Development of school mapping in Somalia

Four reports were compiled for UNICEF and form part of this document:

1. An initial assessment of school mapping in 2006
2. Further development of school mapping, April 2007
3. Final report on the development of school mapping, August-September 2007
4. Report on data assembled for school mapping in Somalia

The four reports follow:

An assessment of school mapping in Somalia

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Introduction

At the request of UNICEF (Somalia), I was asked to investigate possibilities for the implementation of a school mapping programme for the country (see the terms of reference in Appendix 1). The idea of having a school mapping programme for Somalia has evidently been around for some years, since most people I interviewed received the idea with enthusiastic anticipation. What, however, is school mapping? A first part to the answer is to stress that school mapping is simply a tool, one used most often to enhance access to schooling. And it is only one of several tools that can be used to plan for increased access. A second component to the answer comes from the idea that education has geographical dimensions in the same way as that education has political, social, economic and other dimensions. School mapping can therefore be used to offer perspectives on the geographical distribution of schooling. This is most often achieved by assembling data on education into a computerized geographical information system (GIS). A GIS is again simply a tool used to compile, analyse and display spatial information.[1] Finally, school mapping is often used as a synonym for micro-planning, the purpose of which is to plan the expansion and development of schooling on a local basis.

I spent four days in Nairobi, four days in the north-west zone of Somaliland, and five days traveling to and between these places and my home in Namibia, and two days in compiling this report in Namibia.

Observations

Most effort and time during this assessment focused on trying to answer three questions:

a) How would school mapping be used to greatest effect in Somalia?
b) What demands are there for school mapping?
c) What information could be assembled for purposes of school mapping?

a) Uses of school mapping

In response to the first question, school mapping can help improve the delivery and management of education in a number of ways. As mentioned above, a common application is for planning better access to schooling. The importance of this purpose in the context of Somalia, where enrolment rates are low, is made clear in the terms of reference for this work. The need to plan for improved access was also highlighted in discussions with many people in Nairobi and Hargeisa, and in various policy documents. Access to schooling is hindered by distance to primary or basic education (grades 1 to 8) and secondary education (grades 9-12).

Geographical barriers to schooling, for example as result of an absence of schools near to potential pupils, is however only one main constraint. Two other major factors evidently hinder

[1] Mendelsohn, J.M. 1996. *Education Management and Administration, and the use of Geographical Information Systems.* UNESCO, Paris, 76 pp.

access in Somalia. One is poverty, parents simply being able to afford either school fees[2] or to manage without the labour that their children can provide. A second factor might be broadly described as cultural, the most important consequence being poor school attendance by girls. Parents don't value education, and therefore keep their children at home or withdraw them after a few years of primary grades.

For purposes of the rest of this assessment, I assume that the best and most immediate use of school mapping will be to help plan for better access to education. However, and assuming that a school mapping programme is indeed developed for Somalia, it would be worth considering some additional applications:

1. For the planning of selected schools or facilities, for example, vocational schools or libraries and computer training laboratories
2. For monitoring to assess changes in the behavior of the education system.
3. For diagnoses, for example in understanding reasons for drop-out or poor performance.
4. For presentations of ideas and information, for example in negotiations with local communities, development agencies and politicians.
5. To plan the formation of school clusters.

All these uses of school mapping have potential benefits, but it is now probably too early to anticipate or directly plan for their application.

b) Demands

The second question concerns interests in school mapping. Actually, the issue is not school mapping, but interests in planning to improve access. There are perhaps three main groups with a potential interest in enhancing access: government planners, international agencies, and communities of parents. Assessing their interests in any comprehensive or objective way during such a short study is obviously hard, but I have the following observations and comments.

In the absence of a formal ministerial structure and staff in the central and southern zones (CSZ) of Somalia it is reasonable to assume that there is no recognizable demand for improved access to schooling there. It would thus be premature to develop a school mapping programme for the use of education planners in CSZ. The introduction of planning mechanisms would also be difficult in the light of the unsettled political and security environment.

I did not visit the north-east zone (NEZ or Puntland), and was thus unable to asses the interests of education officials in access and the possible use of such a tool. In the north-western zone (NWZ or Somaliland), officials on the Ministry of Education appeared superficially interested in school mapping, but I could not discern any real commitment to improving school access. This is not a criticism, but rather reflects the reality of other priorities, shortages of competent staff and funds, and the fact that schooling is evidently driven more by parental interests than those of the government. It is also fair to say that interests in planning access appeared much stronger amongst district and regional staff than those based at head office in Hargeisa.

As for international donor development agencies (which here include foreign non-governmental organizations), it is assumed that most have strong interests in getting more

[2] School fees in Somaliland usually amount to US$1/month in rural areas or US$2/month for urban schools. Many schools also accommodate some pupils that are unable to pay these fees.

children to school. They should also require sound judgments on the placement of new facilities, which they often fund. This conclusion is further based on the fact that UNICEF commissioned this study, and that I was informed that UNESCO has been anxious for a school mapping programme to be introduced.

It is most unlikely that parent communities would have any direct or structured interest in school mapping. However, it is clear that many, perhaps most schools have been started as a result of parental interests and action. I would therefore predict that maps of districts, or other local community areas, will serve as useful media for local discussions and the planning of new facilities to enhance access. The use of maps in this way is discussed below.

c) Information

In answer to the third question, school mapping to help improve access is most easily visualized as a 'supply and demand' problem. Three kinds of information are thus required.

