularly by women (e.g. Sha'san, Sana'a governorate).

Water harvesting and storage

Water harvesting from hillsides above cultivated land helps to enhance crop and fodder yields and reliability. Water harvesting channels are usually privately owned, as an extension of the privately owned parcel of land that they service. Where topography and sub-surface are appropriate, these hillsides could also be used for short-term storage for supplementary irrigation of fruit trees, qat and crops. Where hillsides are above the village housing, and a clean supply of water is available, water tanks can be installed for drinking water that would then flow by gravity to houses or communal taps.

Re-instatement of traditional natural resource management practices and byelaws

The impression from the survey was that in most cases there are no restrictions on the use of communal grazing lands by village members. Thus an unlimited number of animals can graze these areas, and an unlimited amount of fodder and fuel can be gathered. With increased populations, this could be unsustainable and lead to the degradation of the natural resources. There are traditional methods of natural resource management that could be re-instated (as they have in Bait 'Oqab, Sana'a

²⁶ For example: Joab, where of the seven minefields, two are cleared, one is in the process of clearance, four are yet to be started; Sha'b, where the area known as *Jebel Suma'a Al-Rawdha* was reported by villagers as not having been demined; Bait Al-Soobah, where villagers reported that one area and a house were still to be cleared; Bait Al-Azani, where the remaining area to be cleared from mines is called *Jebel Ali Sa'eed* (located midway between Bait Al-Azani and Katan villages).

governorate), as well as encouragement for specific bye-laws for the use of rangeland. Awareness could be raised, especially among women and children who do most of the herding and fuelwood collection, about natural resource management considerations. On private land trees could be planted, especially on terrace risers to conserve soil. Communities mentioning soil and water conservation as a requirement for the future included Al-Khudad and Habeel Al-Braq in Lahij governorate, both of which are experiencing the erosion of the wadi banks from floods.

Planting of grasses and saplings to enhance the grazing/browse potential

Livestock production in general is a low input/low output activity, using local breeds, available fodder and forages, and minimal veterinary care. There is certainly scope (voiced by some villagers) for improvement of breeds, husbandry, feeding and health, which would result in large gains in productivity. This would come at a price, and the economics and social aspects of higher input/output systems would need to be carefully weighed before recommending them.

Training of local people as paravets

Many communities are too far from professional veterinary care to use them except for the most valuable animals. The training of locally-selected individuals in basic veterinary care would provide the community with a local source of expertise. These paravets (or community-based animal health workers) would receive a basic set of veterinary equipment and some commonly-used drugs, and be linked to government or private vets for situations that they could not handle, and for the reporting of notifiable diseases.

Extension services, and the introduction of new types of grasses and trees

As with animal production, food crop technology (especially on rainfed land) is geared towards reliability and local preferences, rather than high output or market needs. Very few villagers mentioned the need for improved extension services or improved technologies. This may be because there is very little profit in food crops compared to qat, and the motivation to invest scarce resources for uncertain returns is understandably low. However, good seed and modest pest and disease control measures could save considerable losses of production.

There is potential for the introduction of new forage species, including the enhanced use of *Prosopis* (see the account in Annex 11 for Bait Al-Shawki in Al-Dhale governorate) and *Opuntia* (see the account from Bait 'Oqab in Sana'a governorate). The spread of *Sesbania* in the wadi conditions in Ofeini in Abyan governorate shows the value (and dangers) of an introduced species. *Sesbania* was introduced from India to reduce wind erosion in sandy areas, but it is now an important fodder for camels and other livestock in the coastal wadis.

Modern bee-keeping

The considerable income accrued from bee-keeping (700,000 YR/year) by a single family in Ofeini (Abyan governorate) demonstrates the potential of this enterprise. That family is using crude box hives, rather than bar hives, which could improve management and yield of bee colonies.

New terraces and boreholes for irrigation on cleared land

Where cleared land is not in private ownership, it is often because it is land of poor quality or accessibility, and is used for grazing and fodder/fuel wood collection. However, some communal land could be developed into crop land through terracing and irrigation for the benefit of poorer members of the community with little or no land of their own. This would require a one-off capital development grant for the bulldozing of the terraces, the sinking of boreholes and the initial establishment of appropriate food or cash crops, in addition to the establishment and training of a local organisation to administer the grant, supervise the land development process and support the new land users.

Renovation of existing, but unused terraces

A number of communities (e.g. Al-Sharaf and Mazlb in Dhamar governorate, Bait Al-Ra'ae in Ibb governorate) are not using freed crop land because they are still concerned about the danger of mines buried deeper than 20cm. YEMAC maintains that these areas are safe, and could demonstrate that by deep-ploughing them. That should be sufficient to convince landowners and others in the community to bring them back into production.

Resolution of land disputes over cleared land

In the north, the ownership of land is generally clear. Private ownership is recognised (often from many generations) by the whole community. The main alternative is communal use of land, with varying degrees of control depending on the interests and strength of the sheikh. However, in the south – because of its different history – the situation is much more confused. Land passed from big landowners to the State after the revolution, and then partly back to the original owners, partly to private individuals from inside and outside the village, and partly into government or parastatal uses that don't directly benefit the local community.

In Aden governorate, all the cleared villages are within the catchment area of the Aden Free Zone. Theoretically, with appropriate government approval, that organisation can use any land within its jurisdiction (e.g. as it has for the Al Aml housing development in Beer Ahmed in Aden governorate). The villagers in Amran (Aden governorate) suggest a survey of the village land, and its redistribution to settled and nomadic families in an equitable way.

The uncertainty about land ownership is holding up the utilization of land in Beer Naser (Lahij governorate), and a resolution would help the community, investors and the government according to local leaders. One suggestion (from villagers in Bait Al-Azani in Ibb governorate) is to transfer cleared land ownership into *awkaf* (charitable endowment), so that it can be protected from private or government annexure, and developed for the good of the community (e.g. for recreation or sports grounds).

There are many instances of disputed ownership of land (e.g. Al-Khudad in Lahij governorate and Al-Heswa in Aden governorate). This can slow down its development and productive use or provide a situation in which the unscrupulous can gain improper access to land (as appears to be the case in Mas'abain, Aden governorate). A land dispute tribunal, which would need to establish its impeccable integrity, could be set up to settle such disputes.

Alternatives to land-based income for bad years

The need for such alternatives can be demonstrated using two very different situations. The remote Ofeini community is inhabited by nomads. They live a precarious existence that depends on the vagaries of the climate and the good will of the sheikh. There is no employment in bad years when camels have to be sold and honey production is low. Am-Jarba, by contrast, is situated on a main road and is close to both Aden city and Lahij town. Despite this many rural incomers do not have the skills relevant to their new urban environment. Skills training and employment advice are important for the balanced development and livelihood security of such situations.

B.3. Opportunities for the whole community

The section above deals with opportunities to develop assets that were directly affected by the presence of land mines and UXOs. However, it can also be argued that the development of the whole community has been blighted by the fear and restrictions caused by these munitions. It is probable that travel was restricted into and out from the community, and that teachers, health workers, agricultural extension staff and others will have been put off visiting the landmine-affected communities.

In addition, managers of government development programmes and donor projects may have selected communities without the difficulties and dangers presented by landmines (as has been documented in other mine-affected countries). It is therefore legitimate to give some priority to requests by communities for general development initiatives. **Annex 10** lists these in detail by community and by different interest groups. While it is understood that each of these requests would have to be considered on its merits, and according to guidelines for each development programme, the Annex and the sub-sections below simply record what was requested.

Educational facilities

Requests for education facilities came in many forms and, with water and medical-related initiatives, were the most numerous. Communities recognise the major influence a good education has on employment and advancement prospects for girls, boys and adults.

Where a community lacked its own primary or secondary school, or where the local school was more than one or two kilometres away, the women and children's interest groups almost always came up with a request. Children and particularly girls, mentioned the need for enhanced provision of schools in nearly all the group discussions.

While it is recognised that there are guidelines about where a government school is justified, there are clear issues connected with the social restrictions preventing girls from travelling any distance outside the village to school and in consequence the potential exclusion of girls from continuing beyond primary education. For similar reasons, the need for female teachers for girl students was emphasised (see section on women's development priorities below).

Examples of communities requesting schools are: Sha'san (for an intermediate school for girls); Bait Al-Ra'ae (school for girls); Bait Al-Azani (girls' school); Al-Qafleh (basic and secondary schools – with female teachers for girls); Habil Al-Abdi (intermediate and secondary schools); Al-Masharih (extension of primary school to 9th grade); Al-Farsi (extension of present school).

A specific educational problem exists with nomad children, encountered in a number of communities in the south (e.g. Ofeini – Abyan governorate, Al-Khudad – Lahij governorate and Amran – Aden governorate) who find it hard to get an education. While the children of Ofeini cannot read or write, we discovered that they are very skilled at making dolls from locally available materials, suggesting that there may be opportunities to develop vocational skills as well as academic ones.

The lack of employment opportunities has been previously highlighted. This has prompted requests for a range of adult training opportunities for men and women, from adult literacy classes to computer classes and vocational training in tailoring and other subjects. Examples include Sha'san, Al-Sharaf, Bait Al-Azani, Habeel Al-Braq (all for adult literacy), Bait Al-Ra'ae, Beer Naser and Am-Jarba (vocational training centres for women); Al-Heswa (training centre for women and girls); Amran (training in the use of computers and other office equipment already provided by a donor).

Medical facilities

Over half of the communities surveyed feel the need for local medical facilities. Many have no trained people or facilities within the community. Examples are: Sha'san; Al-Jafinah; Bait Al-Ra'ae; Bait Al-Azani, Al-Qafleh; Habil Al-Abdi; Al-Masharih; Al-Farsi; Al-Heswa; Mas'abain; Al-Khudad; Habeel Al-Braq; Beer Naser.

Drinking water

The call here is for clean, reliable, easily accessible drinking water in communities, including: Sha'b; Al-Sharaf; Bait Al-Azani, Al-Soobah; Al-Masharih; Amran (for nomads); Habeel Al-Braq.

Water for crop production

Depending on their situation, villages are calling for boreholes (Sha'san, Mazlb, Al-Soobah, Al-Qafleh) or water storage and drip irrigation (Al-Jafinah; Bait Al-Azani) to provide water for irrigation of qat, fruit trees, fodder crops and food crops. In Amran the call is for boreholes to provide drinking water for livestock and for the nomads that keep them.

Sewerage

Some opportunities are region-specific. In the south more than half the communities requested sewerage systems to reduce disease (Al-Farsi; Mas'abain; Amsara; Habeel Al-Braq). An innovative idea in Al-Heswa was to use the cleaned water to irrigate palm trees, which are used to make vinegar and handicrafts.

Fishing

Also specific to the southern, coastal villages were requests to upgrade the fishing industry, which is very small scale at the present time. Fishing families want improved boats with motors and better nets, transport of fish to market, refrigeration

facilities (Al-Farsi and Al-Heswa, Aden governorate), and a fish canning factory (Al-Heswa).

Support to survivors

A range of suggestions for government and donor support was provided by survivors and other community members. These included the need for a survey of the needs of landmine and UXO survivors (Beer Ahmed), followed up by the provision of training and the resources needed to enable survivors to start small, sustainable businesses (e.g. small shops, mobile trading; fattening livestock, fishing) that reduce dependency on government, community and family and give self-esteem to survivors (these suggestions came from Al-Qafleh; Habel Al-Abdi; Al-Farsi; Al-Heswa).

In Al-Qafleh, the need for financial assistance to help survivors get to hospital (transport costs and some money to cover the expenses of hiring extra labour) was mentioned, while in Al-Masharih it was emphasised that mental health care needs for traumatised and depressed survivors were sometimes as important as physical health needs. Several survivors have lost limbs, but have not been able to get artificial limbs (e.g. in Al-Jafinah and Habil Al-Abdi).

There is a clear need for the Yemen Landmine/UXO Victim Assistance Programme to find out how many survivors there are and what their needs are, and to develop plans for communicating with and assisting this category of community members.

Farmer associations/cooperatives to access government support, credit, machinery and training

Local institutions (apart from the sheikh and the Local Council) are generally poorly developed, with farmers acting independently for the purchase of inputs and the sale of produce. However, a few communities (e.g. Al-Jafinah) see the benefits of collective action, and have requested the formation of farmers associations or cooperatives for these functions. In Beer Ahmed, farmers are looking for soft loans for the purchase of agricultural machinery and livestock. Two communities (Habil Al-Abdi and Beer Naser) want local associations to help build houses in demined fields for local people.

Community welfare organisations

A few communities surveyed (e.g. Al-Farsi and Al-Heswa in Aden governorate and Bait 'Oqab in Sana'a governorate) have active local social welfare organisations with a good level of donation by the wealthier members of the community. Other communities (e.g. Sha'san, Amran, Mas'abain, Al-Khudad) requested that the establishment of such organisations be facilitated in their locations. An advantage would be that donor or government development initiatives could be implemented through these organisations. In addition, by training the executive members in proposal writing, planning, financial management, etc, a body of local expertise could be built to write further proposals and administer future projects.

Miscellaneous requests

In addition to the carefully considered requests detailed above, villages also suggested a "wish list" of capital projects, as follows:

- Cemetery: Al-Farsi
- Bus services: Al-Farsi

- Market: Al-Farsi
- Post office: Amsara
- Pavements and street lighting: Al-Farsi
- Electricity supply: Al-Sharaf; Al-Soobah; Al-Qafleh; Habil Al-Abdi; Al-Masharih; Amsara; Habeel Al-Braq
- Mosque: Bait Al-Azani
- Extension Centre/advice: Bait Al-Azani, Al-Soobah, Al-Qafleh, Beer Ahmed
- Tractors: Al-Qafleh
- Play/sports ground: Bait Al-Azani; Al-Farsi; Al-Heswa; Amran; Mas'abain; Am-Jarba; Amsara; Beer Naser (better use of time than chewing qat!)
- Preliminary court: Amsara.

