PRACTICAL ACTION
Consulting

Towards sustainable and integrated waste management in Azerbaijan

Recommendations for Yevlakh and Tovuz Towns

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Executive Summary

Practical Action Consulting is supporting HAYAT, a national NGO in Azerbaijan, on a project funded by ENVIRON Foundation and DEFRA (PECE) to promote and undertake Sustainable Waste Management activities in Azerbaijan. Dr Mansoor Ali and Dr Lucy Stevens undertook a visit to Azerbaijan from the 8th to 15th of October 2006 to assist HAYAT staff in developing recommendations for implementation under Phase 2 of the programme. During the visit the consultants travelled to the towns of Yevlakh and Tovuz with HAYAT staff and a translator. This report includes the background to the programme in Sections 1 and 2 followed with details of the various meetings and discussions conducted in Section 3. It then goes on in Section 4 to summarise general and specific recommendations for Phase 2 Implementation.

The key recommendations are as follows:

- The waste systems in Tovuz and Yevlakh are fairly basic and there is a lot of scope for improvement. However improvements need to be designed to contribute to the overall goals of improvements in public health and the local environment, with the benefits distributed as widely as possible across all income groups. A number of specific projects will be initiated in Phase 2, however we strongly feel that there is a need to **develop a strategic vision and plan for waste systems** in both towns. HAYAT can play an important role in enabling municipal organisations to initiate this process in Phase 2.
- The main area of concern in both the towns is secondary (i.e. temporary or intermediate) storage and transportation, however the nature of the problem is different in both the cases. In Yevlakh, although the current fleet of vehicles is adequate to transport the generated quantities, the vehicles are very old and the system is inefficient. Hence in Yevlakh, there is a need to **pilot more efficient collection systems, for example with use of different container systems etc**. In Tovuz the CSO (Municipal Services Department) is hoping to introduce a waste collection system in the surrounding villages. The number of vehicles they own is not enough to expand the service. Hence, in Tovuz we recommend the **purchase of a tractor and trailer** but strongly recommend that a partnership agreement be signed with the CSO Tovuz to ensure that the vehicle will **collect waste from secondary storage points as opposed to house to house**. This will help in carrying larger quantities of waste away from the residential area, hence contributing to the public health.
- The final disposal sites in both the towns are a major threat to the natural environment and water bodies. Although, HAYAT staff and the CSOs would like to see improvements here, we suggest that the partial solution of just covering the waste may actually increase the risk from leachate and gases.

We recommend that the CSOs should receive **training on the planning and operation of final disposal sites**. PAC will assist HAYAT in identifying potential training organisations in Turkey. We also recommend that HAYAT only supports the programme of improving the final disposal sites by pushing the waste but not covering it. This area needs careful technical planning and any short term solution to just hide the waste may do more harm than good.

- Waste reduction and recycling are important component of waste systems and various possibilities were discussed during our visit. HAYAT is already running some programmes in schools and communities on recycling. We recommend that pilot programmes need to be undertaken on **waste separation at source, home composting and supporting recycling centres currently run by the private sector**. The exact nature of such programmes will depend on the costing and further details to be developed by HAYAT staff.

- Interventions in general will increase activities and so operating costs needed in relation to waste management. If these changes are to be sustainable they will have to be matched with **improved cost recovery systems**. In this case as with waste reduction and recycling initiatives, there is a need to support programmes with activities to **build community awareness** and change attitudes towards payments. There is also a need to consider cross-subsidy between different income groups of users.

- The improvement of the park area in Yevlakh and a street in Tovuz are important initiatives by Hayat demonstrating **better use of public spaces for recreational use**. Such initiatives can be used as starting points to introduce better practices of waste storage and disposal in the neighbourhoods. We recommend that such initiatives be replicated in both the towns using Phase 2 funds. If Hayat staff would like to take this forward, a part of Phase 2 budget must be used for this.

- The area of **wastewater** also needs immediate attention in Yevlakh in particular. The whole system needs planning and replacement, which may be outside the scope of this project. The community is very concerned about the situation and there is a scope for community participation and contribution on wastewater improvement within the wider context of the strategic plans to be developed in Phase 2. For those areas, where wastewater is a higher priority, solid waste initiatives may be delayed.

- In general, **training of CSO and HAYAT staff in better planning and design of waste management systems** is an important activity for Phase 2. The consultants have a good idea of the training needs and will identify appropriate training opportunities with an emphasis on looking at successful cases in Turkey, which shares cultural and language links as well as a similar climate to Azerbaijan. We would like to propose that CSO and Hayat staff

would use the training as an opportunity to develop details and costing of the Phase 2 projects.

The report goes on in Section 5 to propose ways forward for the project and outline timeframes for activities and priorities for work in the Phase 2, building on the recommendations of this report over the coming months.

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1. Background

HAYAT is a leading national Non Governmental Organization working in Azerbaijan since 1994. Its strategy to address environmental issues is driven by the Environmental Awareness and Improvement Programme (EAIP) which includes various projects undertaken with an objective of raising community awareness and providing environmental education in Azerbaijan. HAYAT would like to address environmental issues from many perspectives and use different approaches to address these issues. Their methods include surveys, consultation, training, support, model projects, youth activities and practical orientation for stakeholders. In 2006 HAYAT received a grant from the ENVIRON Foundation and DEFRA (PECE) to improve the solid waste management situation in provincial towns in Azerbaijan. This project is complementary to the overall EAIP programme under which a few activities to improve municipal solid waste management in the town of Tovuz have already been supported.

Under the Environ Foundation-DEFRA programme Phase 1 activities, HAYAT has already conducted a waste management survey which covers the towns/villages of Dalar Jayir, Tovuz, Ujar and Yevlakh. Practical Action Consulting (PAC) provided technical support for this project and defined the terms of reference for the survey conducted by HAYAT. PAC also provided feedback on the survey results. Following up on the outcomes of the survey, a visit was undertaken by Dr Mansoor Ali and Dr Lucy Stevens of PAC from 8th to 15th October 2006. The overall purpose of this visit was to work with HAYAT staff, community representatives and local municipalities in developing recommendations for the implementation of the Phase 2 project. The PAC team worked alongside Hayat staff to make sure that the ownership of the initiatives remain local.. In addition, Practical Action staff also held capacity development workshops and structured discussions with municipal staff, community leaders and HAYAT personnel. The full terms of reference for the visit are provided in Appendix 1. This report details the activities undertaken during the visit, the methodology utilised and the recommendations as a result for Phase 2.

1.1. Visit Schedule and Approach

The detailed itinerary of the visit is given in Appendix 2.
HAYAT field staff consisting of community liaison officers, environmental specialists and technical staff accompanied the consultants throughout the visit along with a translator. As said above, the overall approach of the consultants was to work closely with HAYAT staff to maximise their participation and confidence in the process, and involve them in developing recommendations as much as possible. Structured

meetings were conducted with the municipal staff to understand and incorporate their points of view. Some useful solid waste management books and a DVD on sustainable waste management practices were also given to the HAYAT office in Baku to both provide information and to be a resource which could be used in future awareness raising or educational activities. Because of the short time available, not much time was allocated to talking with the beneficiaries, therefore we relied on the community views reflected in the surveys conducted by HAYAT and summarised in Section 2 of this report. The earlier waste management survey complemented by the stakeholder meetings and workshops undertaken in the visit, have enabled the joint development of recommendations not just based on technical criteria, but on the interest and priorities (ownership) of local people including HAYAT staff.

2. Baseline Study Conducted by HAYAT

This section summarises the key information related to waste management as provided in the final report of the Waste Management survey undertaken by HAYAT. This information provided the background information which enabled the preparation and scoping of the Phase 1 visit and workshops. The following sections will help readers of this report to understand the baseline situation and our point of departure. The fieldwork for the report used various methodologies to collect data and information including structured interviews, focus groups and self-completed questionnaires. The towns surveyed and their populations are given below in Table 1:

Town	Province	Population
Ujar	Ujar	16,800
Tovuz	Tovuz	14,000
Yevlakh	Yevlakh	60,000
Dallar	Shamkir	5,500

Table 1 - Towns covered by Waste Management Survey

As an initial conclusion of the survey it was decided to focus the efforts on the project on Yevlakh and Tovuz as they offered the best combination of clear need, local HAYAT capacity, potential to act as models, and willingness and interest on the part of Community Action Groups (CAGs) and Municipalities. The background information on these two towns is reproduced here without any factual changes made by the consultants.