Data on the supply of schooling, consisting of the co-ordinates, unique code numbers and names used for schools, as well as statistical data on what schooling is provided. The latter statistical information can be derived from the UNICEF primary and UNESCO secondary school surveys. Thus, for example, maps could be compiled to show the locations of all schools, or certain types of schools (lower primary, upper primary, secondary and madrassa schools etc), and the enrolments or numbers of class rooms available at schools. Likewise, maps could be drawn to show the location of schools having characteristics that indicate over-crowding and a need for additional facilities.

Co-ordinates for some 650 schools in the whole country were given to me by the Food Security Analysis Unit (FSAU of the Nairobi office of the Food & Agriculture Organization (FAO)), while a large number of co-ordinates of schools (including Koranic schools) have been recorded (and promised to me) by the Nairobi office of the United Nations Development Programme (UNDP). It is also likely that staff of the Red Crescent in Hargeisa have mapped many schools in Somaliland. Just how accurate and comprehensive these sets of data are remains to be seen, but it is likely that good locational information is available for a significant number of schools.

The main conclusions are (a) the existing co-ordinates will have to be checked, (c) unique code numbers equivalent to those used by the UNICEF and UNESCO surveys will have to be allocated to these co-ordinates, since neither the UNDP or FSAU data used these school survey codes, and (c) all other schools without co-ordinates will have to be found and mapped using global positioning systems (GPSs).

Data on demands for schooling. Ideally, these would consist of mapped points or polygons for towns, villages or settlements showing the number of school-aged children not at school. Such information is not available, and would be very expensive and logistically difficult to collect. However, UNDP has collected estimates of the total number of people in towns and villages throughout most of Somalia. These data could be used to estimate numbers of potential pupils. The UNDP data is now being finally checked before being made available in the next few weeks. The Red Crescent in Hargeisa has also mapped the positions of most water sources in Somaliland and recorded the number of users of the water. These data, too, could be used to estimate demands for schooling.

Contextual data on such features as towns, villages, settlements and other significant place names, roads, rivers, elevations or relief, heath services, commercial services, administrative services, refugee or displaced people centres etc. These data are needed to help in the interpretation and use of analyses of mapped information and relationships between supply and demand.

Various agencies in Nairobi and Hargeisa have assembled much of this information. For example, the FSAU supplied me with data on livelihood zones, roads, relief, rivers, airports and administrative boundaries. It should be a simple matter to collect most other contextual information.

In summary, much information is already available in digital format. The main challenges will be to compile a reliable database of school locations, and then to assemble all the supply, demands and context data into a geographical information system (GIS) database. That database will be used to analyse and identify major gaps between supply and demand, and to print maps for purposes of further planning (see below).

Recommendations

1. For further implementation of this project, it is recommended that school mapping focus clearly on all government and non-government institutions that provide formal education, which is here taken to mean the formal curriculum offered between Grades 1 and 12. The mapping would thus include all primary and secondary schools, madrassa schools, primary alternative education (PAE), primary non-formal education (PNFE) and alternative basic education (ABE) schools.
2. As a result and corollary, the following schools and institutions should **not** be mapped: Koranic schools, vocational, tertiary and any other non-formal education institutions. This recommendation is made against the background that the inclusion of these kinds of organizations would confuse the planning functions of school mapping to improve access to formal education. Their inclusion would also require a considerable additional workload that may not be justified.
3. I suggest that the school mapping programme be developed on a pilot basis in NWZ or Somaliland, at least to the extent recommended here. If UNICEF is sufficiently assured of its success, the programme can later be extended to the other two zones (NEZ and CWS). The extensions would obviously benefit from 'lessons learnt' in NWZ. This more tentative approach is also based on the possibility that geographical barriers to access may not be as pervasive as we assume, or that they are serious impediments in only certain areas. Greater clarity is thus needed on the degree to which school mapping can be used to solve access problems. Furthermore, the school mapping programme should be led as far as possible by demand and interest, which needs to be tested and developed on a pilot basis. If adequate demands are established, then it would be useful to encourage government planners to assume full responsibility for the programme, of course with assistance where needed. Some additional applications of school mapping, as described earlier, could then also be introduced.
4. All existing mapped information should be collected from agencies holding these data, and then checked and compiled into a GIS database. This should be a relatively simple task for contextual data and the population estimates assembled by UNDP and perhaps the Red Crescent. As for the schools, it will probably take a good deal of effort and checking to link co-ordinate data from these other sources with the corresponding

schools in the UNICEF and UNESCO school survey databases. This is because much of the matching will have to be done using the names used in the co-ordinate and survey data sets. Past experience has shown that this is often difficult because of such errors as misspellings and duplicate school names.

5. To obtain co-ordinates of schools that can not be found in these data sets, it is recommended that the enumerators that visit schools during the 2007 school survey be equipped with GPS devices. They will have to be trained in the use of the GPSs, and they should collect co-ordinates of both the schools they survey and all other formal education schools in the districts or areas they cover.[3]
6. I believe strongly that the best chances of school mapping actually leading to improved access will be through the use of maps by local communities. To do this, I recommend that all relevant information be compiled (see below), that maps of districts and perhaps some smaller areas be printed, and that facilitators be trained to use the maps as a basis for stimulating discussion and local planning. Where appropriate, the plans can be divided into those that communities can implement and those that need to be taken "up the ladder" to the Ministry of Education and development organizations.
7. These community discussions can also be used to verify, correct and add to the information already printed on the maps. For example, schools that might have been missed can be recorded and placed on the maps, at least roughly. One set of data that would benefit enormously from these local inputs would be estimates of numbers of potential pupils in each area. Participants can be asked to provide these estimates, which can then be added to the maps and used during the discussions as a basis for recommendations on the need for new schools or additional classrooms at existing schools. All these discussions, the inputs from participants and the decisions made will further serve to improve local knowledge and ownership. The maps should thus serve to stimulate greater interest in schooling, and they will serve as useful follow-ups to the community-participation programmes that UNICEF and others have been promoting.
8. In addition to the maps printed for use during community discussions, I recommend that a variety of other maps covering different areas be compiled and printed. Significant numbers of copies should be printed and the maps should be widely distributed to people with an interest in education. For example, one map could show all the schools in Somaliland, while others would cover each region or district. Again, past experience has shown that there is a high demand for such "road map-type" maps. They serve to generally enhance levels of information and knowledge as useful references, and the maps help improve the quality of debate about schooling, because, for example, the presence (or absence) of schools in an area can easily be verified during any discussion.
9. Should the recommendations made here be accepted, UNICEF (Somalia) should consider acquiring or loaning GPS devices, GIS software, a large format printer and a