B.4. Women's discussion of development opportunities and priorities

In terms of opportunities for development of the cleared assets, women's suggestions were similar to those of men. Women identified the main constraint to increasing the productivity of rangeland grazing and of agriculture as the limited provision of water. Hence they suggested the construction of wells and irrigation systems, dams and water harvesting structures. Support for land rehabilitation was suggested in two villages and for animal health and management in another two. Both men and women identified the importance of solving land disputes. Women specifically articulated the need for completion of demining where this was still required, and for deeper demining where they were not confident that mines were removed.

Women's broader developmental priorities were strongly oriented towards the provision of drinking water (the most frequently mentioned topic), electricity and educational provision. Education for girls was particularly emphasised. They want classes beyond the sixth grade in their local school for girls to study, without having to travel outside the area.

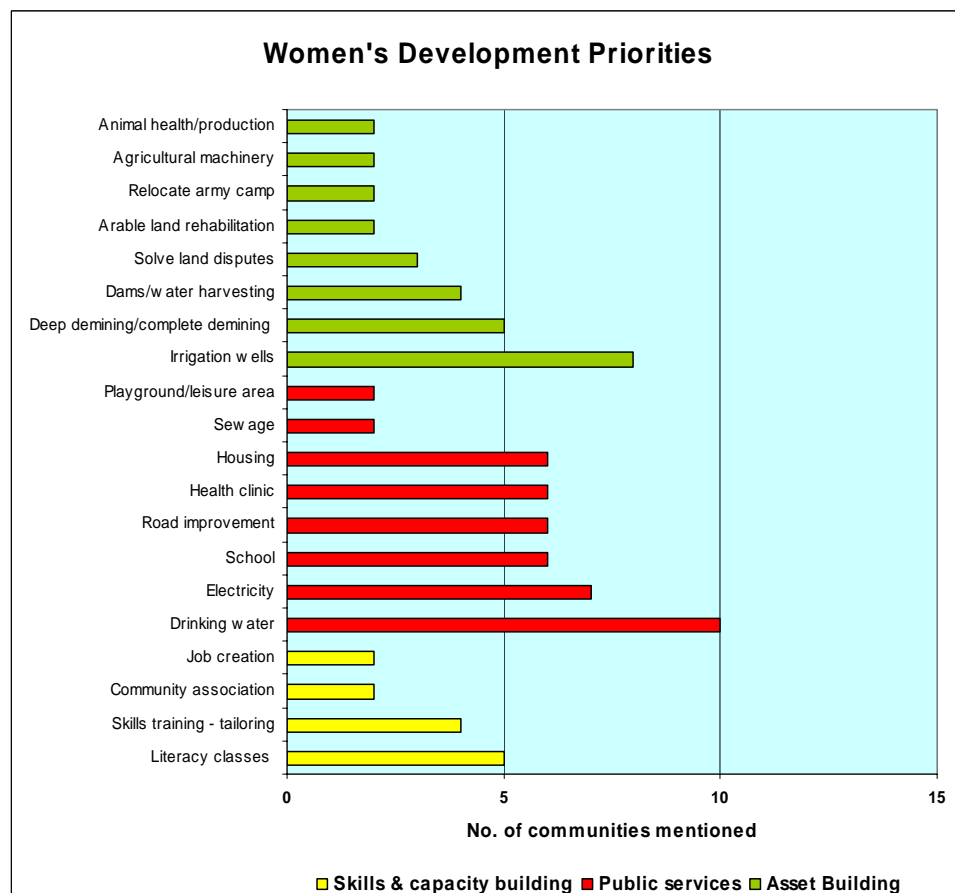
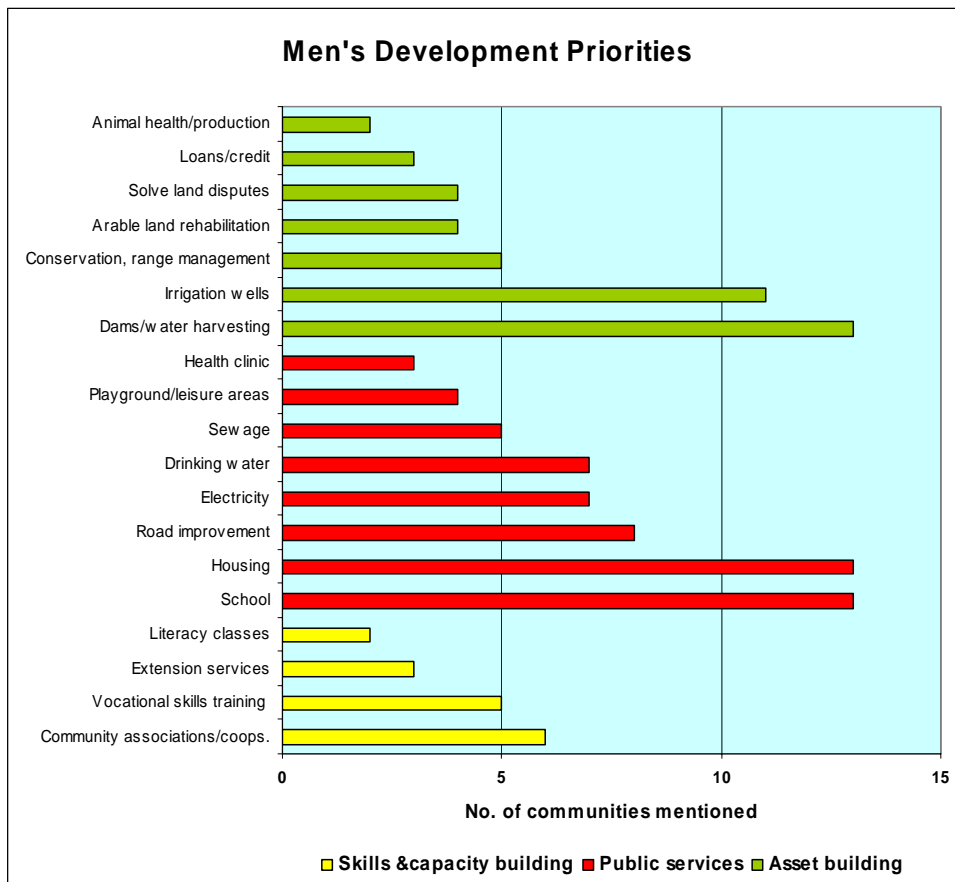
"There is one primary school in the village till the sixth grade. After this, the children go to another school in a neighbouring village. The schooling there is mixed and the teachers are men. In our case, we cannot allow our daughters go to mixed schools. They are not children anymore. Similarly, we do not accept that male teachers give lessons to our grown up daughters. We demand that a basic school be built in the village and supported by female teachers to educate our daughters. Everybody in the village wants girls to have adequate education. The dropout [rate] of girls after the sixth grade is high in our village." (Al-Qafleh)

The other most frequent requests were for road improvements, housing schemes and medical centres. Literacy classes, skills training and other job creation initiatives were also requested. In several villages, women commented on the lack of cooperation between village members. Although there was cooperation in social events, village initiatives to create opportunities and encourage investments were lacking. In some villages (e.g. Bait Al-Azani which already has a strong village organisation), people regarded it as their responsibility to contribute to solving problems, while in others it was considered the government's responsibility to bring them opportunities. In Beer

Ahmed, the women suggested the establishment of a cooperative/association as a potential solution to the problems in the community. Such organisations could then attract government support. However, past local experience of trying to set up cooperatives showed that failure could result from too rigid conditions set by the government for their formulation and establishment. Comparisons of women's and men's development priorities for asset development, public services and skills and capacity building, are illustrated in figure 6.

Children's development priorities were clearly focused on educational provision for the reasons discussed above. Their second most frequently mentioned need reflects their specific interests – a playground where they could relax and play sports. Other needs were similar to those of adults, such as water supply and electricity projects.

Figure 3 - Comparison of Women and Men's Development Priorities.



B.5. Conclusions and recommendations

Successful development depends on good leadership. Leadership in the villages, particularly in the north, is very autocratic and of variable quality and effectiveness. The capacity of the community to plan and implement development projects is limited, although a few communities have successful community welfare organisations. There is poor capacity at village level to develop budgeted, time-bound business plans for development opportunities.

Recommendations 11 -

- **Give priority to demined lands and to the communities affiliated to these lands during the preparation of development plans, with emphasis on the comparative advantage and unique situation of each community.**
- **Revive the role of current Civil Society Organizations (including community welfare associations) in the communities where land was demined and promote the formulation of new organizations**
- **Promote investment in the demined areas**
- **Promote sustainable development initiatives through capacity building of local leaders (M&F), and of local communities, in planning and implementation of developmental community-based initiatives.**

There is considerable potential to increase the productivity of the **land-based assets freed by clearance**. Some possibilities have been mentioned in the previous section, and additional ones are listed below:

- Installation of water storage for drinking water and supplementary irrigation
- Soil and water conservation (particularly for wadi banks where flooding occurs)
- Training local individuals identified by the community as para-vets
- Establishment of terraces for the poorer members of the community who cannot afford the capital investment involved
- Provision of agricultural extension advice on soil fertility management, pests and disease management, crop, livestock and fodder husbandry, honey production, woodlots, etc.
- Provision of advice on the storage, processing and marketing of agricultural and handicraft products for men and women

The development of the **whole** community has been blighted by the fear and restrictions caused by these munitions. Where the circumstances merit investment and meet government guidelines, it is therefore legitimate to give priority to requests by mine-affected communities for general development initiatives, such as:

- Educational and medical facilities
- Boreholes and wells for drinking water and irrigation
- Sewerage facilities
- Fishing equipment and processing plant
- Farmer/fishermen associations/cooperatives

Recommendation 12 - Communities should be involved in the identification of development priorities, using this report as a starting point. The development of sustainable local capacity should proceed hand in hand with tangible development initiatives that benefit the whole community (within district plans and government guidelines).

Women, men and children have different development priorities.

Recommendation 13 - The priorities of each group should be identified separately and priorities of women, men and children should be addressed.

C. Enhancement of the capacity of YEMAC to conduct future assessments of socioeconomic benefits from mine action

This survey was an important learning experience for YEMAC, and particularly for the seven YEMAC staff directly involved in conducting the preliminary and main surveys. A thorough training in the theory (see Annex four) and practice (in Sha'san community, Sana'a governorate) was given to six staff, as well as three women from outside YEMAC. The methods used in the survey are illustrated in the photographs below:

C.1. Photo record of methods used in the survey



Sha'san. Identifying the cleared areas with community members



Sha'san. Time line



Sha'b. Introductions



Sha'san. Constructing a village profile with village members



Joab. Using the map as part of discussions



Joab. Meeting with children



Sha'b. Meeting with girls



Ofeini. Meeting with women



Al-Qafleh. Meeting with boys



Bait Al-Ra'ae. Farming systems diagram



Joab. Meeting with survivors



Am-Jarba. Force field diagram



Ofeini. Meeting with nomads



Al-Khudad. Meeting with children



Al-Heswa. Interviews during qat sessions



Amran: constructing a village profile with a fishing community

These photographs show how involved the staff were in using all the methods. In addition, all team members (including the female team members) were involved in an assessment of the results and an analysis of the methods used after the completion of each governorate. At the end of the survey, the team was divided into three groups, each of which did an independent evaluation of the survey methods used (see Annex 8).

As a result of these trainings and evaluations, staff expressed the opinion that they would be able to plan, conduct and analyse similar surveys in the future. This report, and particularly the training materials in Annex 4 (repeated in Arabic in Annex 5), are available as training and survey materials for the further training of others.

The evaluation of the survey methods reported in Annex 8 generally endorses the methods used, with some reservations. These include the following perceptive observations by team members:

Introductions: Good to make people aware what we want to do with them and why we are there. Important to focus on introductions and not allow general discussions.

Community profile: Some questions were difficult for people with limited education and literacy. “Political” issues raised in the profile (e.g. land distribution) can cause disquiet. Helped to get good information about the context.

Time line: Important method, and directly related to our purpose. Easier to do it in the afternoon, during qat.

Community maps: Maps sometimes not accurate enough to be useful for all purposes. Sometimes it was an excuse not to see the cleared area for ourselves (it is important to go to see the area).

Focus group discussions (FGDs): Most important method, but people were puzzled by the relationship between some of the questions and landmines. Confusion between the opportunities for the cleared land, and for the village as a whole. It would have been better to keep them separate. FGDs gave information in detail to complement the general information from the community profile.

Participant observation: Not properly explained in the training. First impressions can be misleading, and need to observe carefully throughout visit, and be prepared to alter opinions. Eighty percent of the social and economic benefits from cleared land can be seen by eye. Helped to validate the information given in other methods (triangulation).

Photographs: Sometimes pictures can tell a story, but not everybody could take the pictures. Some restrictions on photos of women. Need to assign this task to an individual. Otherwise good opportunities can be lost to take photos as evidence.

Farming system diagram: Subject may not be representative of the village. Methods like Farming Systems Diagrams touch on very sensitive issues, that some rural people don't like to answer (e.g. numbers of livestock, income etc).