2.1. Yevlakh Town

The HAYAT survey found that Yevlakh has 75 open communal temporary storage points (“secondary” storage points) from which waste is transported to the landfill site and there has been a 50% increase in dumping in the last 8 years. A total of 10 vehicles are used for waste collection from the these secondary storage points as well as some collection is directly done from households. Waste is neither separated at home nor collected separately in vehicles. The final disposal site attracts local scavengers who look for metals and glass for resale. Once the garbage is dumped in the designated area, it may be up to six months before being buried. Also, the site’s drainage leads towards run-off into the local waterways.

Street cleaners collect 1,500 cubic meters (300 tonnes) per day based on a density of 200 kg/cu-m) of waste, half of which is non-biodegradable. Households produce 10-15 kg a month (approximately 0.5 kg/ person/ day). They are charged 0.15 AYN (or US$0.17) per person (an average of 0.70 AYN or US$0.79 per household).

While households have collection from and the use of public waste bins, businesses are responsible for disposal of their own waste. Businesses that have collection boxes are charged 15 AYN (US$17) a month. Each month 105 cubic meters (30 tonnes per day) are collected, and 30% of this is non-biodegradable. A similar amount is collected from the local bazaar by designated workers. The bazaar administration is charged 120 AYN (US$136) each month. Similarly, industries dispose of waste in collection boxes in similar amounts but with a higher amount of non-biodegradable waste.

Trucks and trailers are used to collect garbage. These vehicles collect mixed waste from both households and containers at dumping points. Households are visited regularly with 5 to 10 kg collected in each visit. Much of the generated waste is kitchen waste, but households also include branches, metals, plastics and other heavy items. Street and public areas are cleaned everyday by hand/broom resulting in six truck loads of waste a day. We suspect that this also includes waste from the markets.

According to HAYAT's baseline, the major needs of this community are in the area of waste management with the primary goals of 100% waste collection and covering of open sewage canals. Currently, the population would like to have more waste collection bins constructed and distributed. However, the community members do rate the waste management situation as improving since the 1980s. Subbotniks (cleanliness days) and other organized 'volunteerism' is seen as a way to improve waste management practices in Yevlakh.

2.2. Tovuz Town

Tovuz is a small town as compared to Yevlakh and the existing waste system is fairly basic and restricted to the town only. The HAYAT survey estimates that there has been a 50% growth in public dumping in the last eight years, a similar rate to that found in Yevlakh. Six trucks/tractors are used for waste collection with about half rented for this purpose. These vehicles collect mixed waste from both households and containers at dumping points. Households are visited regularly with 5 to 10 kg collected each time. Much of the regular waste is kitchen waste, but households also include branches, metals, plastics and other heavy items. Families are charged about 0.7 AYN a month for collection. Business, apart from those in the local bazaar/open market, are also part of the collection scheme with each truckload charged at 15AYM.

Street and public areas are cleaned everyday by hand/broom resulting in six loads of waste a day. Nearly 80% of this waste is non-biodegradable, particularly as cigarette butts, plastics, treated paper and various litter.

The waste is disposed of in a field 15 km away from the town which is currently in a bad condition. This field attracts local scavengers who look for metals and glass for resale. Some look for reusable items. Waste is not currently separated.

The garbage is taken to the final disposal but once the garbage is dumped in the designated area, it may be a few months before it is buried. Also, the site's drainage points towards run-off into the local rainwater catchments.

The market is responsible for its own collection. A private company manages all market administration. A large truck is used to cart waste from the public market (a large area with many shops, agricultural products stalls and more). Each sales point is charged 10AYN monthly for collection with about 60 truckloads a month. At least, half of these loads are not bio-degradable.

Officially, the town has six large secondary storage points which the CSO would like to reduce in number by introducing house to house collection. The community representatives noted the need for more awareness work, changes in agricultural practices, stronger coordination and improved information transmission / knowledge management. They agreed that they can organize planned work, raise awareness among the population and create neighbourhood committees. To better respond they emphasized the need for equipment for separation and recycling.

The PAC consultants kept the above recommendations in mind when carrying out discussions with HAYAT team and municipal officials.

3. Field observations and meetings during this visit

This section presents the details of observations, meetings and discussions held in Yevlakh and Tovuz during the PAC field visit. The specific and general recommendations developed from these observations and meetings are given in Sections 4.

3.1. Field observations

3.1.1. Final disposal sites: Yevlakh and Tovuz

Yevlakh landfill

The site is located approximately 7 km from the city centre and is irregular in shape. It measures approximately 200 m by 50 m. About 20 truck loads of waste are disposed at the site each day (approx 60 tonnes/ day). The waste is exposed and there is no sign of regular waste coverage and compaction. The site has no protection to leachate and no collection of gases. The site is located between a river on one side, and a drainage/irrigation canal on another side. The site is not far from one pipeline route and has been used for waste disposal for more than 20 years. Most of the waste is larger pieces of metals, construction debris, combined with household waste, and items such as empty paint cans. The ownership and management of the site is with the CSO, however no municipal staff, equipment or machinery was present at the site. According to HAYAT, the government has no vision or plans to improve the site. The main interest of Yevlakh's residents in the site is whether it could provide them with business opportunities, and whether waste is removed from their neighbourhoods. They are less worried about any environmental pollution.

Figure 1 - Yevlakh landfill waste composition
Figure 2 - Yevlakh landfill, proximity to river

The waste picking activity was not significant at the site. We observed three waste pickers at the site – one using a car, one on horseback, and another on a trishaw. They were looking for thick metals and other re-usable items. It was clear that only a small proportion of the recyclable materials were being picked at the disposal site with just 10-15 waste pickers coming to the site each day. There is some land adjacent to the site which is used by pickers for storing separated waste before it is sold to dealers. We were told that there are two factories outside the city which buy metal from receiving centres (dealers) in the town. Apparently there is a large demand for the separated waste particularly iron and plastics but waste picking has not benefited from this demand. Reasons for this are thought to be a combination of waste quality not meeting specifications on the parts of buyers, lack of economies of scale and a missing linkage between the resource and the potential buyers. Strategies to address these issues are proposed in Section 4.

Tovuz landfill (Abubeilee Area)

The landfill site in Tovuz is located away from streams or other fragile environments, however it slopes towards the river catchment area. We were told that this part of the country receives about 900mm of rain per year, enough to generate leachate. There is some snow cover in the winter months (November to February). The site topography is of hills and valleys. The site is owned by the municipality of one of the villages surrounding Tovuz town, although exact details of the site ownership are not clear. The access road is not metalled and is uneven in places. The CSO manages the site to some extent by pushing waste from the road and covering it with soil but the impact of all this was not visible.

Figure 3 - Tovuz landfill where some waste has been pushed and covered
Figure 4 - Tovuz landfill with large quantities of glass – a resource

Waste is disposed of at different points on the site, but there was more waste near the entrance. All the town's waste including hospital and hazardous waste is brought

here. There were surprisingly large amounts of metal and glass at the site. It seems that no market is yet available for these products. Some seem to be have been separated out, but still dumped with everything else. One or two waste pickers were operating on the site during our visit but there was no signs of significant waste picking. There is potential to improve this site, if that is prioritised but basic planning needs to be undertaken first.

3.1.2. Secondary storage points: Yevlakh and Tovuz

Yevlakh: communal bins

A range of communal storage facilities are in use in Yevlakh. There are open areas, concrete enclosures 4m X 5m in size and set of metallic bins each of 1 cu-m volume. Family members (mostly young or old women) bring waste to the site in plastic bags or loose in buckets. They don't always throw the waste into the bin itself as access to bins is often blocked by the waste. The information in Table 2 about the type of containers in use in Yevlakh was collected by HAYAT staff.

Type of container	Number	Size (m x m)	How regularly emptied
Concrete boxes	17	4m x 5m	Every 2 days
Open spaces	39	-	Every 2 days
Small containers	23	1.2m x 0.9m	Daily

Table 2 - Yevlakh Waste Container Data

Figure 5 - Concrete secondary storage, Yevlakh
Figure 6 - Small metallic secondary storage, Yevlakh

The area around the metallic containers was better maintained. This is in the comparatively cleaner middle or high-income area with a footpath and trees planted. The bins in the areas we visited were cleared-up regularly but there were piles of

construction debris, large pieces of metals etc. The waste is collected daily by CSO trucks. We were told that the CSO cannot collect from all the bins regularly and there are many areas where it accumulates. There are 10-15 such concrete enclosure type communal bins in the town, plus 70/80 metallic containers and drums are used. Some low density and high volume waste is also deposited at these bins, such as packaging, plastics etc. The waste is loaded to CSO trucks manually using long handle (1.2m) shovels. These trucks are open trucks with loading height in excess of 2m. Low density waste is loaded without any further processing and some of the space is occupied by cardboard boxes not flattened before loading. The current methods of communal waste storage, their transfer to trucks and further transportation to the disposal site are not very efficient in Yevlakh and pose a constant threat to public health because of uncollected and exposed waste in the residential areas. It takes more time to load the trucks leading to less number of trips to the disposal site. It also seems difficult to get the containers properly clean.