[3] This could be divided into two stages to speedup the process:

1. A first stage might cover all schools in Gabiley and Hargeisa districts. Being close to Hargeisa, it should be possible for UNICEF staff to visit and map all the schools in these districts between now and the end of January. The co-ordinates can be recorded using the three Thuraya systems now in the UNICEF office at Hargeisa.
2. The second stage to map all remaining schools should be done during the next school survey. Again for the sake of moving ahead rapidly, I urge that the school survey be done in March.

It is vital that the co-ordinates of each school be recorded against both the name and unique code or index number of the school. To avoid duplication and loss of information, it would be best if one UNICEF staff member in Hargeisa be appointed to maintain a register of schools and all the co-ordinates that are recorded. That person could also manage and dispatch staff to map co-ordinates of schools in the Gabiley and Hargeisa districts. I can assemble such a register and list of existing co-ordinates once the activities proposed here are approved.

stock of printer ink and paper. To explore the latter option, a member of the UNICEF staff in Hargeisa could consult other UN offices and development organizations to see if they have GPSs and a printer which are not in use and can be borrowed. Similar enquiries could be made among UN agencies in Nairobi.

10. An additional requirement for implementation is for the UNICEF offices in Hargeisa and Nairobi to identify people who can be trained to work as facilitators, and also to help develop and maintain the whole school mapping programme.
11. In conclusion, I trust that the pilot activities recommended here will produce useful results and help build demand for an expanded school mapping programme. Use of the following ideas could help stimulate such demand:
    - Print and distribute as many copies of the maps as possible.
    - Compile a modest newsletter on school mapping to keep everyone informed
    - Such a newsletter could, for example, present diagnostic analyses of needs, challenges and plans in each district
    - Ensure that those responsible for the programme provide an effective service, especially to staff in the regional and district education offices.
    - Use the maps and newsletter to engage senior management, to cultivate their attention, and to support their needs and interests.
    - In summary, every effort should be made to create a responsive and creative service.

Organisations and people consulted:

Hargesia and Somaliland

- Ministry of Education: Director General, Director of Teacher Training, Director of Non-formal Education, Director of Planning and some of his staff
- HALO Trust – landmine clearing group
- Red Crescent – staff involved in mapping water and sanitation services and needs
- UN Habitat – staff involved in mapping large towns and cities, and estimating the number of households in each place.
- Ministry of National Planning & Co-ordination – Vice Minister and Director of Statistics
- UNICEF staff involved in community planning and mobilization
- UNICEF staff in the education group
- Schools: I visited five schools in Hargeisa, Gabiley and Tog Wajaale
- Amoud University in Boorama

Nairobi

- UNDP – mapping and statistics unit
- FSAU (food security analysis unit) of FAO
- OCHA – UN Office for the Co-ordination of Humanitarian Affairs
- UNICEF – health group involved in previous mapping of catchment areas
- UNICEF – education group that instigated the need for this assessment
- UNESCO – Director of Somali office to discuss their data on secondary schools

Appendix 1: **TERMS OF REFERENCE**

Development and Implementation of a School Mapping Strategy for NE and NW Zones in Somalia
Submitted by: Education Section

For the last ten years UNICEF supported the reconstruction of Somalia's education sector in various ways including school rehabilitation and construction, creation of PAE and NFE learning centers, teacher training, provision of teaching/learning materials such as textbooks, exercise books, pens, pencils, sharpeners, rulers, chalk, blackboard, and sports supplies. UNICEF has also conducted the annual primary school survey since 1997.

This year, UNICEF Somalia focused on increasing enrolment in primary schools through construction of additional learning spaces, lobbying and advocacy for increased participation in schools, social mobilization through the "back to school campaign and expansion of primary alternative education through establishment of additional learning centers. The "back to school campaign" in Somalia has yielded positive results leading to a 13.6 %[4] increase in enrolment.

Justification
Accordingly, UNICEF intends to support the Ministries of Education in NEZ and NWZ to conduct a school mapping exercise covering PFE, PAE, NFE and Koranic schools in Somalia as part of a broader programme of support which will include EMIS design and operationalisation and educational management training capacity development. The first step will be commissioning of a scoping study and design of preparatory activities using the services of an expert in school mapping. Initially, a pilot project of school mapping will be implemented in NWZ and later roll over to NEZ. This TOR outlines the initial planning activities to be conducted by the school mapping consultant over a period of two weeks (14 days)

The objective of the consultancy
Based on a rapid assessment, and in close consultation with the Chief Education and Chief, Planning, Monitoring and Evaluation, establish overall purpose and design of an appropriate school mapping activity

Tasks
The consultant will:

- Share knowledge on school mapping with USSC education staff, purpose and implementation methods.
- Develop a school mapping framework and schedule for NWZ and NEZ including essential requirements necessary for commencement in January 2007
- Identify key persons to be engaged in school mapping activity
- Hold initial meetings with MOE at central, regional and district authorities for induction on school mapping (depending on time, meetings might be limited to central ministries)

[4] 2005/2006 Primary School Survey

- Discuss and advise on MIS data base for storage of school mapping data.
- Develop a frame work for school mapping in NWZ (based on field experience, explore the possibility of inferring to develop framework for NEZ.
- Develop the tools needed for data collection

Consultant's Output

- A school mapping framework for NWZ
- A school mapping implementation plan for NWZ.