Village analysis: Very good reflection method, which gave chance to compare between focus groups and other methods, and see the consistency of information, and allowed team members to appreciate the whole picture

The team concluded that the methods worked well as a whole, providing a clear and comprehensive picture of the socio-economic benefits of landmine clearance within the limited time available.

C.2. Conclusions and Recommendations on survey methods

YEMAC staff received a short, but intensive, training in participatory approaches and methods, and over the three weeks of the survey became competent in their application. Several staff grasped the concepts and the practice well, and would be able to plan and conduct similar surveys in the future – especially if a local development specialist supported them. The methods used were appropriate to the cultural conditions and were effective in understanding the impacts of landmine clearance on men, women and children.

Recommendations 14 -

- **Women should form part of future survey teams, as the views of women and girls are vital to the full understanding of community situations**

- **The methods used in any future survey should depend on the objectives of that survey, building-on, and adapting, the methods used here.**
- **Further studies should be carried out on a proportion of cleared communities by YEMAC staff supported by a social scientist and women surveyors. These studies would have three purposes: a) the learning of lessons by YEMAC so that procedures can be further improved; b) the documentation of experiences and achievements to inform interested national and international audiences; c) to provide the basis for development initiatives.**

D. Assessment of community landmine impact scores as a tool for identifying impact and determining priorities for action

D.1 Landmine impact score methodology and assumptions

The overall vision for Landmine Impact Surveys as articulated by the Survey Contact Group, is to “facilitate the prioritizing of human, material and financial resources supporting humanitarian mine action at the national, regional, and global level.” (Land mine impact survey, 2000). Amongst the subordinate objectives, was to “give implementers baseline impact data that will provide success indicators for mine action programs”.

A detailed discussion of the methodology for landmine impact scoring is given in Benini (2002) and Benini et al (2002). These show how information from the surveys is used to compile a ranking of communities by the severity of mine impact. The criteria for assessing impact are chosen to reflect the risks and the extent and value of blocked assets, e.g. the types of areas to which landmines are blocking access, including services and livelihoods; the actual number of recent victims and the nature of the contamination and the terrain (table 9). The indicators are combined in an index – the Mine Impact Score – to create the ranking. The high-impact communities are given priority attention for technical surveys, clearance, victim assistance and mine risk education.

Table 8 - Indicators and weighting for Impact Scoring (from Land Mine Impact Survey 2000)

The presence of mines	2	Low impact: Score 1-5; Medium impact: Score 6-10; High impact: Score 11 and above.
The presence of unexploded ordnance	1	
Access to some irrigated crop land was blocked	2	
Access to some rain-fed crop land was blocked	1	
Access to some fixed pasture was blocked	1	
Access to some migratory pasture was blocked	1	
Access to some drinking water points was blocked	1	
Access to some water points for other uses was blocked	1	
Access to some non-cultivated area was blocked	1	
Access to some housing area was blocked	1	
Some roads to administrative centers were blocked	1	
Access to some other infrastructure was blocked	0	
Mine victims in the last 24 months	2	

The method of ranking on a composite score has the advantage of combining the dimension of saving human life and the benefit of released assets, without requiring a calculation of the trade off between them. The importance of the asset type in influencing the level of economic return from demining is illustrated from a mine impact study in Afghanistan which found that clearance of irrigation works and

agricultural land brought more than 10 times the economic benefits of clearing grazing land.²⁷ These issues are reflected in the weighting given in Yemen survey criteria to recent casualties and to blocked irrigated land. The methodology also ensured the inclusion of small communities.

The working assumption is that communities scoring high on this index are also the ones in which mine action has a greater potential for reducing future suffering and releasing productive potential.

D.2 Relationship of village scores in LIS to actual post clearance impacts

The pen sketches of individual villages, and the detailed notes contained in Annex 10, show the complexity of the factors which influence how individuals and communities react to the opportunities presented by mine clearance. The methodology has emphasised the assessment of the benefits and for whom they are advantageous or detrimental. This study has focused on community level and perceptions of benefits rather than attempted a broader cost benefit analysis of, for example, the value of released land for major housing or infrastructure investment which may be of no benefit to the affected community. In order to make a rough and ready comparison, some indicators to score the village information for comparison with the LIS were applied.

Table 9 - Indicators for scoring current study impact data

Absence of victims since 2000	2
Absence of victims since demining	2
Freed access to irrigated land	2
Freed access to rainfed land	1
Freed access to pasture	1
Freed access to migratory pasture	1
Freed access to water points (drinking)	1
Freed access to water points (other uses including water harvesting)	1
Freed access to stone cutting /collection	1
Freed access for firewood collection	1
Freed access for housing development	1
Freed access to roads to administrative centres.	1

A comparison of the data from the LIS with the findings from the surveyed villages in this study shown in Table 10 reveals some interesting observations on the extent to which the actual outcomes reflected the initial score and on the factors that account for the differences.

Thirteen of the 25 villages show similar scores, seven are scored higher in the post clearance survey and five lower. There are several reasons for the discrepancies;

²⁷ See - Study of the Socioeconomic impact of mine action in Afghanistan, revised draft report June 2001; Byrd and Gildestad, 2002.

- For those scored lower, the original score may have included blocked water sources when these were not reported in the present study (e.g. Mazlb and Al-Sharaf). Also for these two villages, their major livelihood resource – rainfed agricultural land, was not brought back into use after demining because of fears over its safety. An important valued asset not included in the original LIS scoring was stone. This helped to increase some of the originally ‘low’ impact villages to a medium impact score, e.g. Sha’san, Al-Soobah, Bait Al-Azani.
- Two of the four ‘high’ impact villages had a medium score, probably because the scoring against victims since mine action was not weighted according to the number of victims before mine action began.
- A number of the ‘low’ impact villages have medium scores, based on a simple count of the assets being utilised. However, in some cases assets have been grabbed by individuals, resulting in exclusion of community members and negative impacts (e.g. Al-Mas’abain, Al-Jarba, Al-Farsi and Beer Naser).

D.3 Comments on the tools for landmine impact scoring

The findings of the current study lend support to the LIS impact scoring method as a rapid method to assess a country’s landmine problem. Although the outcomes calculated by the method used here are not completely consistent with the impact scenarios of the LIS, they are closely linked. The survey has highlighted the importance of certain blocked assets such as building stone which is a major source of income from mountain areas in highlands. Although this was recorded in the LIS, it did not figure in the scoring. Other sections of this report discuss the constraints to using cleared agricultural land, including the need to overcome perceptions of danger and uncertainty about the status of mine clearance within communities.

The weighting methodology of the LIS makes no allowance for whether an asset constitutes a major element in local livelihoods. Blockage of irrigated land is clearly likely to present a greater loss in income, but rainfed agriculture may be equally crucial for particular communities where there is no alternative. Similarly, different communities may have different degrees of success in adapting to the blocking of assets.

An important influence over whether assets will be used effectively or not is the existence of ambiguity or conflict over rights of ownership. This element should be addressed in future surveys

D.4 Recommendations for landmine impact survey methods

Points to consider in future development of the LIS methods are the potential for;

Recommendation 15 -

- **Adapting the weighting according to the importance of the affected assets for people’s livelihoods in different regions.**

- **Including in the land mine impact scores a measure of adaptation to the blocking of assets, through exploring the community strategies for dealing with the situation.**
- **Including an assessment of the ownership rights over assets which affect the likelihood of equitable access or conflict after clearance is complete.**

Table 10 - Comparisons of asset status, casualty data and impact scores, pre and post demining.

Village	Blocked assets (LIS)	Assets actually used.	Casualties from LIS	Casualties since mine action	LIS Impact	Study Assessment
Sha'san	Pasture, agriculture	Pasture, firewood, stone cutting and water harvesting.	None recent. 8 killed 4 injured in past.	No victims since 2000, or since demining	Low	Medium
Joab	Pasture, agriculture, water/irrigation and animals	Pasture, rainfed land, water harvesting, and firewood.	None recent. 5 killed 4 injured in past.	No victims since demining	Medium	Medium
Sha'b	Pasture, water/irrigation	Pasture, water harvesting, stones, firewood. (No irrigated land was mined.)	2 recent killed. 10 killed, 20 injured in past.	No victims since demining	Medium	Medium
Al-Jafinah	Pasture, agriculture	Irrigated land, pasture, water harvesting, stones, firewood and local paths. Recreational area for children.	2 recent killed, 2 injured; 2 killed, 2 injured in past	Informants put the recent 2 killed and injured <u>15 years</u> ago, around 1991. No victims since 2000, or since demining	High.	High
Bait 'Oqab	Pasture, water for animals and drinking.	Pasture, stone cutting, firewood, water harvesting and local paths.	None recent. 10 killed, 6 injured in past	No victims since 2000, or since demining	Medium	Medium
Mazlb	Pasture, water for animals, washing and drinking, agriculture, roads to other villages	Pasture and local paths. No report of blocked water sources.	2 recent killed, 17 killed in past.	No victims since demining	Medium	Low
Al-Sharaf	Pasture, water for animals, washing and drinking, agriculture, roads to other villages	Pasture, stones and local paths. No report of blocked water resources	1 recent killed, 11 killed, 2 injured in past.	No victims since demining	Medium	Low
Al-Soobah	Road to district centre	Rainfed land, pasture, stone cutting, firewood and the road to the administrative centre.	1 recent injured, 1 killed, 5 injured in past.	No victims since demining	Low	Medium
Bait Al-Ra'ae	Pasture, agriculture, Stones	Pasture, stones	1 recent injured, 8 killed, 2 injured in past.	No victims since 2000, or since demining	Medium	Medium
Bait Al-Azani	Pasture, agriculture	Pasture, stone cutting, firewood, road to administrative centre.	None recent; 2 injured in past.	No victims since demining	Low	Medium
Al-Masharih	Pasture, agriculture, water for animals and drinking.	Irrigated land, rainfed land, pasture, water sources for irrigation & drinking, stone cutting, firewood and local paths.	2 recent killed, 1 injured; 13 killed, 2 injured in past	No victims since demining	High	High
Al-Qafleh	Pasture, agriculture, water for irrigation, animals, washing and drinking; road.	Irrigated land, rainfed land, pasture, firewood and local paths. No report of blocked washing/drinking water.	1 recent injured; 4 killed, 4 injured in past.	Two victims injured in 1998 and 1999. No victims since 2000, or since demining	Medium	Medium

Habil Al-Abdi	Pasture, fuelwood	Pasture, water harvesting, stones, firewood, housing development, local roads.	1 recent injured; 6 killed, 7 injured in past	No victims since demining	Medium	Medium
Bait Al-Shawki	Pasture, agriculture, roads.	Rainfed land, pasture, stones, firewood and local paths. (Also honey production)	4 recent killed, 3 injured; 7 killed, 12 injured in past.	No victims since demining. (Victims since 2000 not reported.)	High	Medium
Al-Heswa	Pasture, fishing, agriculture.	Irrigated land, pasture, firewood and the road to access the coast for fishing. Recreational area and access to handicraft materials.	3 recent killed, 1 injured; 1 killed, 2 injured in past	No victims since 2000, or since demining	High	Medium
Al-Farsi	Pasture, fishing, road.	Road to access coast, housing development (but not for the community - negative impact on forage availability.)	None recent. 3 killed, 1 injured in past	No victims since 2000, or since demining	Low	Low
Amran	Pasture, water for animals, washing and drinking; road.	No report of blocked water sources. Pasture, firewood and the road.	None recent. 5 killed, 5 injured in past	No victims since 2000, or since demining	Medium	Medium
Beer Ahmed	Pasture, agriculture	Pasture, rainfed agriculture (but little capacity to rehabilitate), firewood, housing (but not for the community) and road to administrative centre.	None recent. None past	Past victims were met in village No victims since 2000, or since demining	Medium	Medium
Al-Mas'abain	Pasture, agriculture, road.	Pasture and road to administrative centre, land for housing development. But ownership of agricultural land is disputed.	None recent. None past	No victims since 2000, or since demining	Low	Medium
Al-Khadad	Pasture, road.	Irrigated land, pasture, firewood. Road mentioned by children	None recent. 6 injured in past	No victims since demining	Low	Medium
Al-Jarba	Housing	Housing development, but for the university not the community. Road.	2 recent injured; 2 injured in past	No victims since demining	Medium	Low
Beer Naser	Pasture, agriculture, firewood, housing, road.	Road, pasture, water company benefited from secure water supplies, housing development, but disputed with villagers.	None recent. 1 killed, 1 injured in past	More victims were reported from the past No victims since demining	Medium	Medium
Ofeini	Pasture, agriculture, trees	Migratory pasture, firewood. Also beekeeping. Rainfed agriculture only when sufficient rainfall.	None recent. None past	No victims since 2000, or since demining	Low	Low
Habeel Al-Braq	Pasture, firewood	Pasture, stone cutting, cement factory and local paths.	None recent; 1 killed in past	No victims since 2000, or since demining	Low	Medium
Amsara	Trees, pasture.	Rainfed land, pasture, water harvesting, firewood	None recent; 2 killed in past	No victims since 2000, or since demining	Low	Medium

E. Advice on enhancements to YEMAC's processes for survey, clearance, awareness/education and survivor support and advocacy, and for their M&E system

E.1 Monitoring and evaluation in YEMAC

Effective monitoring and evaluation (M&E) systems are essential for programme accountability and quality assurance, and for assessing the value of outcomes and impact against the resources and money invested. But equally, they are fundamental to learning about processes and problems and hence to improving performance. The relationship between planned activities, the necessary inputs to achieve them, the immediate outputs and longer term outcomes and impacts, can be conceived as a “chain of results” in which lower level activities contribute to higher level goals and impacts. M&E systems assist organisations to track these relationships and assess their success against their goals and objectives and performance standards set. The emphasis of this study was on field assessment of the impact of mine action, and therefore a detailed review of YEMAC's M&E and data management systems was not attempted. However, some observations are included below.