We have been given some information about the type of vehicles, their age, capacity and number of trips.

Type of vehicle	Number of vehicles owned	No. of vehicles operational	Capacity (tonnes per trip)	No. of trips/ day	Total tonnes carried per day
Open trucks 15-20 yrs old	3	3	3 tonnes per trip	4 x 16 km = 64km	3x3x4 = 36
Tractors 15-20 yrs old	7	7	4 tonnes per trip	3 x 16 km = 48 km	7x4x3 = 84

Table 3 - Waste Disposal Vehicles in Yevlakh

The above table suggests that a total of 120 tonnes of waste is transported out of Yevlakh to the disposal site everyday. If the population of Yevlakh is 60,000 then the figure suggests there is generation of 2 kg per day per person. This is too high for a city like Yevlakh. There may be a mistake in terms of the capacity of the trucks, and the number of trips. We were told that 20 truck-loads come to the dump site, but here they are estimating 33 truck-loads. In the absence of any reliable data we believe that the actual city generation of waste is around 40 tonnes per day and each truck is not carrying more than 2 tonnes per trip. This 40 tonnes includes household waste, waste from the markets, hospitals etc. Based on the observations, we also estimate that the density of waste is between 150 to 250 kg/cu-m and per capita generation rate is not more than 0.5 kg/ person/ day. The current vehicle fleet is enough to transport all the waste generated out of the town. However, the vehicles are quite old and operating beyond their design life leading to frequent breakdowns. The fleet needs replacement, which can be done gradually. There may also be more efficient

options to carry the waste out of the town and some relevant recommendations are discussed in Section 4.

Tovuz: Open dumping in villages (on the way to Abubeilee area)

Open waste dumps are visible in various places along the roadsides and there is no system of communal storage in Tovuz. The Tovuz CSO is keen to further expand their system of house to house collection and HAYAT has introduced a system of recyclables containers in Tovuz after cleaning up of a lane. There are 5 villages surrounding the town of Tovuz that have now merged geographically with the city. The CSO is taking on the responsibility of waste management in these villages, but without the resources to make it happen. There are some containers in the villages, but these fill up quickly because they are too few, and sometimes farmers bring large quantities of agricultural waste and throw it into the containers.

Figure 7 - Open dumping on the roadside in a village outside Tovuz
Figure 8 - New containers installed by HAYAT on a street after the clean-up

Tovuz: Town

Estimates for Tovuz waste generation are not available. We suspect that Tovuz generates a total of 10 tonnes of waste everyday. The current fleet of vehicles, though ageing, is adequate to remove the waste out of the town. The density of the waste is same as Yevlakh i.e in the range of 150 to 200 kg/ cu-m. The CSO operates a tractor trailer and 3 trucks to collect waste. These visit every street in the city on particular days of the week. The trucks park for 3 hours and households come and throw their rubbish onto the back. This area was not previously served by any service at all. Following the clean-up HAYAT also provided the tractor and trailer which now serves this area. CSO is continuing to operate this tractor. HAYAT considers that such interventions can play an important role in educating people, demonstrating the importance of separating waste and clean-up campaigns.

We visited the Bazaar at the back of which is a large open dump site which is approximately 15 x 4m where all the market waste is dumped. When the site is full,

the head of the bazaar arranges a tractor to come and clear it and take it to the final disposal site. This is paid for by the businesses in the bazaar through the fee system described in the Waste Management Study (summarised in Section 2.2).

3.1.3. Receiving Centre in Yevlakh

We visited a receiving centre in Yevlakh. This centre receives and distributes beverage bottles. It also collects, stores and further transports the empty glass and plastic bottles. It is run by the owner and 1 employee. This is the only centre of it's kind in the city although there is another centre that deals in rubber and metals. The glass bottles were colour separated and stored in bags. People bring bottles to them from their homes / businesses, and from the final disposal site. This centre is an example of private sector linkages in waste reduction and reuse.

We were told that there are dealers in the city who purchase plastics, metals and glass. The purchase prices, selling prices and quantities per month are given below.

Material	Purchase price AYN per tonnes	Selling price	Approx margin	Quantity per month
Polythene bags	400-600	1,000-1,200	600	500-600 kg
Glass bottles	100-250	200-500	175	15-20,000 bottles
Plastic bags	400	800	400	600-700 kg
Aluminium	6,000	7,000	1,000	1,200-1,500 kg
Copper	17,000	18,000	1,000	500-600 kg
Rubber	500	1,000	500	600-700 kg
Black metal	250	400	150	180-200 tonnes

Table 4 - Recyclable Material Prices and Quantities in Yevlakh

These prices and quantities are approximate and include all the dealers operating in the city. The quantities are the amounts the businesses in Yevlakh receive each month. The availability of the prices at various levels and quantities processed is an indicator of the demand for recyclable material. Some recommendations need to be developed to benefit from this demand.

3.1.4. Reclaimed Park, Street and Underpass clean-ups

Yevlakh: Reclaimed park

HAYAT has been instrumental in reclaiming some of the public spaces in the town of Yevlakh. We visited a reclaimed park, which is a square open space between a number of apartment blocks and houses. It used to be an open waste dumping site, with 8 public toilets and car garages. Before the improvements, it was infested with rats which also got into the surrounding buildings. HAYAT mobilised the people from

the surrounding buildings, and cleaned the area. It took 1 week including use of excavators to remove all the waste. They then added soil and created a park with benches, mini-football field, play equipment and lighting. The grass and flower plants were implanted. There is one new public toilet on the edge of the park which was re-painted – but is poorly maintained inside. There were 4 metallic waste bins behind the toilet block. The whole project took 3 months, and cost $10,000 from BTC with a contribution also coming from the municipality.

Figure 9 - Reclaimed park in Yevlakh

When we visited the side, Ilsin a community leader and official from the relevant government department proudly showed us photographs of how it looked before the park was created. The government is now committed to maintaining the park. They pay for a caretaker who lives in one of the surrounding buildings. Every evening it is used by people for socialising and for children to play. The government has a plan to provide more lighting around the park. There are 4-5 other locations in a similar condition elsewhere in the town and the government would like to improve them in a similar way. HAYAT has already prepared plans for one of those sites.

Tovuz: Clean-up site for street dump: communal bins.

This street was shown to demonstrate a cleaner street and the use of a tractor trailer provided by HAYAT to the CSO for house to house collection of waste. HAYAT worked on raising the community awareness to provide the clean-ups and installed the bins for recyclable components. This site was full of solid waste 6 months ago and HAYAT has helped to clear the area completely. This was one of two areas that they cleaned up. The City Council has improved the road (added more gravel) and

HAYAT have installed 3 metal waste containers. There was some household waste in one of the containers. The others were empty. The containers are emptied by CSO staff using shovels twice a week (See Figure 8 - New containers installed by HAYAT on a street after the clean-up).

One is labelled 'Plastics' but this separation system is not currently operational. There is no clear plan for marketing any separated waste.

Tovuz: Underpass

In Tovuz, HAYAT has supported the municipality in cleaning an underpass and installed some solar PV powered lights. This underpass is well under use as it provides a cleaner access between the train station and the centre of the town.

3.1.5. Wastewater in Yevlakh (Kassimba Zakir Street)

We were taken to this area to see the problem of wastewater. In most of Yevlakh the wastewater from laundry, bathing and washing is carried through open channels. The excreta and toilet water is disposed of in pit latrines or septic tanks. A number of open channels are silted and have significant growth of grass and vegetation. This may lead to poor flow of water and risk of flooding. Wastewater is apparently a significant problem in this neighbourhood because 30% of all the city's waste water drains to this location. In this area there are 6 badly affected streets, with about 150 households. Residents came to talk to us about the problem. They were clearly very concerned about it, and were eager to offer their time and money to help solve the problem.