Scope

This is a preparatory activity for school mapping to be conducted in January. The consultant will hold meetings with USSC staff in Nairobi, MOE and UNICEF staff in NWZ.

Geographical Coverage

The planning meetings will be held in Nairobi and in NWZ. The consultant will induct USSC education and PM&E staff, UNICEF staff in the zone and MOE on school mapping, definition, purpose and application.

Methodology

The consultant will design the school mapping framework in Nairobi. He will also review education related materials on Somalia. The consultant will serve as a resource person on school mapping and share his knowledge on use of school mapping with education team. He will advise on the best methodology to conduct the exercise. The consultant will also travel to NWZ for meetings with MOE and UNICEF zonal colleagues to share the concept and identify persons to be involved in the actual exercise.

Time frame

The initial consultancy will be for a period of 14 days (2 weeks)

Activity	Output	No. of days
Travel to Nairobi		1
Induction meeting with Education section/orientation, administrative issues, preparation for the exercise.		1
Debriefing meeting with Education and PM&E. Review of policy documents and development of tools, meetings with OCHA, World Vision, UNDP for data gathering		5
Travel to NWZ, Meeting with MOE and UNICEF zonal staff in NWZ, identification of research assistants and training	Agreed plans on how to work with the MOE, key persons to be trained	5
Travel to Nairobi if possible debriefing with education section	Debriefing notes	1
Finalization of report and departure		1

Management of consultancy

The consultant will report to and be supervised by Primary Formal Education officer, UNICEF Somalia. The overall supervisor will be Maurice Robson, Head of Education Section, UNICEF Somalia.

11. Agency's Input:

- ☞ UNICEF will provide the consultant with existing documents on education
- ☞ Cover flight costs to and from Nairobi, and to and from Somalia (NWZ)
- ☞ Provide transport for field activities to the field, from airports and back within Somalia.
- ☞ Assist in travel arrangements and organization of meetings
- ☞ Provide security escort where deemed necessary.
- ☞ Organize meetings and training with MOE and UNICEF field staff

Qualifications, Expertise and Experience

- A post graduate degree in education/ social sciences/ planning and management
- At least 5 years experience in mapping and application of special software for mapping, the use of GPS and MIS and area based planning
- Experience in planning education projects
- Excellent communication skills in English (Somali language skills would be an asset)
- Open-minded and have ability to listen and synthesize information
- Ability to work as a member of a team, develop a team spirit
- Be willing to work in Somalia
- Be willing to learn about the context of Somalia/Somaliland as it relates to education
- Good report writing skills

Contracting Agency

UNICEF Somalia will be the contracting agency

Recommended Consultancy fee

The Consultant will be paid at L 4 for a period of 14 days. Payment will me made on completion on the exercise based on the following deliverables

- School mapping framework for Somalia
- A comprehensive list of inputs needed to conduct school mapping
- A detailed implementation plan on how to execute school mapping exercise beginning January

Exit Penalties

The consultant and UNICEF Somalia may agree to reschedule deadlines if unforeseen circumstances arise. In the event that such rescheduling has not been agreed in advance by exchange of letters, and submission of scheduled drafts does not occur within the deadlines indicated within these terms of reference, a fine of two percent of the total value of the contract may be deducted. In the event that the client, UNICEF Somalia, is dissatisfied with the work produced by the consultant, UNICEF Somalia may opt to terminate the contract on mutually agreeable terms. Likewise, if the consultant is unhappy with the new conditions given by his/her clients, s/he may opt to withdraw on mutually agreeable terms.

End of report and document

Further development of the school mapping programme in Somalia

April 2007

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Background

UNICEF (Somalia) requested that I investigate and implement the initial stages of a school mapping programme in Somalia. The first steps in this were taken during a consultancy in November and December 2006, when discussions were held with various people and organizations in Hargeisa and Nairobi. Following recommendations from this first assessment, it was agreed that steps be taken during 2007 to do the following (see attached Terms of Reference):

1. Assemble databases and systems for school mapping in the two northern zones of Somalia (north-west zone (NWZ) or Somaliland, and north-east zone (NEZ) or Puntland). The programme would be extended to the central-south zone on the basis of experience gained in the northern zones, and once more stable conditions allowed in central-south.
2. As part of the 2007 Primary Education Survey (PES), the locations of all schools offering a formal education or curriculum would be recorded used global positioning system (GPS) receivers. The co-ordinates and PES survey data would be built into a school mapping database.
3. The main products from this work will consist of (a) a GIS (geographical information system) database of school locations linked to EMIS data for schools, (b) maps showing the location of schools and the phases they offer in each district and region in NEZ and NWZ, (c) analyses and maps showing features of schools which suggest additional investigation and remedy, for example locations of over-crowded schools, or those that offer a particularly limited range of grades.

This report covers visits to Nairobi, Hargeisa and Bosasso between 10 and 26 April 2007. The main purpose of the visits was to collect additional GIS data to compliment and contextualize the school mapping data, to further plan the products to come out of the programme, and to assess what audiences would benefit most from the products.