The overall mission of the National Mine Action Strategy 2004-2009 is to put an end to suffering of the people and the casualties caused by anti-personnel mines in mine affected areas by end of March 2009. The elements of YEMAC's programme include survey and clearance, awareness and community education, survivor support and advocacy. The major expenditure is on survey and clearance and it is in this area that YEMAC's monitoring and evaluation systems are most developed. When the monitoring and evaluation department began in 2002, its first task was to ensure proper organisation, tracking and accountability in relation to the programme resources, particularly equipment. Following this, efforts were made to establish systems for the regular (6 monthly) technical monitoring of teams undertaking field operations, in particular, the technical survey, clearance and dog clearance teams. Using questionnaire formats developed from UN standard operating procedures, the field teams are regularly monitored at the activity and output level. Specific questionnaires are used for different teams, and include a section for assigning a performance score, space for observations, report of corrective action and feedback from those reviewed. The efficiency of the clearance teams' operations is assessed in terms of areas cleared per day, numbers of mines and UXO cleared and destroyed. In addition, the questions pay close attention to issues of team management, planning and communication, supervision and quality control, and health and safety.

In addition, mine risk education activities are monitored annually at governorate level. The questionnaire covers the types of training given, the numbers of men, women and children trained, the preparation and management of the training, the clarity and accuracy of content, training skills and use of materials and whether the training goals were achieved.

The Survivor Assistance programme has had its first two monitoring visits carried out, focusing on the victim support programme. A draft questionnaire is under preparation, but not yet formally approved.

It was not clear whether the data from the different areas of monitoring were structured in a data base in such a way to allow cross comparisons, nor how data on casualties reported since 2000 are handled in the data base.

Information from the monitoring questionnaires is summarised, together with the analysis of reasons for good or poor performance and progress. The main findings and recommendations are passed to the director for decision and action. Reports are produced for the annual planning meeting and the quarterly mine action committee meetings at which targets are compared to achievements.

Annual operational targets are set, mainly at the output level, for example, the number of square metres to be cleared, the numbers of workshops on mine risk education and the planned provision of medical support to land mine survivors.

E.2 M&E in relation to communities

What is striking is that the monitoring questionnaires explore in detail and assess the technical efficiency and effectiveness of the team's operations, but make little or no reference to the social context of the user community or surrounding population. The land mine impact survey (LIS), 1999, is the main source of information provided from the communities on their experience with mines. Our current study selected villages according to some of the main parameters from the LIS and used some of the information as the 'baseline' against which post clearance impacts are assessed (Table 10).

However, it is unclear what interaction the technical survey and clearance teams have with the community or any specific sections within it, such as herders, women, children, etc. There do not appear to be systematic mechanisms for ensuring that community feedback is elicited and recorded – at least, not as part of regular monitoring arrangements. The clearance team monitoring questionnaire asks whether people on site know there will be an explosion of a mine and that all the people are within the safe area during the explosion of the mine. It does not specify whether 'people' refers to both the mine clearance team and their support personnel or includes the local community, passers by etc. There are no questions which examine how this information is communicated.

The questionnaire dealing with the clearance teams' camps asks whether the leader visits local authorities regularly and whether health personnel attached to the team extend medical services to local villagers.

There are no ongoing procedures for asking and recording information on the ownership status of assets and the intended use of demined land. This is important as in some cases demining can exacerbate community conflict by releasing contested assets.

E.3 Assessing outcomes and impact

YEMAC appears to have successfully established procedures to monitor and evaluate the technical processes and outputs of mine action. However, the level of outcomes and impacts is still to be articulated. There are no specified outcome or impact targets against which the programme can be evaluated.

The focus of the current study has been on outcomes and impacts of the programme. That is, it is less concerned with issues of the effectiveness and efficiency of the mine action work, albeit important, than with the *consequences* of the actions and the changes brought about for the communities affected. It considers such questions as:

- Has cleared land and other blocked assets actually been brought into use and by whom?
- Have behaviour and incidences of mine related accidents changed following awareness campaigns and demining?
- At the impact level, has the increase utilisation of previously mine affected assets actually had an impact on people's livelihoods (e.g. widened opportunities, generated more income and employment, increased security)?

Attribution of outcomes and impacts to specific mine action interventions is difficult because of the intervening factors which affect the utilisation and benefits from freed assets. It is recognised that there is a complex relationship between awareness raising within communities and ensuring safety. Some people do not receive information, through absence or because information is not passed on (e.g. from men to women; from the centre of the village to outlying settlements). There is a range of motives and reasons which contribute to accidents, e.g. some people are forced by poverty and pressing need to take risks. Monitoring of the education and awareness programme mainly tracks the delivery of services rather than outcomes in terms of changes in behaviour. However, YEMAC does collect the important information on accident rates pre- and post-awareness campaigns. Thus, accident rates are one of the main indicators of impact of the mine action programme.

In relation to the first evaluation criterion – whether cleared assets are actually being used by the community – the reasons for limited use in many cases related to lack of clear information. The stage of handing over of cleared assets to the community appears to be particularly weak. YEMAC information suggests this is done in a 'formal ceremony', yet no reports of such an event were recorded during village discussions.

E.4 Recommendations

The experience of this study was that people in villages were readily able to articulate their fears and concerns about the mine risks, and to comment on the activities and performance of the survey and demining teams. The need for good communication skills within the teams is clear – it is not necessarily the same individuals who are responsible for the technical management of demining who should handle sensitive discussions with villagers. It is important to create an interview context in which feedback will be freely given to the teams.

Recommendations 16 -

- **YEMAC to reinforce understanding across all its programme areas of the importance of learning from feedback, specifically to encourage greater interaction with communities throughout all mine action processes. Records should be kept of all interactions with the community, covering:**
 - **Consultation with communities and local leaders over locations of landmines and UXO**
 - **Participation of communities during demining – records of information shared and to whom**
 - **Feedback of communities from education and awareness building activities.**
 - **Feedback on progress and experience of survivors.**
 - **A separate file should be kept for each village recording all stages of the awareness/clearance/handover processes. The file would also record feedback from the community, and performance against Quality Assurance indicators.**
 - **Criteria for community and gender balanced interaction need to be incorporated into monitoring forms.**
- **YEMAC to incorporate the collection of information on outcomes and impacts from mine action into its monitoring system. The first step is to develop a set of indicators which reflect communities' criteria of impact from mine action, including potential negative impacts. These could be subdivided according to different social groups, differentiated for women, men and children. Information on these indicators should be collected on an annual basis from a sample of communities.**
- **Prior to demining, YEMAC to undertake an assessment of potential development plans through participatory consultation with the community, both for the released assets and for the sustainable livelihoods of the village more generally. This should be consistent with national and local planning processes. It should incorporate careful investigation of the ownership of the mined areas, specifically where ownership is contested. This should be clarified by the village, together with agreement on how the unblocked assets will be allocated. Communities should be encouraged, wherever possible, to allocate resources to victims, landless and marginal groups.**
- **Questions relating to the handover process of cleared assets to the community should be a required part of the monitoring procedures, covering issues of participation of different groups (including women and children) and the nature of the physical demonstration of the safety of the cleared areas.**

F. Estimated costs and economic returns of clearance and release

The full figures on costs of mine clearance for all 25 communities visited were given in the last columns of Table 3. YEMAC calculated the estimated costs of landmine clearance on the basis of US\$ 1.4 per sq m of minefield cleared and the costs of land release on the basis of US\$ 0.072 per sq m of minefield released (although these may represent incremental costs only).

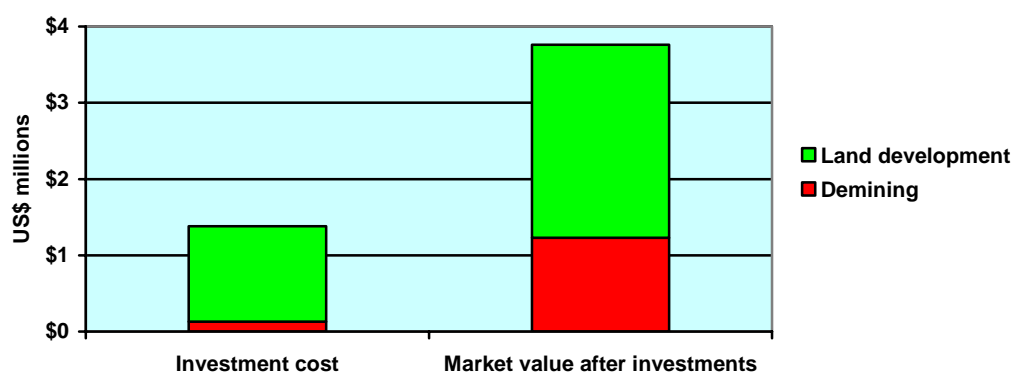
F.1 Cost-Benefit Analysis²⁸

While the survey was not designed to provide a complete accounting of the economic benefits accruing from mine action, we have obtained sufficient data to perform some very useful analyses of costs and benefits in some communities. Because the communities were not selected randomly, we cannot extrapolate from these illustrative cases to generate an estimate of the total economic benefits stemming from the mine action programme in Yemen, but it is clear from these few examples that the economic benefits are very substantial and, in total, exceed the cost of demining.

The most straightforward example is from Al-Jafinah, in Sana'a Governorate where an investment in demining of about \$125,000 led to an increase in the market value of the land of \$1,225,000. It also created the opportunity for follow-on investments in the range of \$1.25 to \$1.7 million to develop the land for crops (qat and grapes). These follow-on investments led to a further increase of \$2.53 million in the market value of the land (Table 11).

Figure 4 – Creating value and Opportunity in Al Jafinah Community

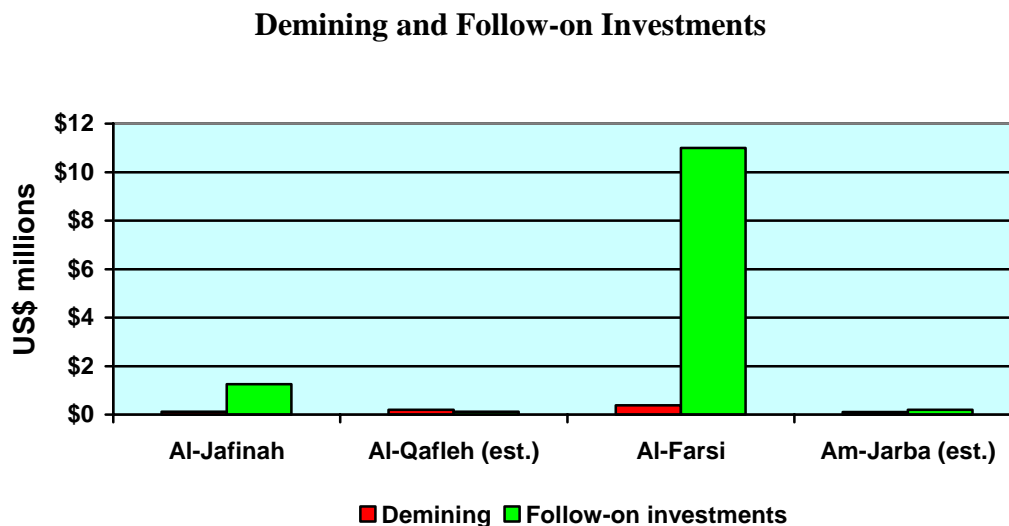
Creating value and Opportunity in Al Jafinah Community.



²⁸ From calculations by Ted Paterson based on data obtained during the survey. Details on the calculations and assumptions are obtainable from him at t.paterson@gichd.ch.

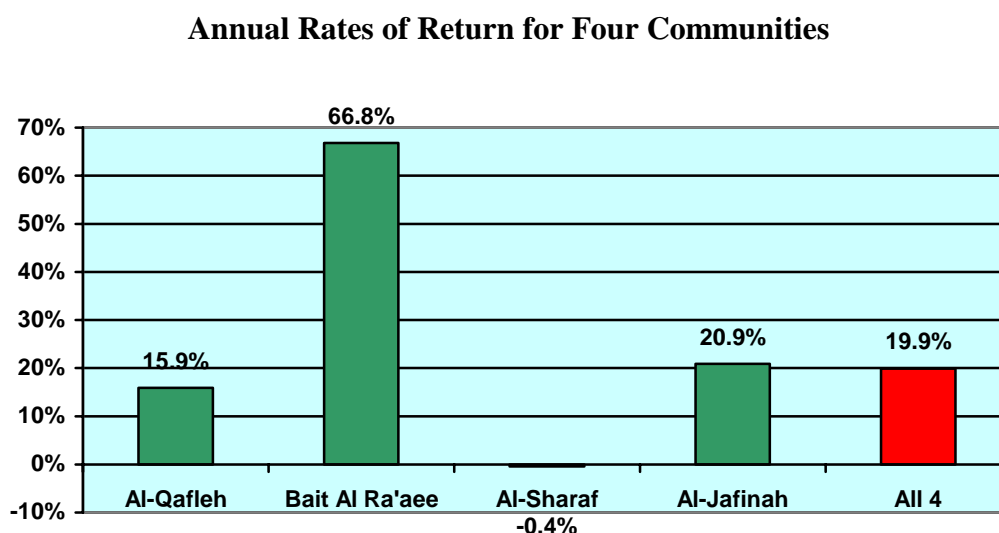
Demining created opportunities for follow-on investments in housing and land improvements for agriculture in a number of other communities, as illustrated below in Table 12.