Figure 10 - Overgrowth in wastewater channel in Yevlakh

3.2. Meetings and discussions

A number of structured discussions, workshops and meetings were held to understand the waste situation in Yevlakh and Tovuz and to discuss the proposals. The following is a list of discussions with the topic covered in each of those:

3.2.1. Workshop with HAYAT staff in Yevlakh

The following topics were discussed:

- Stages of Solid Waste Management from generation to final disposal and the importance of considering all the stages for proper planning.
- Problem tree analysis of containers (as an example). The staff discussed the problem and the root causes of the problem.
- Options identification and discussion against criteria for Yevlakh. Various options were discussed against the criteria on improved health, technology, finances etc.

In addition, videos on landfill planning and operation in the UK and waste capacity building in Kenya were shown to the staff.

Problem Tree analysis of Containers

We took the problem of containers being dirty and waste spilling out. This was used as an example of how to use the tool. The purpose was to identify:

- Root causes of the problem
- Interlinkages between problems and causes
- Most effective entry points
- Indicators of changes you could expect to see

The outcome of the exercise is shown in Figure 11 below:

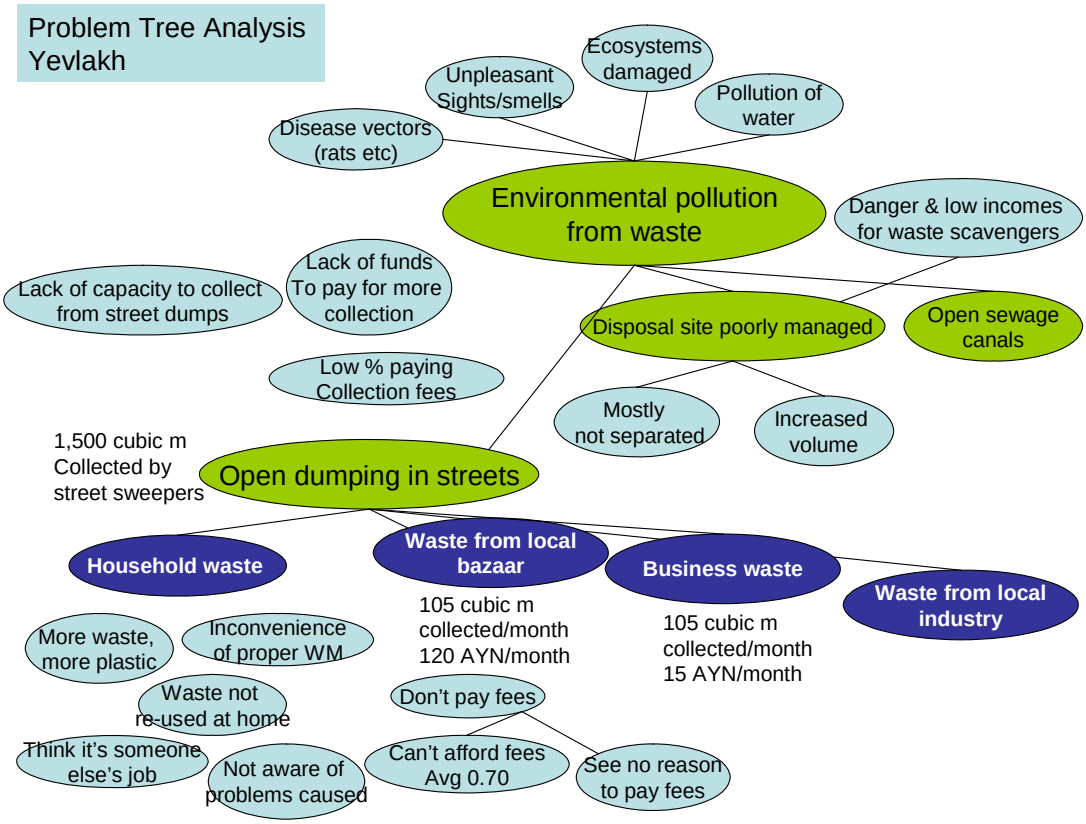

Figure 11 - Results of Problem Tree Analysis

Possible projects for Yevlakh as discussed and evaluated with the staff.

The full list of possible projects considered was as follows:

Improve final disposal

- To improve the access road
- Sort the deposited material and sieve
- Install large Incinerators
- Think about centralised compost and biogas facilities
- Separate disposal of toxic waste
- Bury the waste and cover
- Move the waste 30m away from the road
- Erect fencing
- Training and capacity building of HAYAT and CSO in Turkey

Containers and communal bins

- Encourage recycling
- Provide more containers
- Introduce an improved system of waste storage and collection
- Introduce house to house collection and eliminate secondary storage
- Raise public awareness
- Better design of bins

Recycling and reducing waste

- Sorting at home of dry and wet waste and pilot introduction of home composting
- Sorting in the street
- Bring and label containers
- Work with sorting centres
- Provide sacks / bins at household level
- Public awareness building
- Separation at the final disposal

Replicate the park model

- '31' Area site in planning (need to think about improving toilets too)
- Also some smaller areas possible
- Other possibilities

Wastewater

- Final treatment (may not be necessary)
- Covering channels in streets with concrete slabs
- GIS use
- Pipe system
- Recycle water at home
- Clean up existing channels

The staff used an evaluation matrix shown in Figure 12 to assess these options against benefits to health, local environment, finances, technology and institutional capacity to manage the systems. The feedback from this session was invaluable in defining recommendations for Phase 2.

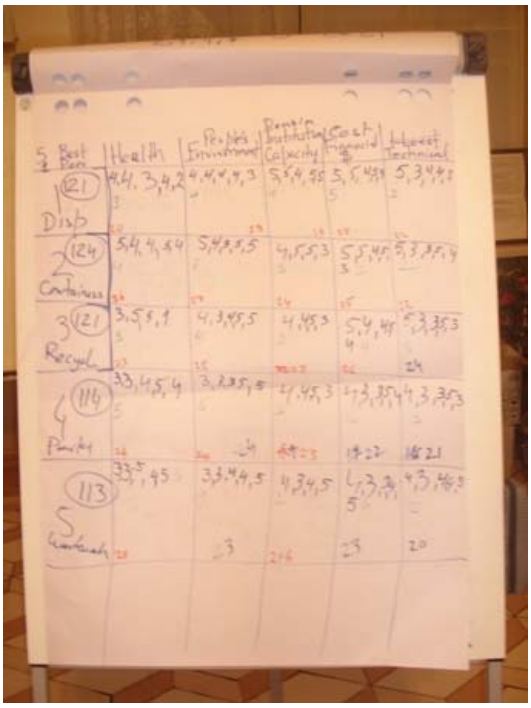

Figure 12 - Results of the evaluation of the options against criteria

3.2.2. Workshop with Municipal leaders and council staff in Tovuz

This workshop was organised in the municipal building and attended by CSO representatives from each of the villages, community leaders and the municipal staff. Though the workshop was organised at a short notice, the attendance and participation was good. This indicates the high status of HAYAT in the town, and the importance of waste management as an issue. All the representatives from the villages indicated their priorities in waste management. This was then followed by a discussion on strategic planning in waste management and a discussion on evaluating different options.

The workshop ran from 10 am to 12 noon in a meeting room at the Council Offices. It was attended by 11 external participants from various Municipalities, CSO and one community activist. Attendance was impressive considering the late arrangement

<u>Introduction by Amil of HAYAT</u>
Amil reminded the participants of the work of HAYAT in the town. He briefed them on the purpose of our visit. He put our visit in the context of Tovuz merging with its surrounding villages, and the growing waste management problems this has brought.

<u>Introductions by participants</u>

- Jasiyev Bahadur. Leader of Asage-Quscu Municipality. Population: 9,200.

There are about 15 collection points, mostly in the centre. They bought one tractor and pay one salary through the municipal budget. Collections are twice per week. They have managed to reduce waste disposal from 5 places to 1 place.

- Aliyev Aydin. Leader of Abulbyli municipality. Population: 7,000.

  They deal with waste by both burying it, and transporting it to the final disposal site. Their main concern is lack of finances, which means they can't always afford to clear the garbage.

- Sultanov Samsad. Leader of Qazqulu municipality. Population: 800.

  We have designated places where people can bring their waste. We collect it from there. They pay to hire a tractor once a month or so (when needed) using their own budget.

- Fathakov Firdovsi. Deputy of City Municipality. Population of Tovuz: 15,000.

  Their main concern is financial problems. They are ready to receive any support from HAYAT.

- Vasil Qahzamanov. Chief of Tovuz relationship department. Also a community leader from Tuchakan municipality. Population: 5,000

  Their main problems are the ecological problems (of waste), lack of finances and machinery. They carry and bury the waste. Every village has its own area where they bury the waste. They also have a territory where waste was buried previously. They don't own any trucks or tractors. They hire them when needed, which can be costly.