Observations and results

In terms of working days, five days were spent in Nairobi, and two each in Hargeisa and Bosasso. Another five days were spent traveling to and between these places and my home in Namibia. One day was spent in compiling this report and attending to various administrative issues Namibia. The details of my movements are as follows:

Date	*Day*	*Activity*
10-Apr-07	Tuesday	Departed Windhoek 19h00 for Johannesburg
11-Apr-07	Wednesday	Departed Johannesburg 11h00 for Nairobi
12-Apr-07	Thursday	Nairobi
13-Apr-07	Friday	Nairobi
14-Apr-07	Saturday	Nairobi

15-Apr-07	Sunday	Nairobi
16-Apr-07	Monday	Nairobi
17-Apr-07	Tuesday	Nairobi
18-Apr-07	Wednesday	Departed Nairobi for Hargeisa
19-Apr-07	Thursday	Hargeisa
20-Apr-07	Friday	Hargeisa
21-Apr-07	Saturday	Departed Hargeisa 14h30 for Bosasso
22-Apr-07	Sunday	Bosasso
23-Apr-07	Monday	Bosasso
24-Apr-07	Tuesday	Departed Bosasso 07h30 for Nairobi
25-Apr-07	Wednesday	Departed Nairobi 16h00 for Johannesburg
26-Apr-07	Thursday	Departed Johannesburg 10h30 for Windhoek

Nairobi

The most important sets of data collected during this consultancy consisted of a large array of data on roads, rivers, relief or elevations, towns and settlements, administrative boundaries, land cover, land use systems, and various other physical geographical features. These data were obtained from SWALIM, a project of the FAO to compile data on the geography of Somalia. The Director and staff of SWALIM also offered to assist UNICEF in the further development of this school mapping programme, including the production and printing of maps of education facilities in each district. We also discussed the possibility and utility of producing a compilation of school data in the form of a Dynamic Atlas of education for each of NEZ and NWZ. This Dynamic Atlas would be produced on a compact disc from which users could load the Atlas onto their computers, and then browse, view, query and print information and maps on schooling. SWALIM have recently produced such a Dynamic Atlas for all their geographic data, and it is by modifying this overall product that an "education version" could most readily be produced.

Two visits were paid to the UNDP (Somalia) office in Nairobi from where I had hoped to obtain sets of data on the locations and population estimates of all villages and settlements. These data were assembled during a massive survey of settlements across Somalia in 2006, and should be of key importance to the school mapping programme. This is because the population estimates would provide measures of how many children of school-going ages are resident in each village or settlement, allowing analyses to be conducted of how the present locations of school (i.e. the supply of education) relate spatially to demands for schooling in each populated place.

I had also hoped to obtain data that UNDP had collected on the positions of education and health facilities in 2006, as well as on other infrastructure and services. These data would be of value for planning in providing contextual information to better guide plans to develop new schools. In addition, the data on locations of education facilities would be used to check and guide the GPS mapping of schools now being done as part of the PES.

My visits and requests for these data followed previous discussions with the UNDP staff in November last year. I was then promised that all the data would be sent by email. Unfortunately, UNDP (as of the time in writing this report) have still not supplied any of the data promised.

In Nairobi, I also had discussions with staff of the World Food Programme (WFP) and Food Security Analysis Unit (FSAU) of FAO to assess if these organizations had any additional data of use to the school mapping programme. However, relevant data from the organizations had been submitted to, and were available from the SWALIM datasets.

Attempts to meet staff of UNESCO and WHO in Nairobi to obtain data on secondary schools and health facilities, respectively, were not successful but will be followed by email enquiries and further attempts to obtain these data.

Hargeisa
Visits were paid to the offices of UN Habitat, the Examinations Centre of the Ministry of Education, and Red Crescent. As a result, a formal written request was sent to the head of the UN Habitat office to obtain locations of education facilities in Hargeisa and Boroma. Data on results at each school offering end of primary school examinations were to be provided to Ms Safia Jibril Abdi (UNICEF head of education) and sent on to me. At the time of writing this report, neither the UN Habitat nor the examination data had been sent. From the Red Crescent office in Hargeisa I obtained GPS locations and population estimates for some 60 settlements in Somaliland.

Discussions were also held with UNICEF education staff and Ms Wafaa Elfadil Saeed (Regional Programme Officer of the UNICEF office in NWZ) to discuss and assess the most useful products of school mapping, my programme of activities once all the data are assembled and I next visit NWZ, and training needs. Observations from these and other discussions on those matters are offered below.

Bosasso
Again, discussions were also held with UNICEF education staff to assess the best uses of school mapping, work that might be needed during a next trip to Bosasso and Garowe, and people who should be trained. I addressed participants in a training workshop for the PES, giving an overview of processes and the anticipated benefits of the school mapping programme in NEZ.

Staff in the offices of UN Habitat, the FAO and WFP in Bosasso were consulted to enquire after any relevant sets of data in their possession. None of these offices appeared to have any data that had not already been obtained from SWALIM or other sources.

Recommendations and next steps
In summary, much of the contextual information for the compilation of maps of schools in districts, regions and the three zones has now been collected. For reasons noted above, it is extremely important that data on the locations and population estimates for settlements be obtained from UNDP (Somalia) in Nairobi.

Over the next few months, the following activities will be pursued:

1. Follow-up outstanding sets of data, especially from UNDP, UNESCO, WHO, and UN Habitat.

2. Obtain, check and clean school locations collected using GPSs during the PES survey. These data will be emailed to me.
3. Obtain PES data and link it to the GPS data for school locations. The PES data will also sent by email.
4. Compile and print maps in Windhoek and/or Nairobi in collaboration with SWALIM. These will consist of maps of schools and contextual features in each district, region and zone.
5. With the assistance of SWALIM, develop a Dynamic Atlas for education in NEZ and NWZ.
6. Analyze the PES data and population estimates from UNDP to develop a series of maps showing areas and schools where there are major gaps between supply and demand. Also, compile maps showing a variety of features of schools, for example those that are over-crowded, those needing more teachers, and those having high attrition.