Figure 5 – Demining and Follow-on Investment



The economic returns from demining (either alone or in combination with follow-on investments) vary widely among communities, but in some cases are extremely high. A convenient way of summarising the economic benefits is to calculate the internal rate of return (IRR – roughly equivalent to the annual rate of interest earned on an investment). We have been able to calculate IRRs for four communities. The results range from 66.8% to minus 0.4% (weighted average of 19.9%), as shown in Table 13.

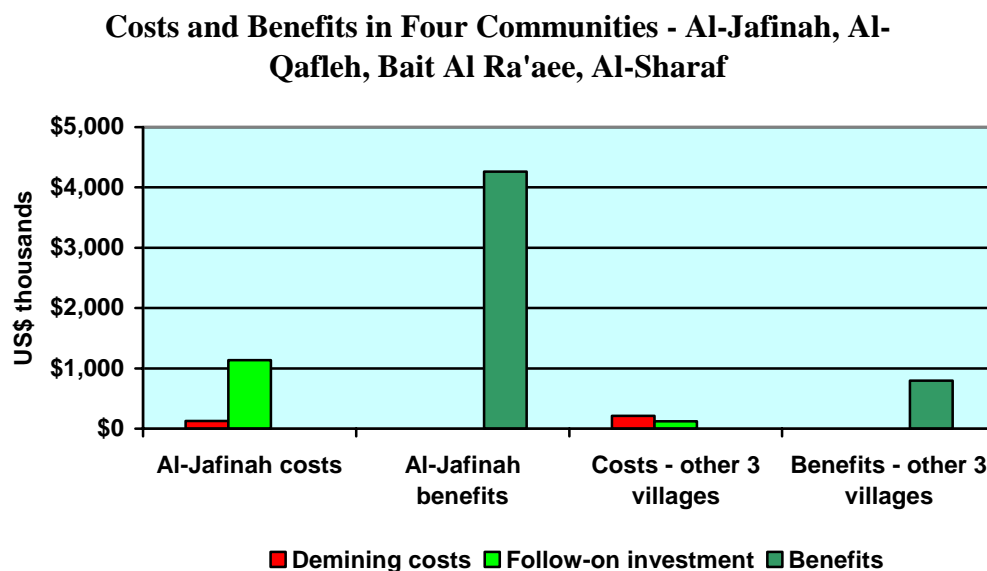
Figure 6 – Annual Rate of Return for Four Communities



These are very solid rates of return, and it must be emphasised that they represent only a partial accounting of the benefits stemming from demining – for example, they do not include the important benefits of (i) reduced landmine deaths and injuries and (ii) an enhanced sense of security for residents in these communities.

The size of the costs and benefits also varied significantly among communities. Of the four communities for which we were able to do a full cost-benefit analysis, the benefits were particularly large in Al-Jafinah, as depicted below.

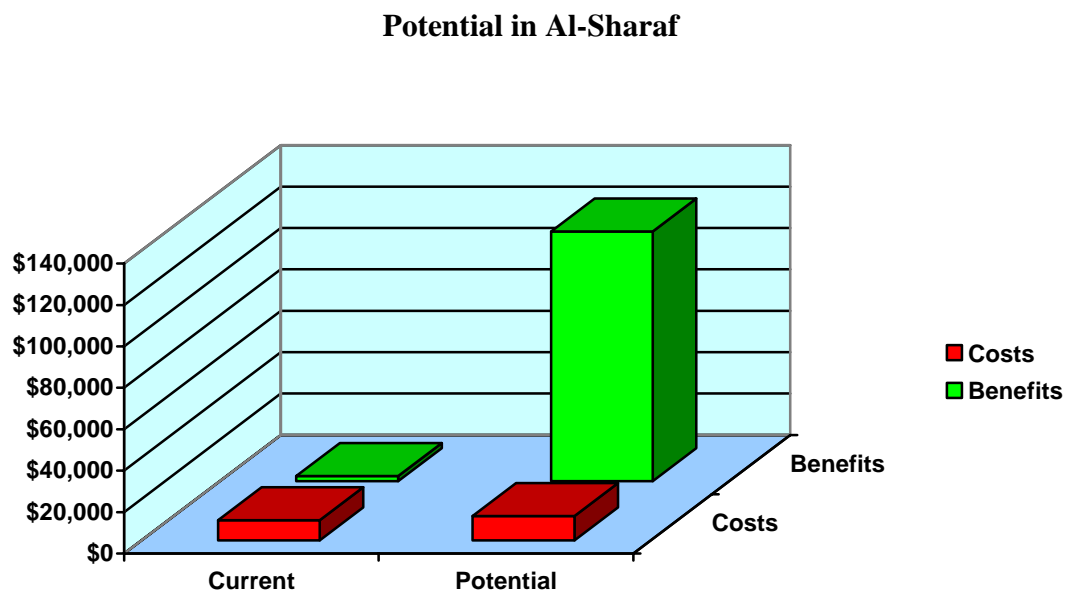
Figure 7 – Cost and Benefits in Four Communities – Al- Jafinah, Al- Qafleh, Bait Al Ra'ae, Al-Sharaf



The net economic benefits (i.e. after deducting the costs of demining and the follow-on investments) accruing from these four communities amount to almost \$3.5 million. This represents about 41% of total demining costs for the 25 communities included in the survey (the cost of demining those four communities was only about 4% of the total demining costs for all communities surveyed). Based on this very partial accounting, the total benefits stemming from Yemen's demining programme almost certainly exceed the costs by a wide margin.

This does not mean that demining has proved to be a good economic investment in each community. In some cases, the areas released by demining are not particularly productive and demining is motivated more by safety concerns and by Yemen's obligations under the Anti-personnel Mine Ban Treaty. In other cases, economic benefits have not been realised because the residents in the community are still afraid to make best use of the land. Further confidence building measures could pay significant dividends in such cases. This is illustrated in Table 15 below for Al-Sharaf, where assistance with a first cultivation of the demined land might provide a convincing demonstration that it is safe to use for growing crops.

Figure 8 – Potential in Al-Sharaf



Note on methodology – Standard cost-benefit approaches were used. Present values for both costs and benefits were calculated for a 15 year period based on a discount rate of 10%. Land was assumed to retain its value in real terms. Where current market values for land were reported, this figure was used; otherwise, today’s market value is assumed to be 5 times the net present value of the income flows associated with that land (the comparable market value figure for Al-Jafinah, where we have data on both the market value and income streams, is 7 times the discounted income flows).

Notes on the cases

Al-Jafinah (Sana’a governorate): 30 families have benefited from cultivating approximately 5,000 libna (approximately 22 hectares of cleared land). The value of the land before demining was 25,000\$ but after demining it increased to \$1.25 million before development, while the value of developed land was around \$3.75 million. The estimated net income from growing grapes and qat on this land is around \$75,000 per year. This compares to the combined landmine clearance and land release costs of \$125,234. Thus the cost of clearance and land release could be said to be recouped after 2 years.

Al-Sharaf (Dhamar governorate): All 7 families in Al-Sharaf have benefited from using the cleared land (around 25% of the total village cultivable land) for grazing their animals. They also collect stones from the land for house construction. Two small areas, formerly the site of the army camp, are cultivated by two households, with an estimated gross value of food crop production of approximately 54,000 YR or US\$276. If the community could (by itself or with help from YEMAC) overcome their fear of cultivating the rest of the cleared land, the annual

gross income from crops alone could potentially be around 2,700,000 YR or US\$13,776, compared with costs of clearance of US\$9,667.

Bait Al-Ra'ae (Ibb governorate): The net revenue from cutting stone is considerable (960,000YR per year), and has been of benefit to the majority of households in the village. This revenue compares to the estimated cost of landmine clearance and release of US\$7521 (1.47 million YR). This again suggests that two years revenue from stone cutting would pay for the combined clearance and land release costs.

Al-Qafleh (Al Dhale governorate): Since the access roads have been made safe, 20 terraces of qat have been established, with a net income of about 7 million YR per year. This compares with an estimated landmine clearance and release cost of US\$196,007 (38.4 million YR), which suggests that the total cost of clearance and land release would be covered by 5-6 years of good qat crops.

Al-Farsi (Aden governorate): The main beneficiary of clearance, is a large housing estate (2,600 houses) under construction for the Aden Refinery Company, with an estimated value of \$US11 million. This compares with an estimated landmine clearance and land release cost of US\$382,994, which is only 3.5% of the value of the completed houses and facilities. Without landmine clearance the houses could not have been built.

Am-Jarba (Lahij governorate): The minefield was in the middle of an urban area. After demining in 2005, people started utilizing the area for building houses, as a road, a playground and for herding animals. The land is privately owned, and the landlords have plans for building houses, with a rental value of 3 million YR per year. This can be compared to the landmine clearance and land release costs of US\$104,085 (20.4 million YR), suggesting that the costs would be covered after about 7 years.

Conclusions and Recommendations

This section brings together the conclusions and recommendations from all other sections, and then provides suggestions on how YEMAC and donors could use the study to benefit communities. These recommendations were discussed at a stakeholders' workshop in November 2006 and will be used as the basis for developing a detailed plan for the development of landmine-affected villages and the upgrading of YEMAC procedures.

Overall conclusions and recommendations

- This is the first survey that looks at both social and economic impacts of demining, and at developmental opportunities for cleared assets and landmine-affected communities. The survey was successful in identifying the impacts of demining and developmental opportunities in 25 communities (a 4% sample of all landmine-affected villages in Yemen and 17% of cleared villages) in 7 governorates (but not in the far north, the far west or the east of the country).
- The survey teams built up a strong relationship with the communities in the short time that they stayed in the villages. Community members gave freely of their time, ideas and hospitality. The presence of the survey teams and their questions will have raised community expectations that some action will follow to benefit the communities.
- Beneficiaries of the land and other assets freed by demining can be local farming, nomad or fishing families, building developers, private speculators or immigrants to the area, and government or para-statal bodies, (e.g. Aden Refinery Company, Aden Free Zone...). In some instances a community's interests can be damaged by assets being taken away from them by these external institutions.
- **There have been no fatal incidents in the survey villages since clearance.** Even so about half of all communities are still not using freed assets to their full potential because of perceived danger.
- The full cost of landmine clearance and land release is matched in most communities in the first few years by economic benefits that are a direct result of freeing up of assets by demining.

Recommendation 1

- **YEMAC is a focussed organisation that is acclaimed for its effectiveness in mine clearance, awareness raising and survivor support. However, it is not set up to carry out natural resource rehabilitation or social development. To implement the recommendations made in this report it would need to build that capability within YEMAC, or commission it from elsewhere. If it is to do the latter, at least one development specialist would need to be recruited into YEMAC who understands the issues and is able to monitor the programme effectively.**
- **The next stage of the process of rehabilitation of assets and development of landmine-affected communities should concentrate on the prioritisation of opportunities by social group, with quantified benefits, contributions, budgets and timetables.**

- **The report provides a good basis for approaching in-country and external organisations for funds to support the rehabilitation of assets, landmine/UXO survivors and the overall development priorities of communities within local council guidelines.**

A. Impact of awareness raising, demining and care for survivors

There is considerable variation between villages, in terms of their size, remoteness, infrastructure and services, educational and medical facilities, leadership, local institutions, occupations, topography, vegetation, land and livestock ownership and land use. Some villages are almost totally dependent on agriculture, while others have over 50% salaried employees (the major divide is between highland/mid-altitude villages and those in Aden/Lahij, which have a more urban character).

Recommendation 2

Based on the methodology of the current study adopt a system of socially-differentiated, gender-sensitive impact assessment of demined areas and integrate it into joint work plans and the information system.

A major factor in changing community perceptions of mine risks will be improving their knowledge of the demining process and its outputs. Awareness of the status of clearance by community members is patchy. In some cases communication between demining teams and the community has been good, but in other cases has been confined to formal meetings with village leaders, leaving others in the community unsure or even unaware of the situation. In some places there is distrust of the safety of cleared land, particularly for cultivation purposes. In some reportedly cleared communities, there is still ongoing active clearance of minefields.

Recommendations -

- **There should be dialogue with all sections of the community from the start of clearance through to final handover, with particular emphasis on actively demonstrating that specific areas are cleared. Community liaison volunteers (men, women and children who are selected by the community and paid a small honorarium for ensuring good two way communication between YEMAC teams and all members of the community) should be identified at the start of clearance and kept informed/involved in all the work of the teams, including handover of cleared land. As part of the required procedures for monitoring the work of the YEMAC clearance teams, records should be kept of team interactions with the community throughout demining, with specific details of the handover process of cleared assets and any demonstrations of safety (also see Section E, below).**
- **Community concerns about the safety of land for cultivation need to be recognised and addressed. Where necessary, local people should be contracted and paid by YEMAC to carry out first cultivation by appropriate methods to demonstrate the safety of arable land where this is in doubt.**

A lot of cleared land is now available to the whole community for grazing, fuel wood and fodder collection. This has had a major social impact, as livestock ownership varies between 5% to 100% of households, wood is still the main source of fuel in rural areas, and fodder is seasonally important in livestock keeping systems. The economic value of grazing, fuel wood and fodder can be considerable to the village.