- Ibrahimov Bayzam. Asagi-Oyseizlu municipality. Population: 7,500.

  Their village now runs into the edge of the city boundary. They face problems of the environment – of gathering all the mess and carrying it. The CSO (one big organisation) is running activities, and they are not able to manage. It happens only once or twice a month, which is not satisfactory. In order to carry more waste they need trucks, labourers, and expenses. They have their own dumping site 2-3 km outside the village.

- Tanizveroliyev Zachid. Bosalganli Municipality. Population: 4,000.

  This village is surrounded by 3 other villages and Tovuz city. The main city landfill site is in their municipality. It covers 7 ha of land. 10 truck-loads of waste are brought every day. He feels the problem of waste is "out of control". Landfill is near to agricultural activities and grazing areas. People in his village are not happy about the situation, and are VERY keen to solve the problem. Land is owned by the municipality, but the waste and managing the site is the responsibility of the CSO.

- Tondar Quscu. Vakil Mizrlyev. Community leader. Population: 3,560

They are experiencing the same problems as others. They carry garbage to the landfill when their budget allows. We have problems of technology, trucks and finances. We try to solve the problem with the support of the community.

- Ali Aslanoz. Deputy Chief of Tovuz Municipality. Population 15,000. In fact the population is 20,000 because 5,000 are not registered. They are internally displaced from villages near the Armenian border, and moved here in 1993/4.

  The population is increasing and the situation is out of control. He said war is the greatest problem, and waste management is the 2nd after that because of its effects on health. The landfill area is 100m from the Kura River, and another branch is even closer. Floods can wash waste into the river. He said that burying waste is prohibited. It is better to compact, sort and sell waste for recycling. He is not satisfied with the BTC project because only 10% of the income from the pipeline will come to Azerbaijan. He feels that such projects need better planning before being allowed. There is pressure from the government to solve the waste problem and he feels that BTC should have done more to support.

In summary it was agreed that improvement of waste systems in the above villages is the priority of CSO.

Introduction by Lucy

Lucy explained the purpose of the workshop, the visit and the structure of the workshop.

Mansoor on principles of solid waste planning

Mansoor emphasised the importance of having an overall vision and strategy for solid waste management and what data and information is required. He also covered why we need improved solid waste management.

Lucy: Options for improving situation in Tovuz

Lucy highlighted four possible options for solving the problems the participants had outlined (with the help of some drawings).

1. Reducing waste through home separation, composting and recycling
2. Once-off clean-ups of black-spots
3. Better collection from secondary storage (house-to-house? More regular?)
4. Improving landfill

The participants then evaluated those options against the following criteria. They discussed which was the best and worst option against each criteria.

Criteria	Best	Worst
Benefits to local environment and health	3 (collection)	2 (clean-ups)
Costs and technology	1 (cheapest)	3 or 4
Sustainability	3 or 1	-
Feasibility / complexity of the project	3 (easiest)	4 (complicated)

Table 5 - Tovuz Workshop Options Assessment

As envisaged, the secondary storage of waste and further transportation have been identified as the main problems. The conclusion of the exercise was that the best options were to improve collection and reduce waste generation through home separation and recycling. It was accepted that improving collection relies at least partly on increasing finances, which will mean better cost-recovery. It was accepted that reducing the amounts of waste might be a longer-term exercise. It was recognised that a good example had already been set in Tovuz city through the house-to-house collection system and the charging of fees.

3.2.3. Meetings with officials in Tovuz

Meetings with Hamid (head of City Council), Mayor of Tovuz, and Imran – head of CSO.

Meeting with Imran – Head of CSO

Mr Imran heads the 'Office of the Communal Services Corporation' and has been particularly co-operative with the HAYAT's programmes in waste management. Their organisation is responsible for all kinds of greening, lighting, sweeping, fountains and waste management. They have 59 workers in total. They would like to develop waste management in Tovuz as a model to other towns.

Imran was very positive about the role of Mr Hamid, the Chief of the Regional City Council. Mr Hamid is an architect by profession and has encouraged lots of interesting projects in the town. He has been in charge since 1999.

He (Hamid) has introduced a system of inter-departmental staff meetings every Tuesday morning (11am) where they report on developments and difficulties in the city. The meeting focuses just on waste management issues. It has prioritised the service and improved inter-departmental communication. It goes along with a service on Thursdays where community members with complaints are received.

The CSO owns 3 trucks and 1 tractor and trailer (donated by BTC/HAYAT). The trucks date from the 1980s, but seem to be quite reliable. If there is a breakdown they try to repair it in a day. All the vehicles have an expected capacity of 4 tonnes

per trip. The trucks make 1 trip per day and the tractor makes 2, so they remove a total of 20 tonnes per day.

These trucks currently cover the whole city, but not the villages. They have been able to achieve this coverage with the addition of the tractor from BTC/HAYAT. They initially rejected the idea of secondary storage because they preferred to collect house-to-house. However, it might be necessary in the villages, and to promote recycling in the city. They are not sure about recycling at the moment because there are no buyers or processors for the waste. Mr Imran further emphasised the need for public education to make any domestic separation system work.

No data and information has been collected and the only study has been done of the waste collection system is the recent one by HAYAT.

They do not have any plans for improving the final disposal site due to financial constraints (and technical knowledge).

The service is financed from two sources: funds from the city council, and payments by households and other users. They have specific service agreements e.g. with schools, hospitals etc. During the Soviet era, the service was free. Payments started to be charged after independence (1991). However, the record of payments is poor. Two years ago 0% of people paid. Last year, 10% paid. Funds from the City Council are about $25-27,000 last year, and have recently been doubled because of good performance.

Meeting with Hamid – Head of Council

Mr Hamid's vision is for the future health and development of the city: 'Clean Water and a Beautiful City'. The city itself is running a project to transport and clean up water, and he sees HAYAT as making a contribution to the 'beautiful city'. (However, he asked for clarification about what HAYAT has done in the city). The water project involves a 59km pipeline. In 2005-2006 they also laid 260,000 m^2 of asphalt road (not including the new 'silk road' improvements being done centrally).

There was a lot of appreciation from both Mr Hamid and the City Mayor of HAYAT's work to clean up and light the underpass. They both spoke at length about the benefits of this project.

Mr Hamid confirmed that a major problem for them is in dealing with the waste from the surrounding 5 villages. It is as if a person dresses very cleanly (the city), but still has dirty shoes (the villages). One of the villages has had a big waste problem for 20 years, but has still not seen any service. These villages are merging into the city to the extent that you can't tell where the city ends and village starts. They want to see them included in a vision for 'greater Tovuz'.

There was some mis-understanding about what role HAYAT (and we as consultants) can play in future waste-related projects. We mentioned the possibility of recycling. This was discussed at length as an investment opportunity. At the end, however, Mr Hamid said it was *not* a priority for the council. Although, if an investor comes, he is happy to provide support with the land and infrastructure facilities. He was under the impression that we might be able to link them with such an investor, or even invest our own funds to this end. This shows an enabling environment in Tovuz for the private sector. This may ultimately improve the municipal financial situation.

In relation to this investment potential he highlighted how Tovuz is a central point for a large surrounding region including some large cities. It is at the hub of a number of communication and transport lines. A number of regional ministries and private sector companies are based here. The city is clearly keen to encourage investment – he described it as a 'free city'.

On behalf of the council and all its departments, he is ready to extend all support to HAYAT 'beyond our imagination' which may include providing workers and financing.

Overall:

- There is excellent support from the council
- There is a need for the council to develop a clearer vision and strategy
- There is a need to clarify HAYAT's role in the city, and in supporting the council's strategy
- There is a need to link projects more closely to the council's overall strategy

3.2.4. Second meeting with staff in Yevlakh

On our way to Baku, we stopped in Yevlakh and discussed the recommendations, before we presented them to the team in Baku. The following recommendations were discussed:

Tovuz

1. Collection in villages around Tovuz with an extra vehicle, making sure that CSO will collect from the secondary storage and improve the systems of users fees payment.
2. Promotion of home separation, composting, recycling
3. Collection system for separated materials
4. Landfill improvement only in terms of pushing the waste, improving access and planting trees.
5. Research into markets for sale of separated materials

Second priority would be for landfill improvement: trees, fencing, moving waste. But not burying or compacting.

Yevlakh

There are still several opportunities and all are equally important.