In taking forward the school mapping programme to ensure that it is maximally useful, there is a spectrum of goals that need to be considered. I describe these as opposing ends of the spectrum, but this is not to mean that the ends are mutually exclusive. I do, however, believe that levels of emphasis for one goal or another need to be determined.

1. The first concerns how people see school mapping. It is clear that some people see school mapping as an end in itself, the purpose being to assemble school mapping systems and data, and print maps. An opposing (or complimentary) idea is that school mapping is only a process that leads to better planning and provision of schooling, and greater access to education. I would strongly urge that emphasis be placed on this latter goal.
2. School mapping is usually assumed to serve the needs of government planners, with the added assumption that these officials produce plans that are later implemented to build new schools or reorganize networks of schools. UNICEF has the clear goal of supporting the development of government capacity in Somalia, and many people I consulted see the products of the school mapping programme being delivered to ministerial planners in Hargeisa and Garowe. In my previous report, reservations were expressed about the degree to which the mapping programme would be used by government to improve access. I also suggested that greater attention be given to using the maps to generate local-level interest, for example amongst district education officers, district councils and community education committees. My assumption behind this is that local interests initiate most schools, and that parents have substantial interests in getting their children to school.
   For purposes of my next visits to NEZ and NWZ, I would recommend that meetings and workshops be arranged both for ministerial officials and for district level officials and community leaders to further assess how school mapping would be of use to both groups.
3. In many discussions about who should take over the implementation of school mapping in Somalia, the recommendation was made that I should spend a good deal of time “building capacity”. Embodied in that recommendation is the assumption that it is primarily capacity that limits planning to improve access. A contrary view is that more should be done to “build interest” in school mapping, planning and the need to

improve access. Again, efforts must be made to assess how much emphasis should be placed on reducing deficits in capacity or interest.

These comments mainly concern how the school mapping programme should relate to government and other people in Somalia. However, I also recommend that the UNICEF offices in Hargeisa, Bosasso and Nairobi identify staff who can be trained to work as facilitators, and also help develop and maintain the whole school mapping programme.

A point made to me by staff of SWALIM is that UNICEF (Somalia) should consider appointing a person to be responsible for all its GIS work. In the view of SWALIM staff, the education, health and water and sanitation offices of UNICEF cumulatively have more than enough mapping work to justify such an appointment.

Terms of Reference: Specific school mapping work plan

Visit 1:

- 10 work days in Nairobi to consult, collect and check all existing digital data/mapped information from agencies holding these data, and then compile a GIS database
- 7 work days in Somaliland to collect additional digital data), support the enumerators on identification of settlement locations – their patterns and demographic strength, identify social and cultural parameters and more specifically school locations, school population, school resources – physical, human, infrastructural using GPS devices and provide guidance on the collection of co-ordinates of both the surveyed schools and all other formal education institutions in the areas they cover
- 7 work days in Puntland to collect additional digital data), support the enumerators on how to identify settlement locations – their patterns and demographic strength, identify social and cultural parameters and more specifically school locations, school population, school resources – physical, human, infrastructural using GPS devices and provide guidance on the collection of co-ordinates of both the surveyed schools and all other formal education institutions in the areas they cover

(After the consultant's departure and immediately after the PES, UNICEF staff will work closely with the MOE (s) staff to capture off all the PES forms and to email them to the consultant.

- 15 days in Namibia collating and checking the co-ordinates, names and unique school codes data to get comprehensive GIS databases

By then all the PES forms will be captured, and the data checked. It is possible that the process of PES data processing will not be complete before the Visit 2.

Visit 2:

- 2 days in Nairobi for planning, administrative matters and consultation;
- 16 days in Nairobi receiving and linking previously received and the late PES data to the school co-ordinates assembled earlier in Namibia, map production and printing
- 15 days in Somaliland to carry out on-the-job training on analyses that derive from the PES data, and the use of GIS, start implementation in the use of maps for school planning by communities and education officials e.g. relating enrolment to resources, relating school space needs and school age population, location of children, distance from school etc..
- 15 days in Puntland to carry out on-the-job training on analyses that derive from the PES data, map and the use of GIS, start implementation in the use of maps for school planning by communities and education officials e.g. relating enrolment to resources, relating school space needs and school age population, location of children, distance from school etc.
- 3 days in Nairobi report writing and debriefing.

End of report

Further development of the school mapping programme in Somalia

September 2007

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Background

Initial steps for the development of a school mapping process were taken in November-December 2006 when the methodology and approach to be taken for school mapping was planned. Terms of Reference were then developed (see Appendix 3) for the remainder of the work, the main products of which will consist of (a) a GIS (geographical information system) database of school locations linked to EMIS data for schools, (b) maps showing the location of schools and the phases they offer in each district and region in NEZ and NWZ, and (c) analyses and maps showing features of schools which suggest additional investigation and remedy.

During a second trip in April 2007, emphasis was placed on collecting secondary and associated sets of data. These included administrative boundaries, towns and settlements, water sources, infrastructure and natural geographical features that would help inform the school mapping process. The data were checked and collated during a period of work at my base in Namibia, then compiled on a DVD and sent to UNICEF (Somalia) in Nairobi. A report describing the nature and sources of these data was submitted with the DVD.