Recommendations -

- **There is a need to ensure good land management practices for grazing, the use of fuel wood, water harvesting and quarrying of stone. In some cases these can be based on traditional land management systems such as “Hema”, and enforced through local bye-laws.**
- **Military camps on or near grazing lands should be relocated where practically possible as they disturb grazing and fuel wood collection by women and children**

The different roles and responsibilities of men, women and children need to be taken into account at all stages of interaction with communities concerning mines. Responses from women’s groups reveal the extent of their at-risk behaviour linked to their roles in the household. There are opportunities for women’s and girls’ interests to be better addressed in YEMAC work through enhancing their participation and access to information. The survey and clearance process did not systematically interact with women, nor was post-clearance information systematically passed on to them. The process of signing-off by local council leaders was not mentioned by the women consulted. Information sharing has not been adequate to inform or convince women that their area has been rendered safe.

Recommendations -

- **More specific gender related procedures addressing the UN Gender guidelines are needed at all stages of YEMAC’s work, but most urgently to ensure the participation of women in the post clearance handover process. This is most crucial to encouraging the maximum use of cleared assets and reducing fear.**
- **YEMAC should continue to encourage greater involvement of women and girls in MRE and awareness campaigns by recruiting more women’s awareness teams and by extending the house-to-house approach.**

Stone for building is a considerable economic asset to some communities. Land clearance has made this asset safely available. Crop production is now carried out on cleared hillsides and on wadi land with considerable direct impact on land-owning community members, and indirect benefits to those who provide labour or services to landowners. In some villages, terraces that were under cultivation before mining have not been brought back into cultivation due to concerns over their safety. Hence the recommendation above of assisting with first cultivation. In other places, new terraces are being established in newly cleared land – often for grapes or qat. In the south, there are problems over land ownership, with powerful influences (private

individuals, parastatals such as the Aden Free Zone, and government departments) annexing land for their own use. In some places the value of land has gone up 50-fold following clearance, with a further three-fold increase after the land is planted to a high value crop such as qat or grapes.

Recommendation - The expropriation of land by private and government interests should be addressed. YEMAC procedures should ensure the participation of communities in decisions about land distribution and use from the start of the de-mining process.

Bee-keeping is popular in some communities and brings in a good income.

Recommendation - Modern bar hives should be introduced to improve yields and ease the extraction of honey.

Roads and paths have been cleared to the benefit of the community, although there are some roads – often outside the immediate vicinity of the village – that have still to be cleared. These may not have been recorded in the village based mine survey work.

Recommendation - Clearance priorities should be identified with communities. Teams should operate within village boundaries. Where “linear contamination” (landmines between villages) is a problem, then this should be fed back to YEMAC programme planning. However, it is acknowledged that this will only be dealt with in exceptional circumstances because of resource limitations.

The clearance of land has made possible the construction of housing and other buildings by local people and outside private/government interests. In the south, this has led to considerable loss of community assets, such as grazing or arable land.

Recommendation - Local councils should be encouraged to ensure that planning of construction on cleared land should include the views of local residents

Land clearance has made playing and sport safer for children.

Recommendation - Permanent play/sport areas should be designated for children

The Yemen Landmine/UXO Victim Assistance Programme was praised by the Mid-Term Review of YEMAC for its medical and rehabilitation work with survivors. However, apart from a limited number of shining examples of survivors being supported to live fulfilling lives, this survey found that few survivors had heard of the Programme or were receiving assistance from it²⁹. This suggests that there needs to be greater awareness created of the Programme and its work, and greater donor/government support for the Programme so that it can respond to the demands that would result from such an awareness creation activity.

²⁹ YEMAC is working with the Ministry of Social Affairs to register all the survivors.

Recommendations -

- **An inventory be made of all survivors and the development of clear guidelines on their eligibility for support from various sources**
- **Survivors are made aware of the services available**
- **Medical care (physical and mental) is available for all survivors, regardless of when the landmine or UXO accident happened - including support with transport and other costs incurred by survivors when they attend hospital**
- **Continue and expand the provision of support for survivors to start their own small businesses and be independent of external assistance**
- **In needy situations, assistance be given to the families of survivors who have difficulty caring for them.**
- **Revise the existing eligibility rules of the Victim Assistance Programme to ensure that different categories of survivors and types of disability can be included.**

B. Development opportunities for landmine-affected communities

Successful development depends on good leadership. Leadership in the villages, particularly in the north, is very autocratic and of variable quality and effectiveness. The capacity of the community to plan and implement development projects is limited, although a few communities have successful community welfare organisations. There is poor capacity at village level to develop budgeted, time-bound business plans for development opportunities

Recommendations -

- **Give priority to demined lands and to the communities affiliated to these lands during the preparation of development plans, with emphasis on the comparative advantage and unique situation of each community.**
- **Revive the role of current Civil Society Organizations (including community welfare associations) in the communities where land was demined and promote the formulation of new organizations**
- **Promote investment in the demined areas**
- **Promote sustainable development initiatives through capacity building of local leaders (M&F), and of local communities, in planning and implementation of developmental community-based initiatives.**

There is considerable potential to increase the productivity of the **land-based assets freed by clearance**. Some possibilities have been mentioned in the previous section, and additional ones are listed below:

- Installation of water storage for drinking water and supplementary irrigation

- Soil and water conservation (particularly for wadi banks where flooding occurs)
- Training local individuals identified by the community as para-vets
- Establishment of terraces for the poorer members of the community who cant afford the capital investment involved
- Provision of agricultural extension advice on soil fertility management, pests and disease management, crop, livestock and fodder husbandry, honey production, woodlots etc
- Provision of advice on the storage, processing and marketing of agricultural and handicraft products for men and women

The development of the **whole** community has been blighted by the fear and restrictions caused by these munitions. Where the circumstances merit investment and meet government guidelines, it is therefore legitimate to consider the requests by communities for general development initiatives, such as:

- Educational and medical facilities
- Boreholes and wells for drinking water and irrigation
- Sewerage facilities
- Fishing equipment and processing plant
- Farmer/fishermen associations/cooperatives

Recommendation - Communities should be involved in the identification of development priorities, using this report as a starting point. The development of sustainable local capacity should proceed hand in hand with tangible development initiatives that benefit the whole community (within District plans and government guidelines).

Women, men and children have different development priorities

Recommendation - The priorities of each group should be identified separately, and priorities of women, men and children should be addressed.

C. Capacity development of YEMAC staff

YEMAC staff received a short, but intensive, training in participatory approaches and methods, and over the three weeks of the survey became competent in their application. Several staff grasped the concepts and the practice well, and would be able to plan and conduct similar surveys in the future – especially if a local development specialist supported them. The methods used were appropriate to the cultural conditions and were effective in understanding the impacts of landmine clearance on men, women and children.

Recommendations –

- **Women should form part of future survey teams, as the views of women and girls are vital to the full understanding of community situations**
- **The methods used in any future survey should depend on the objectives of that survey, building-on, and adapting, the methods used here.**

- **Further studies should be carried out on a proportion of cleared communities by YEMAC staff supported by a social scientist and women surveyors. These studies would have three purposes: a) the learning of lessons by YEMAC so that procedures can be further improved; b) the documentation of experiences and achievements to inform interested national and international audiences; c) to provide the basis for development initiatives.**

D. The Landmine Impact Survey

The findings of the current study lend support to the LIS impact scoring method as a rapid method to assess a country's landmine problem and priorities for action. Although the outcomes calculated by the method used here are not completely consistent with the impact scenarios of the LIS, they are closely linked. The survey has highlighted the importance of certain blocked assets such as building stone which is a major source of income from mountain areas in highlands, yet does not feature in the scoring.

Recommendations – Points to consider in future development of the LIS methods are the potential for:

- **Adapting the weighting according to the importance of the affected assets for people's livelihoods in different regions.**
- **Including in the land mine impact scores a measure of adaptation to the blocking of assets through exploring the community strategies for dealing with the situation**
- **Including an assessment of the ownership rights over assets which affect the likelihood of equitable access or conflict after clearance is complete.**

E. Advice on enhancements to YEMAC's processes for survey, clearance, awareness/education and survivor support and advocacy, and for their M&E system

Recommendations –

- **YEMAC to reinforce understanding across all its programme areas of the importance of learning from feedback, specifically to encourage greater interaction with communities throughout all mine action processes. Records should be kept of all interactions with the community, covering:**
 - **Consultation with communities and local leaders over locations of landmines and UXO**

- **Participation of communities during demining – records of information shared and to whom**
- **Feedback of communities from education and awareness building activities.**
- **Feedback on progress and experience of survivors.**
- **A separate file should be kept for each village recording all stages of the awareness/clearance/handover processes. The file would also record feedback from the community, and performance against Quality Assurance indicators.**
- **Criteria for community and gender balanced interaction need to be incorporated into monitoring forms.**
- **YEMAC to incorporate the collection of information on outcomes and impacts from mine action into its monitoring system. The first step is to develop a set of indicators which reflect communities' criteria of impact from mine action, including potential negative impacts. These could be subdivided according to different social groups, differentiated for women, men and children. Information on these indicators should be collected on an annual basis from a sample of communities.**
- **Prior to demining, YEMAC to undertake an assessment of potential development plans through participatory consultation with the community, both for the released assets and for the sustainable livelihoods of the village more generally. This should be consistent with national and local planning processes. It should incorporate careful investigation of the ownership of the mined areas, specifically where ownership is contested. This should be clarified by the village, together with agreement on how the unblocked assets will be allocated. Communities should be encouraged, wherever possible, to allocate resources to victims, landless and marginal groups.**
- **Questions relating to the handover process of cleared assets to the community should be a required part of the monitoring procedures, covering issues of participation of different groups (including women and children) and the nature of the physical demonstration of the safety of the cleared areas.**

F. Comparison of the costs of clearance and land release with the economic returns to landmine clearance

Community level data was used analyse costs and benefits. Investment in demining increased the market value of the land and created opportunities for follow-on investments in land improvements and housing. The economic returns from demining vary widely among communities, but in some cases are extremely high. In addition, it must be emphasised that they represent only a partial accounting of the benefits stemming from demining – for example, they do not include the important benefits of (i) reduced landmine deaths and injuries and (ii) an enhanced sense of security for residents in these communities.

Demining did not prove to be a good economic investment in every community, especially where the residents are still afraid to make best use of the land. **Further confidence building measures could pay significant dividends in such cases.**

Based on this very partial accounting, the total benefits stemming from Yemen's demining programme almost certainly exceed the costs by a wide margin.

Indicators of achievement and the way forward

The Table below summarises the indicators of achievement of YEMAC's core objectives, and some of the requirements for their effective realisation in tangible terms.

Table 11 - Indicators of achievement and requirements for effective development

INDICATORS OF ACHIEVEMENT OF YEMAC OBJECTIVES	REQUIREMENTS FOR EFFECTIVE REHABILITATION/DEVELOPMENT
Reduction in the numbers of mine accidents and loss of human and animal life.	Both demining and mine awareness education needed.
Demined land brought back into productive agricultural use.	For sustainable use, requires that access rights are clear and uncontested and owners are sufficiently confident to use land. Feelings of security would be enhanced with more information on cleared areas
Productive output and income from cleared agricultural land, both irrigated and rainfed, for different crops	Depends on resources for rehabilitation of land, adequate water supply, inputs and markets.
Use of cleared grazing areas Value of fodder and firewood collected	Increased livestock productivity depends on wider grazing management. Unless common areas are managed there may not be any benefit under an open access system
Value of stone cut	Benefits depend on land ownership and access rights.
Investment in new housing on demined land	Benefits depend on land ownership and access rights and local power relations. Could result in negative impact through loss of common pool resources.
Clearance of mined roads, leading to reduced transport cost and travel time; access to coast and fishing; improved market and social access	Clearance teams work outside the immediate village area



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Appendix 1. Pen sketches of individual villages

There follows a sample of illustrative case study villages (one for each of the seven Governorates surveyed) to demonstrate the range of circumstances under which landmine clearance has taken place, the socio-economic impacts achieved, the developmental potential and the situation of some of the survivors.

Bait 'Oqab (Sana'a governorate)

Bait 'Oqab is an *Uzla* located in Khawlan District, Sana'a Governorate. The village is very old, having been established at least 1200 years ago. There are about 7000 inhabitants, of which about 80% are land-owners and 20% landless. Many find it difficult to make sufficient money from the land alone, and about 15% are also government employees. Although only 30 minutes from Sana'a by road, the area is rural, and many activities of the local community are related to agriculture with the production of cereals and pulses under rainfed conditions, and qat, grapes and vegetables under irrigation. The prevailing drought has led to a reduction of irrigated crops, and a high cost of water. Many wells are dry and farmers cannot afford to drill wells to the depth required. The village was classified as medium impact in the LIS.

The history of land mines in the area goes back to the early sixties, and is associated with the civil war during the presence of the Egyptian forces. Over 1 million m² of land mines were laid on the hill slopes overlooking the wadis where agricultural production is practiced. These hill slopes were sites for the grazing of animals, fuel wood collection, the collection of building stone and the harvesting of water for crops. Paths also crossed the hills to neighbouring farms and villages. With the land mines all of these activities were severely reduced for some 40 years, instilling a great sense of caution into at least two generations. The combined cost of landmine clearance and land release for the 100 hectares of mined land was \$360,000.

Since demining the feeling of security is returning, and with it the various activities described. The hillsides are being used again for grazing, firewood collection and stone collection. However, caution still prevails. One road is still mined with anti-tank mines (Nagd Al-Salaf).



Building new terraces in demined land in Bait 'Oqab

Three major problems exist with the demined land:

1. Deterioration of range lands as a result of overgrazing and over cutting of shrubs and trees. Local suggestions to address this are to revive the traditional range management practices (*Hema*), increase awareness of the dangers of overgrazing, and to organise planting of trees and forages into the rangeland.
2. Limited numbers and low productivity of livestock in the area. Establishing a veterinary unit, or training paravets would help, as would better training of livestock keepers and the slaughter of unproductive animals.
3. New terraces are being established on demined land by the better-off farmers. Funds are needed to assist the community to make terraces and sink boreholes to benefit the poorer and landless members of the community.