1. Recycling and home composting – linked with demand from existing sorting centres.
2. Reclaiming open spaces (Park)
3. Better methods for storage and collection. Better container system.
4. Landfill improvement (similar to Tovuz)

Opportunities 1 and 2 are probably good within the likely project budgets but 3 is a big need too, although more expensive.

Wastewater and sanitation are having a big health impact but it is not clear how much we can do in Phase 2 of this project. This would be discussed in Baku and in the future.

General Points discussed with HAYAT staff in Yevlakh final meeting

There is a need for training, capacity building (for municipality and HAYAT) and start the strategic planning process in both the towns. Methods need to be delivered for the learning and helping of the Municipality / CSO to deliver better services.

Public Awareness will be important at all points – focusing on the right target groups (especially women and children). It can be done through schools and it was agreed that 'education' (awareness) is very important and really the first thing that is needed. HAYAT has already developed experience in this.

In both the towns there are methods of fees collection but the recovery is pretty low. With additional equipment and machinery the operation and maintenance cost will increase. Therefore it is important that innovative methods of fees collection are introduced with the additional support in equipment and machinery.

Promoting enterprises of waste recycling was discussed with a lot of interest. We were told that this kind of enterprise is already existing. In Tovuz (as in every town) the CSO is independent – is a corporation. They have a separate budget. They are trying to buy containers from their own budget, and trying to get people to pay. In some places there are other businesses alongside the CSO. The law doesn't give the CSO a monopoly over delivering this service. The way it works varies from region to region. So there is a need to plan waste management activities tailored to the local actors. So this idea is a very important one. It's a new thing here and caused (could cause) a lot of attention. We can create competition between CSO, and other enterprises. This kind of enterprise could be risky initially. They may fail due to financial problems, and not being accepted by people, or lack of planning. But there is scope to start it. They would need some sort of support from companies like e.g. BP for start-up capital (equipment). There is such a programme by BP which

supports small and medium enterprises in this region through the BTC project e.g. agri-business companies (BP supported with 3-4 tractors).

Mansoor pointed out that CSO is an autonomous department rather than strictly a private sector enterprise. It still gets budget from the Council. We could try to create collection enterprises *under* the CSO (i.e. regulated by CSO). The system is that if the enterprise starts it isn't going to get any money from CSO. They will get it from a different department.

There's one department under government in charge of housing works e.g. one housing area. There are 3 centres like that in Yevlakh. The problem with waste management and collection made a problem for CSO, so decided that the centres should support CSO with finances to improve the situation.

We can also adopt the same principle and methods on recycling enterprises. BP support could also be possible in that field too. OK.

3.2.5. De-brief meeting with HAYAT staff in Baku

A final debriefing session was held with the HAYAT staff in Baku on Saturday the 14th of October. The proposed options for Tovuz and Yevlakh were discussed. The following sections give the general and specific recommendations as discussed with the HAYAT team.

4. Recommendations

4.1. General recommendations

4.1.1. Develop an overall planning framework and strategy

SWM systems in Yevlakh and Tovuz are fairly basic and there is a huge scope for significant improvement. There is a need for overall strategic vision and planning from the city councils / CSO. This needs to be based on a good understanding and analysis of information and data. Projects can play an important role in addressing some immediate needs but their contribution can make a more sustained and bigger impact if they are considered as part of an overall strategy and vision on solid waste management. The municipalities must start this process sooner rather than later. Basic data, information collection and consultation processes can be started with the assistance of HAYAT which has already established a good relationship with the municipal offices. This can be further used to build municipal capacity in the development of a waste strategy.

4.1.2. Develop HAYAT's role as a Facilitator

HAYAT has successfully implemented a number of projects in both the towns. It is important that an NGO like HAYAT should take the role of a facilitator and not just an implementer of the projects. In the longer term, HAYAT could try to move towards supporting municipalities in delivering improved solid waste management and bridging the gap between the community and municipality. This will be important for sustaining the programmes and delivering long-lasting benefits.

4.1.3. Build Capacity of staff and municipal/CSO officials

Existing capacity of municipal staff/ CSO is restricted to just operation of the vehicles. There are no new ideas in terms of changing the system to improve efficiency, or about how to generate investment for the future. There is no know-how on landfill planning, design and operation. This is all required to plan and operate an improved waste system. Training and exposure can play a role, but capacity-building involves more than short training courses. In Phase 2 of this project, we propose to identify possible training opportunities in Turkey where it will be possible to visit successful waste management programmes and systems to discuss practices with counterpart staff and officials. The similarity of the language and climatic conditions as well as existing cultural links and the proximity of Turkey to Azerbaijan make it a prime location for this type of exposure.

4.1.4. Tovuz as a model?

Tovuz was mentioned as a 'model' for replication elsewhere in the HAYAT survey report. However, we believe that the initiatives in Tovuz are at an early stage and rely on a couple of key people in the municipality who are driving the process. The model of house-to-house collection is relatively expensive. Cost-recovery initiatives have been good, but are still at a low level. There is still a need to look into cost-effective and efficient methods of collection and better cost-recovery before the model can be promoted with confidence among other cities.

4.2. Specific recommendations – Tovuz

The main proposal of the Municipality with respect to Waste Management projects was to collect waste from outlying villages using tractors for house-to-house collection. However as a result of the workshop held in Tovuz and discussions with the CSO and HAYAT staff the project Phase 2 recommendations for Tovuz are to focus on collection of waste from secondary storage points with a tractor, to improve cost recovery for waste management activities and to reduce waste through recycling and home composting. These recommendations are detailed along with the rationale behind them in the following sections.

4.2.1. Waste collection and secondary storage

Waste accumulation at secondary storage sites is a major problem in the villages surrounding Tovuz. The CSO would like to address this problem by introducing systems of house to house collection. This would require an additional 4 vehicles. Our calculations showed that it would not be possible to extend the house-to-house collection system and still cover all the villages with the addition of just 1 more vehicle bearing in mind likely budgetary limitations for projects under Phase 2. Options for using containers and a vehicle that can lift and transport them were also discussed although, the HAYAT team felt that container-type vehicles were too expensive and complicated to operate in small towns. If the CSO insists it wants to extend its house-to-house collection system, it would be worth exploring the option for several smaller vehicles (trishaws) carrying 1 tonne more cheaply. This could cover more households, but would remain relatively expensive and inefficient. The various options are summarised in Table 6 below.

Option	Weight per trip	No. of trips	Weight per day
House-to-house with tractor-trailer	0.5 kg per person. 2.5 kg per family of average size 5.	200 houses per day	0.5-1 tonne
Tractor trailer collecting from communal bins	2 tonnes per trip	3 trips per day	6 tonnes
Specialised vehicle with 4 containers	3-4 tonnes per container	4 containers emptied per day	12-16 tonnes

Table 6 - Collection Vehicle Option Characteristics

During our short visit we were not able to assess the municipal capacity to operate and maintain specialised vehicles and containers, or to estimate costs. We still think it would be worth investigating the costs of such vehicles, and the capacity of the municipality to operate and maintain them. Each container holds 3-4 tonnes. One vehicle can empty 4 containers in a day. It can therefore collect 12-16 tonnes per day. They can therefore carry much more waste than through house-to-house collection or by using a tractor and trailer. The more general advantages and disadvantages of the collection vehicle options are summarised in
Table 7 below.

Option	Advantage	Disadvantage
House-to-house: 1 tractor trailer	No street bins. Already works well in city. Can link to cost-recovery.	1 tractor and trailer can only serve 200 households per day (or 1,200 in a week).
Collection from communal bins (secondary storage)	Greater quantities of waste transported at lower cost. Technology is simple and easy to maintain.	Only about 1/3 of households can be reached. Waste is more accessible to rodents and vermin. It is more difficult to keep the collection points clean.
Specialised vehicle with 4 containers	Almost all villages could be reached. Large quantities of waste transported. Lower fuel consumption.	Inconvenience: people have to carry waste further Dispersed communities need more containers – but these may not fill up.

Table 7 - Collection Vehicle Option Assessment

In the shorter term therefore, we recommend a system based on collection from secondary storage rather than house-to-house because this will bring more health and environmental benefits to a wider population. It will ensure regular collection and prevent the accumulation of larger quantities of waste at the secondary storage points. For Phase 2 we recommend that we buy a tractor and trailer which will be used to collect waste from secondary storage points in the surrounding villages.