As a result of conditions prevailing in central-south Somalia during 2007, it was agreed that the school mapping programme would focus on the northern zones of the country, and that the locations of schools in those zones would be mapped. UNICEF (Somalia) arranged for the purchase of a number of global positioning systems (GPS) to be used by field enumerators during the primary education survey (PES) of 2007. The co-ordinates of all formal and primary schools were to be collected, as well those of all formal secondary and tertiary education institutions.

Observations and results

This report covers visits to Nairobi and Hargeisa between 27 August and 18 September 2007. In terms of working days, 13 were spent in Nairobi and two in Hargeisa, while another five days were spent traveling to and between these places and my home in Namibia. The details of my movements are as follows:

Date	*Day*	*Activity*
27-Aug-07	Monday	Travel to Johannesburg
28-Aug-07	Tuesday	Travel to Nairobi
29-Aug-07	Wednesday	Meetings in Nairobi
30-Aug-07	Thursday	Map production and data checking in Nairobi
31-Aug-07	Friday	Map production and data checking in Nairobi
1-Sep-07	Saturday	Data checking in Nairobi
2-Sep-07	Sunday	Nairobi
3-Sep-07	Monday	Map production and data checking in Nairobi
4-Sep-07	Tuesday	Map production and data checking in Nairobi
5-Sep-07	Wednesday	Map production and data checking in Nairobi
6-Sep-07	Thursday	Map production and data checking in Nairobi

7-Sep-07	Friday	Map production and data checking in Nairobi
8-Sep-07	Saturday	Data checking in Nairobi
9-Sep-07	Sunday	Nairobi
10-Sep-07	Monday	Travel to Hargeisa
11-Sep-07	Tuesday	Hargeisa
12-Sep-07	Wednesday	Hargeisa
13-Sep-07	Thursday	Travel to Nairobi
14-Sep-07	Friday	Consultations and data checking in Nairobi
15-Sep-07	Saturday	Report production in Nairobi
16-Sep-07	Sunday	Nairobi
17-Sep-07	Monday	Report back and travel to Johannesburg
18-Sep-07	Tuesday	Travel to Windhoek

The original purpose of the mission was finalize the production of the GIS database of schools, the compilation and printing of maps and the analyses, as described above. However, serious errors were discovered in the sets of co-ordinates for schools. For example, of the 1,424 sets of co-ordinates that had been collected by the field enumerators, definite or likely problems were found in 366 co-ordinates. Of these, 67 sets had been taken in places where it was certain that were no schools, 18 sets were completely wrong as a result of recording errors, seven sets placed schools in regions or districts far from where the schools were located, and 205 sets were suspicious because they indicated locations at least 5 kilometres from known villages or settlements. In addition, co-ordinates were missing for 71 schools. Of concern is also the fact that many co-ordinates were taken in places far from schools, suggesting that the enumerators may not have actually visited the schools.

Once the scope of these errors was discovered and after discussion with UNICEF staff, it was decided that my current effort should be devoted to trying to correct the mistakes and obtain the missing information. Nine large format A0 maps (at an approximate scale of 1:260,000) were compiled and printed in the offices of SWALIM in Nairobi. The maps showed the locations of all the school co-ordinates, villages and settlements and roads. I then consulted UNICEF and Ministry of Education staff in Hargeisa who helped check the draft maps to identify errors and correct as many sets of co-ordinates as possible. Two UNICEF staff who had travelled from Bosasso to Hargeisa also helped check the errors.

These checks enabled me to obtain accurate or at least approximately correct positions for about 130 schools. Many of these were for schools reported to me to be located in a town or village whose position was known; I then simply located these schools in the GIS database in these settlements. In addition, positions for about 30 secondary schools that had not been mapped were reported to me and then added to the GIS database.

To correct the remaining errors it was decided that UNICEF staff in Hargeisa and Bosasso would dispatch teams with GPSs to the schools in question, and that the co-ordinates would be later sent to me for processing.

I also attended several meetings in Hargeisa and Nairobi to present preliminary maps and examples of the kinds of analyses and applications that could be achieved from the school mapping process, at least once the data are reliable. A remaining concern has been the failure of UNDP to supply estimates of household numbers in each settlement, town and village. As recalled from previous reports, these estimates would provide measures of demand for schooling against which the locations of existing schools could be compared. That

comparison should help highlight areas where substantial numbers of children are not at school, thus indicating priorities for the possible provision of new school facilities.

Some preliminary work was done on the compilation of a Dynamic Atlas of Education n northern Somalia. Again, that can only be completed once reliable sets of data are available. The Atlas will be produced on a compact disc from which users can load the Atlas onto their computers, and then browse, view, query and print information and maps on schooling.

Next steps and recommendations

It is hoped that a complete and reliable set of school locations will be available by the end of October. These will then be used to compile new printed maps of all schools in northern Somalia. Likewise, the analyses of school-level data from a geographic perspective and the development of a Dynamic Atlas of Education can then be completed. Some of this work will be done at my home base in Namibia and the remainder in Nairobi. Thereafter, trips will be undertaken to Hargeisa, Bosasso and Garowe to distribute copies of the maps and Dynamic Atlas, and to do some preliminary training on school mapping applications.

In previous reports, I have drawn attention to the question of who will use products of the school mapping process and, more specifically, how the products could be used to improve schooling conditions. Convincing answers to these questions remain elusive. However, it may be useful to identify people and/or organizations that are the most active or successful "agents of change and implementation", and to target the school mapping information at these people. Of course, changes may be instigated at different levels, but it seems to me that the best potential lies at district and community levels where incentives and interests for getting children to school are greatest. Thus, there appears to be merit is using products of the school mapping process to inform and stimulate discussions and planning within communities and districts. More details on how this could happen are given in Appendix 1. At the very least, I recommend that the approach be tested in several districts, perhaps through the new Strategic Partnership (SP) project to be implemented by UNICEF and UNESCO with funding from DfID.