Schooling in the village is inadequate, and there is a need for separate schooling to reduce drop outs among female students.

There is a social welfare organisation in the village. This is "Asad Al-Kamel", which is very active and highly praised by the community because of its genuine services to the needy in the community. The main resource of the charity is the monthly fees from community members. This charity could be used to channel government or donor funds to the needy in the community.

Case study of Hasan Ali Saleh Al-Kol (resident of Bait 'Oqab)



Hasan Al-Kol was lost one of his legs to a mine accident in the 1960s. An artificial leg was provided in Egypt, which was later replaced locally by another leg which proved unsuitable. Mr. Hasan now uses a stick to support his movement. Although he farms and is quite well-off, Mr. Hasan is interested in other project opportunities to enrich his life. He has had no contact with the Yemen Landmine Survivors Association.

Al-Sharaf Community

Wesab Al A'ali, Dhamar Governorate

Al-Sharaf is a very small village with only seven families and around 140 inhabitants, located in a remote high mountainous area, about four km from Wesab Al A'ali. The area was originally mined because an army camp was positioned on the village land during the early 1980s. The village was classified as medium impact in the LIS. Demining took place in 2004, and there have been no mine related accidents since then.

Before mines were laid, agriculture was the main source of income for the local community *"...we used to cultivate all the land around the village growing sorghum, barley, fenugreek, mustard, peas, and broad beans. We had enough for our needs"*. The main assets affected by mine laying were cultivated lands, estimated at more than 25% of the village total. Some paths to cultivated areas and grazing were also affected. After the mines were laid, alternative sources of income had to be found; local people migrated to Saudi Arabia and to major urban centres in the country. Many returned to the area after the Gulf War in the early 1990s. Currently the local economy depends on wage labour outside the village and some petty trading (mainly by men), cultivation of crops and livestock raising (mainly by women and children). Cereal production is insufficient to cover household needs and the economic returns from agriculture are minimal. The families' situation is one of general poverty.

The village has few services and no active associations or organisations. There is a secondary school in Wesab Al-A'ali, but the primary school is very distant. The water supply is located far away and requires a two hour round trip on foot. There is no electricity connection or telephone in the village. There are no government employees.

The community acknowledged the significant support of YEMAC in demining activities. They said that the benefits from demining have been the greater utilisation of and access to grazing land. They are also feeling more secure because there have been no mine explosions since demining. In addition, they have benefited from stone collection for house construction and terraces. However, they are still not sufficiently confident to cultivate the land as they believe there are mines deep in the soil. The only areas cultivated since demining were two small plots of sorghum planted this year on the actual site of the former army camp.



Sorghum plot on former army camp site



Fear of deep mines prevents cultivation

Suggestions for the future were, firstly, for demining of the remaining mined area and the need for further information on the already cleared area and mine awareness campaigns. Women suggested rehabilitation of the land which after 20 years without cultivation has suffered erosion and damage to the terraces, resulting in poor water infiltration and limited grass growth. The community suggested the construction of small dams for harvesting rainfall, as the scarcity of water and limited rainfall are the major constraints on cultivation.

Village level development suggestions from men, women and children, were for a drinking water supply project which would bring water near to their village and surrounding communities; a primary school to be built within easy reach of the village, literacy classes for women and girls and an electricity supply. They felt that the government or external donors should support these initiatives.

All seven families in Al-Sharaf have benefited from using the cleared land (around 25% of the total village cultivable land) for grazing their animals. They also collect stones from the land for house construction. Two small areas, formerly the site of the army camp, are cultivated by two households, with an estimated gross value of food crop production of approximately 54,000 YR or \$276. If the community could (by itself or with help from YEMAC) overcome its fear of cultivating the rest of the cleared land, the annual gross income from crops alone could potentially be around 2,700,000 YR, or \$13,776, compared with costs of clearance of \$9,667.

Case study: Fatima Ali Ahmed

Fatima Ali Ahmed is about 16 years old. The accident happened in 2000 when she was 10 years old. She was digging a plot of land to prepare for planting. Her mother was working some distance away from her, when she heard the explosion and saw her daughter was injured. Fatima was given first aid in the village and then her father took her to hospital in Sana'a. She stayed for two months in the hospital. Her foot was badly injured, but the doctors managed to save it. The family bore all the costs (transport, treatment and operations) by taking loans from relatives. "We ought to continue her treatment - she still needs another operation and physiotherapy, but our economic situation doesn't allow this. The costs totalled more than one million riyal. We still owe money from the loans we took."

The mother was aware generally that the area was planted with mines, but not of the risks of that particular location. Following the accident, some pamphlets with drawings were distributed warning us about mine explosions written in English and in Arabic. Neither Fatima nor her mother is able to read.

The family did not receive any outside support and had not heard about the victims association. The mother wishes somebody could help her daughter to complete her medical treatment because she still suffers pain and needs exercises and a further operation. Furthermore, she needs psychological care and support; "*She is depressed and permanently nervous. She stays at home alone and doesn't want to go out and mix with other girls or women.*"

Bait Al-Ra'ae (Ibb governorate):

Bait Al-Ra'ae is a small (20 multi-family households), medium-impact village at 2387 metres altitude. It is three kilometres from the district capital, Al Nadera, which has good facilities and good wadi agriculture (maize, qat, sorghum, fruit, some vegetables). Bait Al-Ra'ae in contrast, has no irrigation, and few crops were planted this year due to poor rains. The village has a reticulated water supply (although this doesn't work all the time), electricity supply and telephone, and several village members have mobile phones and televisions. There is a culture of cooperation among families and households, and the village is open with its information.

The demined area used to be used for cultivation of agricultural crops, herding animals and cutting stones. Mines were planted in 1982. During the period when the mines were there, some exploded, killing twelve people and numerous livestock from the village at different times. Mines were cleared during the period 2003-2004.

The demined lands are private property, and have been returned to the original owners. However, herding animals is open to the whole community. Cutting of stones is permitted upon request for members of the local community only.

The area is used for grazing, fuel wood collection and stone collection. However, because people are still not confident in the safety of the minefields, the terraces are still not cultivated. Women in particular were not informed about the activities of the deminers. As one woman said about the demining team: *"We did not know why they were coming and going to and from the village. We did not know if the area was demined or not because whenever they come they do not talk to us or explain what they are doing in our village. They used to dig posts with red colours or white colours. We did not know what these colours meant. Therefore we kept on feeling scared about the areas planted with mines."*



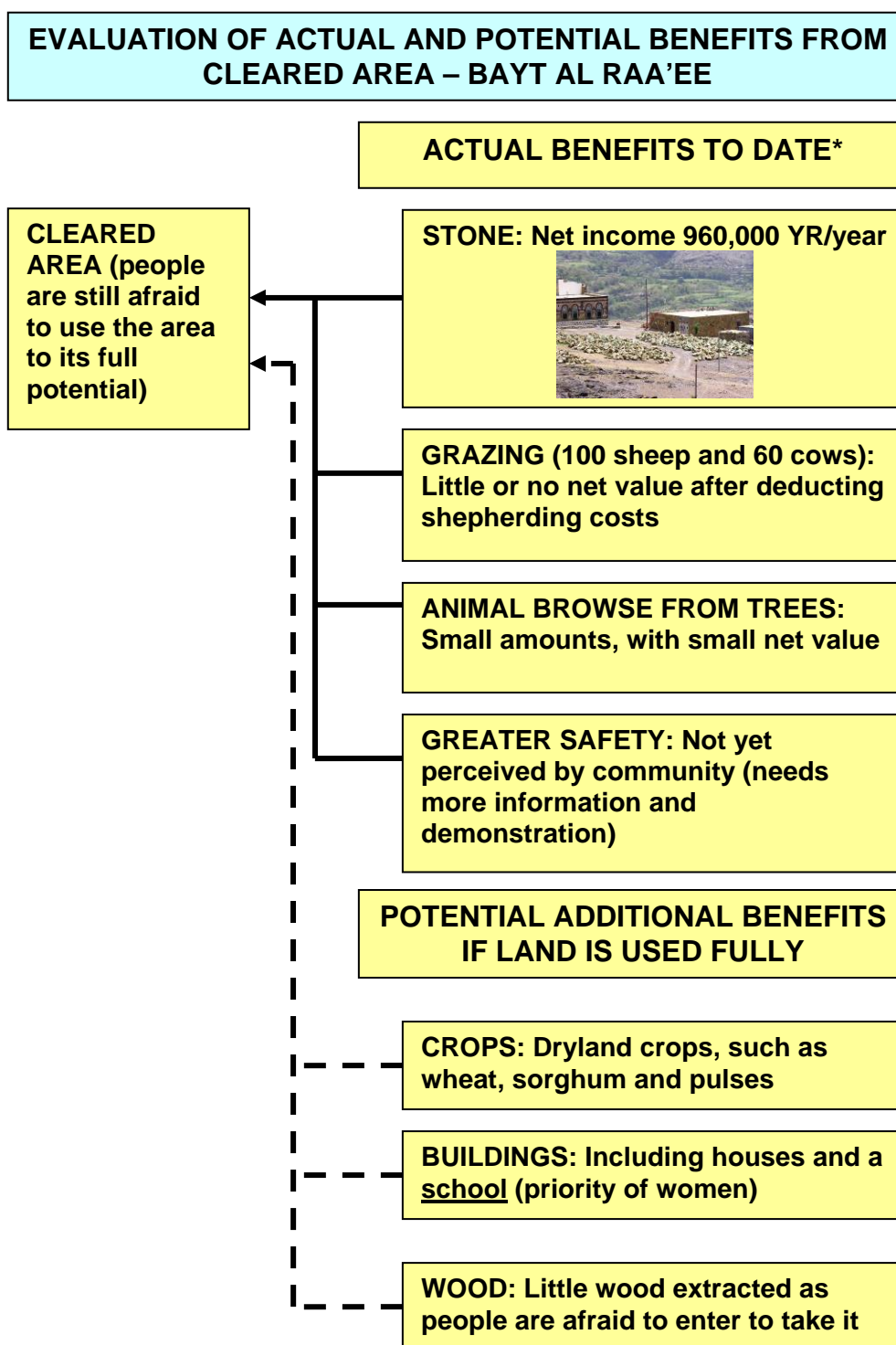
The demined area, showing unused crop terraces.

The net revenues from cutting stone is very considerable (960,000YR per year), and has benefited the majority of households in the village. This revenue compares to the estimated cost of landmine clearance and land release of \$7,521 (1.47 million YR). This suggests that two years revenue from stone cutting would pay for the clearance and land release costs.

Case study of Yahya Ali Saleh Al-Ra’ae

Yahya was 25 at the time of the accident in 1998. He was collecting stone for profit at the time, even though he was aware that he was in a mined area. His right leg was amputated below the knee, and there are metal pieces in the left leg. He received no support, and was un-aware of the Yemen Landmine Survivors Association. The injury did not deter Yahya. On the contrary, it gave him more reason to struggle for a better life.

Figure 9 – Evaluation of Actual and Potential Benefits from Cleared Area- Bayt Al Raa’ee



Al-Qafleh (Al Dhale governorate):

Al-Qafleh is a small, mid-altitude village with four minefields. It is 15 minutes from Qa'tabah town and less than one hours drive to Al-Dhale, the District capital. The community is predominantly agricultural now although in the 1960s – 80s many able-bodied men migrated to Kuwait, Saudi Arabia and the Persian Gulf. The village was on the frontier between North and South Yemen, so has known conflict for some time. There is no village council. Everything is decided by the sheikh, who then convinces the local Council to support his projects. The community contributed one million riyals towards building a six-class school in 1997, and the government put the roof on. Water comes from hand-dug wells, and a deep borehole (480 metres) which cost 5 million to dig and 6 million to equip.

The mines were planted in 1982. Before this, the local people were living a safe life practicing agriculture, herding animals and collecting fuel wood for their local needs. After planting of mines, their lives changed drastically. The feeling of insecurity got worse and worse and there were several casualties (people and livestock). The land was 20% cleared of mines by the community by itself, using rakes to locate the mines. The other 80% was done by YEMAC. Official demining started in 2005. After demining, people started to feel more secure, and started to utilize the demined area for agriculture, herding animals and fuel. The demined area consists of 5% agricultural land, which belongs to landowners in the village, with the balance rangeland, which is considered community property. Nearly all households own livestock, so the return of important grazing lands has made a big impact on the whole village.

Since the access roads have been made safe, 20 terraces of qat have been established on the agricultural land, with a net income of about 7 million YR per year. This compares with an estimated landmine clearance and release costs of \$196,000 (38.4 million YR), which suggests that the total cost of clearance and land release would be covered by 5-6 years of good qat crops.

The irrigated land is owned by 5% of the population. However most households benefit from good returns to qat in one way or another (labouring for 600-1000 YR/day, selling etc). There is also immigrant seasonal labour (some of whom settle in the village).