In the current system as shown in Table 6 - Collection Vehicle Option Characteristics, the tractor trailer will collect about 2 tonnes per trip and make 3 trips per day from the collection area to the disposal site. It can therefore collect 6 tonnes per day. There are seven villages with a total population of 37,000 (7400 households) generating approximately 18.5 tonnes per day. In other words, about 3 times more waste is generated than can be collected by a single tractor and trailer. Therefore, the tractor will only provide a partial solution covering about a third of population.

In addition to seeking assistance to fund additional vehicles, we recommend additional measures to meet the gap as described in the following sections.

4.2.2. Waste Reduction and Recycling

The promotion of waste reduction and recycling programmes is recommended. With a conservative estimate of separation at source, we can reduce waste volumes by 20% to 15 tonnes per day. This will include:

- Home composting in villages closer to the town where organic waste is not fed to animals (see Figure 13 below for more guidance on possible designs).
- Establishing some trial receiving centres (staffed) where people can bring recyclable materials. This could be started in one village initially.
- Better practices of waste storage both at primary (household) and secondary (public) levels. This could include introduction of plastic bags on a trial basis, and introduction of communal storage bins.
- Public awareness campaigns to promote all of the above especially targeting women (as the managers of household waste) and children. Schools could be a good focal point for this work.

In one area (2-300 households) a home separation and composting scheme may be introduced on a pilot basis. Households will be encouraged to separate waste at home. Organic waste will be composted in the garden for household use. The public awareness messages for this need to be targeted at women and children in particular (schools can be used). Monitoring and Evaluation measures would have to be put in

place by HAYAT to measure the effectiveness of the pilots and assess the potential for replication and scale up.

In Tovuz there is currently a lack of existing enterprises and knowledge about market systems with respect to recycling. There is less evidence of existing recycling businesses, so that element may take longer to establish. It will also take time to generate sufficient quantities of waste because it takes time to change habits across the whole population. However there was a lot of interesting discussion and interest in the question of recycling and how to promote it. Overall HAYAT is interested in practical, down-to-earth solutions with a substantial software component.

Home composting will only be an option in specific areas of Tovuz because people feed left-over food / organic waste to their livestock in small rural towns. There was a suggestion to consider apartments for this work instead. However we feel that the management of communal composting facilities is very problematic. The waste cannot also be used in home gardens where people live in apartments. Home composting may be more viable in houses in Yevlakh where people don't keep animals so much. Examples of home composting systems are shown below in Figure 13.

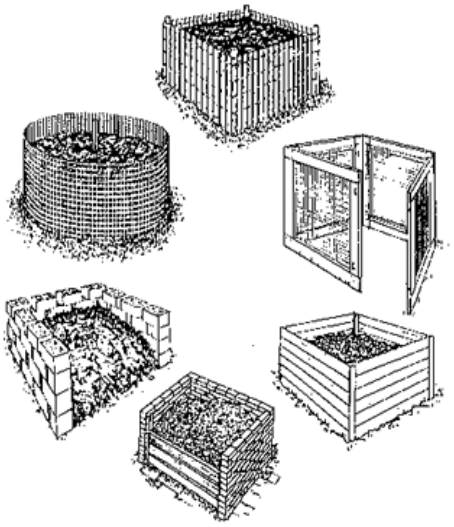

Figure 13 - Home composting options and bins promoted by Practical Action in Sri Lanka

During the Baku de-briefing there was a discussion on the viability of starting a recycling collection point to bring the separated waste and transport it to buyers. There is a possibility of introducing a separate collection system for separated waste or create an incentive and ask people to bring waste. HAYAT could get schools involved and need to focus public awareness on women and pilot this in a selected areas. HAYAT has also developed a video themselves (for children) about waste. They are trying to encourage the habit of separation in ways that will be sustainable in the long term.

There was a discussion about subsidising the collection centres (especially in Tovuz) but it was agreed that it was important not to undercut any existing businesses. For Yevlakh we emphasised the importance of working with existing businesses such as receiving centres and supporting them / helping them to expand.

4.2.3. Fee Collection

Fee collection should be considered as an important part of the new systems to ensure the CSO has adequate finances to continue to operate and maintain the vehicles and pay staff. Detailed proposals will have to be developed building on the limited but significant progress made in Tovuz in the regard to date where around 10% of those benefiting from waste collection are actually paying the fee. The exact nature of the cost recovery system would have to be agreed but systems which are suggested in the context of the secondary storage collection regime proposed, are the use of compulsory coloured bags (which are distributed at a small charge) for those dumping waste or the incorporation of waste collection fees into taxes or utility bills

4.2.4. Landfill

The site at Tovuz needs large investment for significant improvement which may be beyond the scope of this project. In addition, it needs much additional capacity at the CSO level to run it at certain minimum standards. However, the site in use at Tovuz is in a more suitable location than at Yevlakh.

There are ideas from the staff to improve the landfill site by moving the waste and possibly planting trees. In our opinion this will do very little to solve the real environmental problems with the landfill. However, it will do no harm so long as the waste is not buried. The point about developing a more strategic vision of support for the final disposal was well understood and accepted by the HAYAT staff during the Baku de-briefing.

In Ujar town, the government is launching a more thorough approach on solid waste disposal (landfill) and is asking interested parties to submit proposals. The site has

been allocated and they have begun to dig. HAYAT may be able to encourage better practices at this site (lining the hole etc.). It is worth keeping a track of developments in Ujar town.

4.3. Specific recommendations – Yevlakh

Yevlakh has some similar and some differing issues from Tovuz and recommendations reflect that. Yevlakh has adequate availability of vehicles and so no more are proposed using Phase 2 funds. However the efficiency of the ways in which waste is collected and transported would bring substantial improvement in the system as would the introduction of waste reduction and recycling measures. The recommendations for Yevlakh are detailed in the following sections.

4.3.1. Waste Collection and Transportation improvements

As discussed in section 3.1, to transport 40 tonnes of waste per day from Yevlakh, there is a need to experiment with an improved collection and container system. The waste is not well compacted and each truck carries weights lower than their capacity. Waste is not collected regularly, and spills out from the containers / collection points. It takes workers a long time to load the waste from the containers to the trucks which is very inefficient.

The best solution would be to invest in new specialised vehicles and containers as shown in

Figure 14 - Waste Collection truck with a container below.

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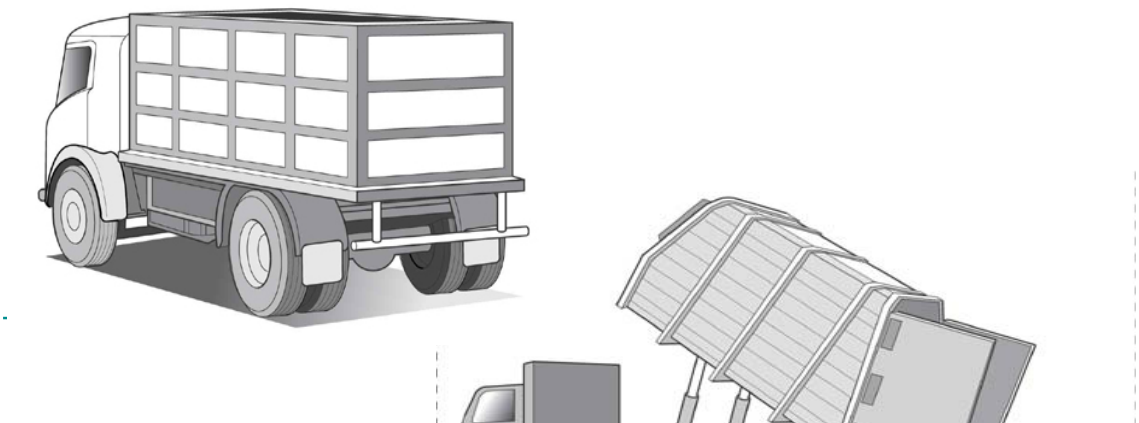

Figure 14 - Waste Collection truck with a container and dumping system

This would address some of the crucial problems faced in Yevlakh with disordered secondary storage areas and high sided trucks and trailers which make collection and disposal of waste difficult and time consuming. However given the restrictions on Phase 2 budgets we would also recommend additional measures as follows.

4.3.2. Waste Reduction and Recycling

Yevlakh would be particularly suitable for the promotion of recycling and waste reduction programmes. This should include:

- Home composting in houses (rather than apartments). Composting can be effectively managed at the household level and used on gardens. Communal composting systems are very difficult to manage effectively, and there is no immediate use for the compost.
- Support existing receiving centres in Yevlakh to encourage them to expand their scope to include additional materials and greater volumes.
- Better practices of waste storage both at primary (household) and secondary (public) levels. This could include introduction of plastic bags on a trial basis, and improvement of communal storage bins.
- Public awareness campaigns to promote all of the above especially targeting women (as the managers of household waste) and children. Schools could be a good focal point for this work.

There are existing enterprises operating in Yevlakh which have a potential to receive and sell higher quantities of recycled materials. We feel there is good scope for promoting home separation and selling of recycled materials to these centres. There is scope to link new or expanded enterprises with funding from BP (or others) on the private sector promotion. The scheme would be based on demand for the materials, and households getting some incentive (small income) for their efforts.

We suggest experimenting with around 1,000 households. For non-organic materials (glass, plastics, metal etc.) we could target apartment blocks. Home composting is

not viable in the apartments. For this we would need to target neighbourhoods of houses with gardens of which there are several in Yevlakh.

A system of containers for separated waste is probably not viable – economically or in terms of their good use by residents. There is more scope for small-scale house-to-house collection by the recycling businesses. The other option is for small staffed reception points where waste can be stored before collection by the enterprises.

Currently there are 2 factories taking in recycling materials, and they are (apparently) working at full capacity. However, there is a €14 million project to set up a factory in Baku with a German organisation to recycle waste and generate energy. Details are not available to NGOs, but Vusal is still trying to find out more. The go-ahead has been given by the government for this factory.

4.3.3. Landfill

Yevlakh's landfill is in a far from ideal location. It is right next to a river and drainage canal, and close to the pipeline. The site needs larger investment which may be beyond the scope of this project. In addition, it needs much additional capacity at the CSO level to run it at certain minimum standards.

There are ideas from the staff to improve the landfill site by moving the waste and possibly planting trees. In our opinion this will do very little to solve the real environmental problems with the landfill. However, it will do no harm so long as the waste is not buried.

Overall what is required is a vision / plan for the site. Specific steps would need to include:

- Some basic data about the topography, soils, water table and flows, and the amount and composition of waste.
- Possibly think of a simple lining and using some of the valleys for the waste. It would be unwise to cover it, though. Fencing the site would also be possible.
- Separating and storing of glass in a separate location of the landfill site so that it can be easily retrieved should a market for it open up in future.

4.3.4. Cleaning and Reclaiming open spaces

This has had really impressive impacts and benefits in Yevlakh in mobilising the communities around an improved local environment, restoring civic pride and dignity and creating a well-used social space for families.

There are 4-5 more spaces in need of restoration in Yevlakh, and we think the model should be replicated. More attention will need to be paid to the communal toilet blocks in these parks (for regular cleaning and good maintenance). There is an apparent problem with the use of communal toilet blocks. We were told that the problem with the toilet blocks is apparently due to a lack of / irregular flow of water.

4.3.5. Wastewater

Issues of sewerage and waste water are very high on the priority list of Yevlakh residents. Residents are not sure at the moment what happens to the sewerage from big apartment blocks in Yevlakh and they had the impression that starting a piped system for waste water would be beyond their means. Wastewater is beyond the scope of this project but it is clearly a significant environmental health issue in Yevlakh and it should be taken into account in the development of strategic plans on waste.

5. Way Forward

The following are the key stages which need to be undertaken in the coming months in order to transition into the Phase 2 Implementation. It is expected that these activities would be undertaken between November '06 and January '07 (bearing in mind the harsh winter climate in Azerbaijan and the intervening holiday period):

- Translation and dissemination of this report for key local stakeholders (HAYAT staff, CSO/Municipality staff and community leaders)
- Detailed local costing by HAYAT of the recommendations
- Identification by PAC of suitable training sites in Turkey and costing by HAYAT of a study tour for CSO and HAYAT participants to those sites
- Development by PAC of a training programme associated with the Turkey study tour where Hayat staff can develop more details and costing.
- Discussions undertaken leading to agreements by HAYAT with CSO/Municipalities on involvement and co-financing of Phase 2 activities
- Discussions undertaken with BTC and other funders by HAYAT about possible involvement and co-financing. BTC are considering another phase of the EAIP project and plan to make a decision in November

The transitional activities above will be necessary prior to putting forward a detailed plan for the Phase 2 activities. Although funds have already been committed for implementation we feel that it would be valuable prior to Phase 2 to detail exactly what can be achieved with remaining committed funds and outline what additional activities could be undertaken with further financial support. It is expected that this plan would be complete by January after the transitional activities above are completed.

The outline timeframe for the commencement of Phase 2 Implementation activities is as follows:

- February 2007 - Study tour for CSO/Municipality officials accompanied by HAYAT staff to Turkey for training and exposure to working Waste Management systems
- Phase 2 activities along the lines of those recommended in this report, modified as agreed by additional information from the transitional activies, can start from March 2007 onwards co-inciding with improving weather conditions in the target areas. Practical Action Consulting would also expect to make a second visit to the towns in late April/May to further assist the HAYAT team during implementation and capacity building.

Appendix 1: Terms of Reference for the Visit

The overall purpose of this visit is to work with Hayat staff in developing recommendations for Phase 2. In addition, the Practical Action staff will also hold capacity development workshops and structured discussions with other partners. The specific terms of reference for the visit are given below:

1) To assist Hayat in further building their initiatives in Tovuz town, where a fee based system is already initiated and CSO would like to improve the situation by reducing the number of final disposal sites, improving the household collection, raising public awareness and to promote recycling and separation at source. Practical Action staff will assess the technical and social viability of these proposals through discussions and observations in Tovuz. The team will also assist Hayat in preparing plans for documentation and dissemination of Tovuz successes to other towns through a number of channels.

2) Practical Action staff will facilitate a one day workshop in Tovuz for Hayat staff and other partners to share international good practices in improving solid waste management.

3) Practical Action staff will conduct a half a day workshop with Hayat staff on the techniques of data and information collection, analysis, monitoring, proposal and report writing for solid waste management projects. This workshop can take place in Yevlakh or Tovuz.

4) The team will also assist the Hayat team in developing technical and social details of some of the proposals made in the survey:

a) Extending waste collection service and introduce a tariff system to commercial units in Dallar Jayir based on lessons learnt from Tovuz
b) Methods to assess waste streams and prepare recycling and compost programmes for a town like Dallar Jayir
c) To discuss the details of canal improvement proposal in Ujar and Yevlakh in the context of improved waste management

d) To discuss the methodologies to design and implement programmes for waste collection, storage, transportation and recycling.

e) Methodologies of community participation, consultation and creating ownerships for sustaining decentralised systems.

Appendix 2: Detailed Itinerary of the Visit

Day	Oct	Activity	Location	Comments
1	9th Mon	• Arrival in Baku • Breakfast/Meeting with HMT • Introduction to Team and Baku • ***Initial Discussion*** with HMT on EAIP and potential tie-ins/ leverage possibilities • ***Rest*** • Depart to Yevlakh with Amil	***Baku***	*Arr:* 0630
2	10th Tue	• ***Tour*** Yevlakh Town / Landfill • Discussion on ***recommendations / developing details*** of other towns with HFT • Initial Discussion on ***Capacity Assessment Framework*** for Landfill	***Yevlakh***	*Dep:* 0930 *Travel:* 4.5 hours
3	11th Wed	• Travel to Tovuz • Visit ***Dallar Jayir*** Village *(enroute)* • ***Tour*** Tovuz Town / Landfill • Introductory Meeting with ***Local Partners*** • Workshop Preparation/Administrative Time	Yevlakh Dallar Jayir ***Tovuz***	*Dep*: 0930 *Travel:* 4 hours with side trip
4	12th Thu	• Half-day ***Workshop*** for HFT/LP on planning and designing solid waste management programmes • ***Review session*** with HFT • *Extra time*	***Tovuz***	
5	13th Fri	• ***Follow-up meeting*** with Local Partners • Return to Yevlakh • Discussion on ***recommendations / developing details*** of other towns, including enhancements for future community proposals with HMT • Administrative Time	Tovuz ***Yevlakh***	*Mtg:* 0930 *Dep:* 1030
6	14th Sat	• Return to Baku • ***Phase 2 Implementation / Planning Meeting*** • ***Summary Briefing*** with HMT	***Baku***	Dep: 0930
7	15th Sun	• Early Morning Departure from Baku	Baku	Dep:

HFT: Hayat Field Team (Amil, Aflatun, Pasha, Elshad, Namig)
HMT: Hayat Management Team (Vusal, Nata, Amina, Eric)
LP: Local Partners (CSO, Municipal Council, CAG, Landfill Crew, Sanitation Crew, ExComm Rep, Others)