Fuel wood collection and grazing of livestock in cleared areas of Al-Qafleh by women and children

In this village the women were aware of the activities of the deminers. One of them said: *“The deminers came to the village a while ago and camped here for almost a year. They were removing mines in the mountains. We used to see them always. Our husbands and our children used to help them in identifying locations of mines. Two months ago, we were told that this area was cleaned from mines. After this, we started feeling safe and secure. We started herding our animals without fear for the animals and for ourselves. We also started collecting fuel wood from the same area. The wood of this area is considered the best fuel wood. Women from neighbouring villages come to collect fuel wood from our area.”*

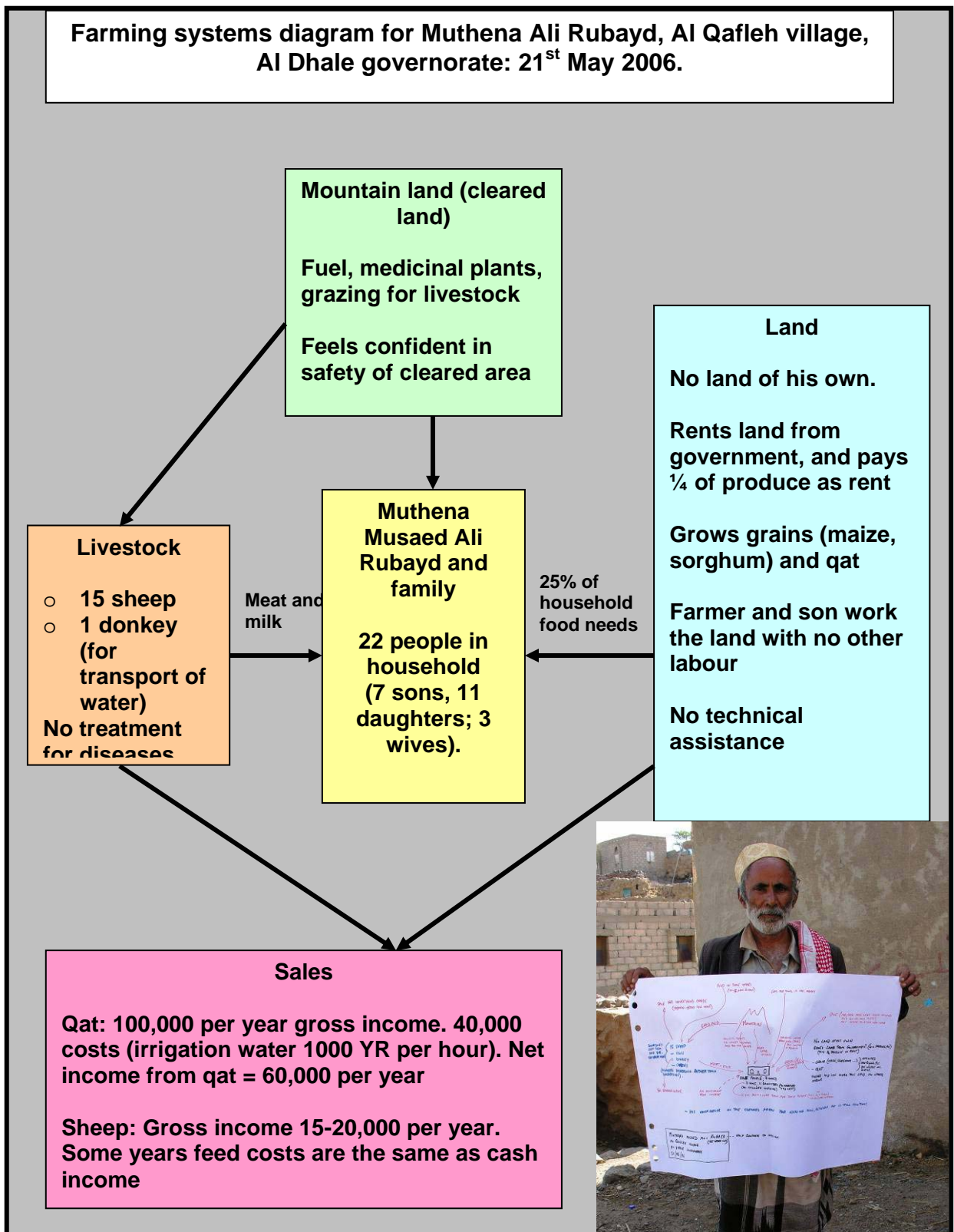
The main developmental opportunities identified by men and women are the digging of deep wells for clean drinking water and the provision of schooling, especially for girls.

Case study of Omer Mohamed Thabet

Omer was 33 years old at the time of the incident,. He is now married with eight children. *“I was herding when the incident occurred in Lakamat Al-Karameed. This happened in 1999. I was rushed to Aden and underwent an operation. I was aware about the dangers of mines, but I did not expect the explosion. My right leg was amputated below the knee. After the incidence, I felt depressed and dependant on others. I did not get any assistance whatsoever. I knew about the department of victims (survivors) in “YEMAC”. I need anything to help create my own business and to be self-reliant.”*



Figure 10 – Farming System diagram for Muthena Ali Rubayd, Al Qafleh village, Al Dhale governorate



Al-Farsi (Aden governorate)

Al Farsi is a medium-sized, low-impact village on the coast close to Al-Buraiqa town. The village was involved in major military activity during the civil war, so there were minefields surrounding the village, on the coastline and near the strategic bridge to Al-Buraiqa. Mines were anti-tank, not anti-personal, so that most victims were killed outright. Only one survivor was found. Demining took place in 2001. The village was a fishing village, and also next to an old salt producing facility. Thirty percent of the present working population are fishermen, 50% artisans (builders etc), 20% labourers and 15% professionals (schoolteachers etc). The older houses are of wood, while newer ones are of cement block, built on sand. The whole area is desert, with no agricultural land and no irrigation. There are a few fruit trees near houses, a few sheep and goats, and 3-4 cows.



Fishermen with their small, fragile boats.

The mined area was not in a productive place, so the main impact on the community has been a greater sense of security for children who might have strayed into the mined area.

The **main beneficiary of clearance** is the Aden Refinery Company, which is constructing a large housing estate (2,600 houses) with an estimated value of \$11 million as compared to an estimated landmine clearance and land release cost of \$382,994 (only 3.5% of the value of the completed houses and facilities). The land around the village is government land. The housing estate has destroyed the grazing land the village used to have. However, the community has benefited from the asphalted village roads, employment in the oil company, a bus to take students to university, classes for the school and contribution to the medical clinic.



Foundations for 2,600 new houses beside Al-Farsi village

Local people are also asking for street lighting, a bus system to get to town and drinking water for the school.

There is a local NGO (Al-Farsi Social Welfare Institution) led by local people concerned for the welfare of poor people within the community. It was officially registered in 2004 and uses anonymous donations from within and outside the community. Those who can (about 120 families) pay in 100 YR per month. The main objectives of the Association are to improve the livelihoods of the poor in the community and to improve the education of local people, especially girls. It would be possible for this NGO to administer government or donor projects that benefit the less well-off in the community.

The main development opportunities for the village are:

- a) The establishment of a fisheries association, and the acquisition of sea-worthy boats, equipment and facilities
- b) Sewerage project
- c) School

Case study of Mohamed Naser Salem Al-Hamaty

Mohammed was 38 at the time of the incident in 1994. He is married with six children.

“I was driving my car in “Karesh” when I hit an anti-tank mine. The mine exploded and my car was completely destroyed. I was injured in my legs and hands. I cannot walk on my right leg, and I have not worked since the incident. No body is helping me. I am looking forward to assistance to begin my own business and generate decent income for my family. I do not know of any association helping mine victims or survivors.”

Am-Jarba (Lahij governorate)

Am-Jarba is a small town on the main Aden-Sana’a road about five minutes drive from Lahij. It is a low-altitude, medium-impact site. The single, small minefield is in the middle of town in an active, built-up area. The mines were planted during the 1994 civil war, causing fear and anxiety among children and grown ups.

The area was cleared of mines in 2005. After demining, peace and calm returned to the inhabitants of the village. People started utilizing the area for building houses, as a road, a playground and for herding animals. The land is privately owned, and the landlords have plans for building houses on the area, with a rental value of 3 million YR per year. This can be compared to the landmine clearance and land release cost of \$104,085 (20.4 million YR), suggesting that the total cost of demining would be covered after about seven years.

There is high unemployment of both men and women, as the town is in transition between rural (without agriculture) and urban (without employment) states. Am-Jarba is located in the vicinity of Saber City, the future capital of Lahij.



The cleared minefield, showing the paths across it

The women interviewed said *“When the demining team came to the village, we provided all kind of help to make their mission a success.”*

The priorities identified for the

development of the village by women were:

- a) A workshop for tailoring clothes.
- b) A reliable and adequate water supply.
- c) A permanent playground for the children

Other priorities identified by village leaders were a medical centre and affordable housing.

Ofeini (Abyan governorate)

Ofeini is a nomad community of 12 families about 40 minutes drive from Abyan town along desert tracks. The nomads live as separate families in rudimentary “settlements”, and herd camels and sheep/goats, and keep bees (their main cash income). One of the main forages is *Sesbania sp*, which is an introduced species. The area is owned by one sheikh, who allows the nomads to graze the area free of charge as long as they don’t make any permanent settlement. The area is suitable for livestock and crop production if there is good flood water or a reliable water supply.

The area was a battleground during the civil war, so there was a lot of unexploded ordnance, which has been cleared and destroyed. The one small minefield was cleared in 2005.



A nomad family in Ofeini

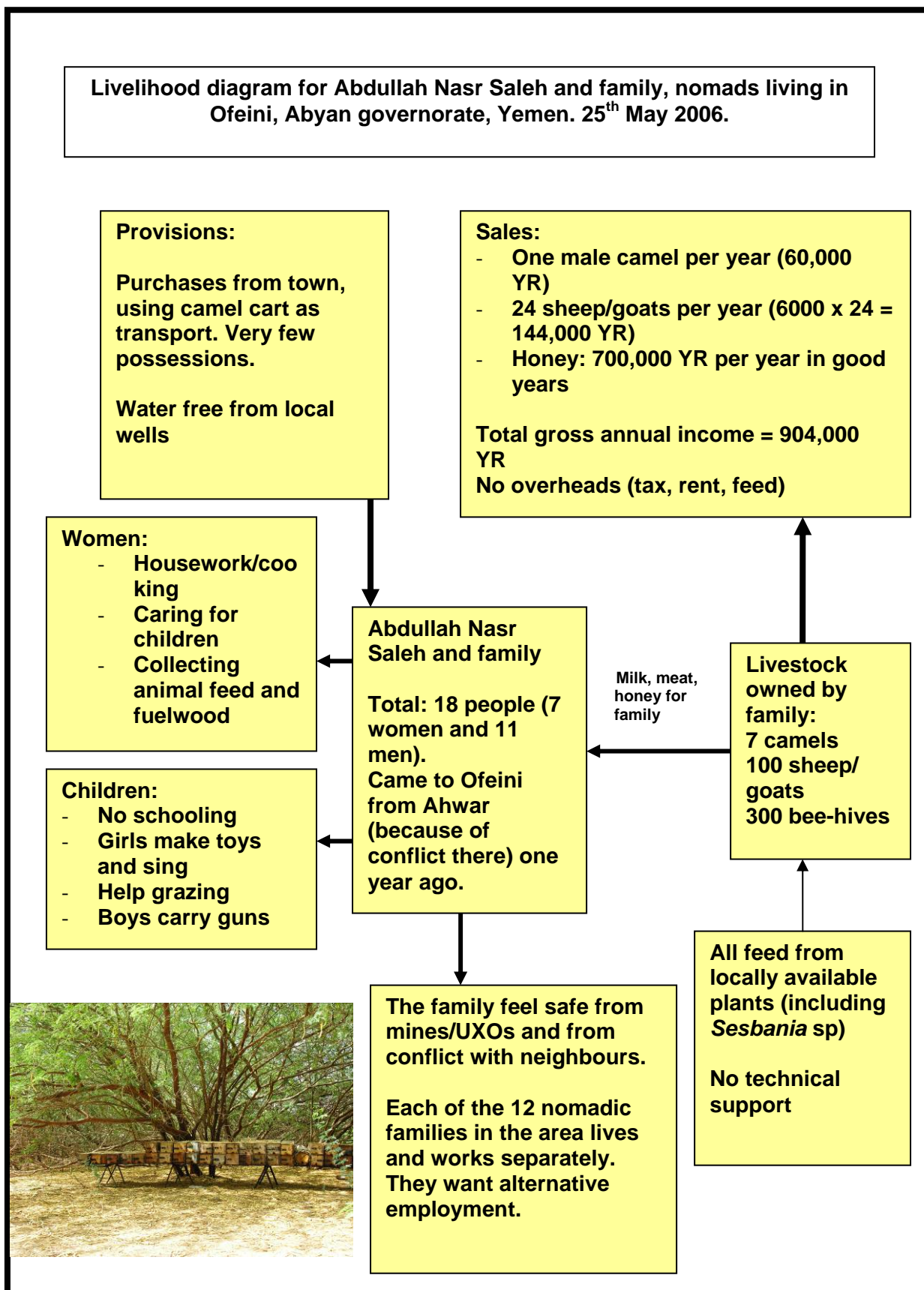
The nomads have moved into the area since it was made safe, and are making a good living. However the children are not in school, and there is a lack of employment for men and women for those years when the climate is against them.



Nomad women in their “home”

Ofeini has experienced shortage of rains and floods during the past seven years. If rain or floods are adequate in future years, the landlord will cultivate the land with crops – perhaps displacing the nomads who have no security of tenure. An alternative plan is for the sheikh to develop the area for the breeding of quality livestock (sheep, goats and camels). The gross income of one family was 904,000 YR (750,000 net income). For 12 families this might be about 9 million YR per year, this being about 12 times the total estimated landmine clearance and land release costs (\$3586 = 707, 856 YR).

Figure 11 – Livelihood diagram for Abdullah Nasr Saleh and family



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