The Primary Education Survey has been conducted in Somalia over many years, but little effort has been made to verify the reliability of the data collected. The large number of false GPS co-ordinates recorded during the 2007 survey raises several possibilities: that some schools were not visited, that statistical data reported for those schools was incorrect, and that some of these are 'ghost schools. Against this background, it seems important that an audit be conducted of the PES data. I recommend that a random sample of schools be selected and visited by reliable enumerators who should verify whether the schools were visited during the 2007 PES. The enumerators should also carry the completed 2007 PES forms to assess the quality of information that had been recorded. That assessment can be done most accurately if the visits are made as soon as possible. Another benefit of an audit is that some government officials should come to realize that the PES is really an important endeavour, and that the PES information has value.

I also recommend that all formal secondary schools be surveyed simultaneously with the PES survey of primary schools in 2008. Such a survey should aim at providing a comprehensive set of information on all secondary schools, since the 2006 survey of secondary schools was not complete. In addition, having the data on secondary and primary schools collected at the

same time would provide the first set of estimates on flow rates of pupils throughout the formal grades.

UNICEF (Somalia) has now invested in, and produced a considerable volume of data on schooling in the country. Moreover, the volume is surprising, given the difficult conditions in Somalia. However, much of the data remains as data, and has yet to be translated into information. Accordingly, UNICEF should consider ways in which information on education can be distributed more widely, and in different ways to interest different audiences. One way of doing this would be to provide information that is targeted at each district and people in those districts that could make improvements to their local networks of schools. Each report, perhaps better called a profile, should focus on information for individual schools. On the one hand, it should provide basic statistics which readers can use for reference purposes, while on the other hand, the document should highlight individual schools that have special problems and that require urgent attention. For example, the report could list those schools that have high enrolments and lack water, or sanitation, or have too few classrooms or teachers etc. The approach would thus be to urge improvements at schools where the greatest number of pupils are affected by shortcomings. More ideas on the contents of district profiles are given in Appendix 2.

The recommendation to provide information on problems at individual schools to the districts is based on two assumptions or concepts. The first is that improvements to education in Somalia need to be made incrementally, school by school, and child by child. Every effort should thus be made by UNICEF and other agents of change to see incremental changes being made. The second assumption was mentioned earlier, namely that parents and community leaders are likely to have the greatest interests in having their children educated.

Another way of disseminating information might be to publish relevant material on a website. This would make information of Somali education available throughout the world, especially to the Somali diaspora. The website could also be used to solicit support, perhaps in the form of voluntary teachers, teaching materials and funds.

In discussions with UNICEF (Somalia) staff, the suggestion was made that the PES effort and its products should be evaluated. One recommendation to be considered during that evaluation is for the PES to include information on outputs from the school system. Currently, the whole survey is devoted to what goes into schools and no information at all is available on what comes out. Some indicators of output could be collected at schools, and the PES should also include information on the results of external examinations.

Finally, to reiterate a recommendation made previously. This is for UNICEF (Somalia) to appoint a person to be responsible for all its GIS work. Cumulatively, the education, health and water and sanitation offices of UNICEF probably have more than enough mapping work to justify such an appointment. Moreover, having such a person might lead to greater co-ordination and convergence of activities between the sectors.

John Mendelsohn
21 September 2007

Appendix 1: District or local level mobilization of people concerned about education

The overall goal is to bring interested people together, to encourage them to identify and prioritize key improvements that need to be made, and then to plan how the improvements can be made. In a sense, this would amount to a process of diagnosis of challenges faced by school-aged children in the areas, from which should emerge an interest and commitment to improve schooling. Much of this should build upon the processes that have been established by Community Education Committees (CECs), the assumption being that most effective agents of change are likely to be parents and those that represent their vested interests.

The discussions would be initiated and facilitated by an appropriate group of people who can understand the nature of the local social, political and economic environment, and who can mobilize community members around their interests in getting their children educated. I would stress that much of the success or failure of the discussions would depend on having really good facilitators who can stimulate thinking, discussion and action.

Participants in the discussions should include senior members of Community Education Committees (CECs), District Council members, traditional or clan leaders, District Education Officers, school principals, prominent local business people and parents, amongst others.

Maps of schools (and associated infrastructure) and PES/EMIS data would be used to facilitate the discussions and identification of potential solutions. For example, the maps would clarify debate regarding the position of existing schools, and help in prioritizing places where new schools might be constructed to serve the largest catchment populations. Likewise, tables and lists of schools would help participants focus on schools with the most urgent problems; those, for instance, with high enrolments but having no water, inadequate classrooms, or insufficient teachers etc.

The following kinds of issues could be discussed, using the tools as prompts for background information. In all cases, the maps and tables would be used as departure points to stimulate interest. From there, the discussions should gather quality as participants added new information, helped correct or update the mapped and tabular information, and provided their local knowledge of what was happening in schools and social and economic conditions in and around settlements.

Topic		**Tools**	**Goals and challenges**
Initial access to school	Identify groups of people, areas, settlements etc where few children go to school.	1. Maps of the area 2. Local knowledge of settlements and socio-economic conditions 3. Tables and/or maps showing enrolments per school	Plan interventions to increase enrolments in these areas, perhaps by mobilizing parents
Facility issues	Identify schools most in need of additional classrooms	1. Tables and/or maps showing enrolments and pupil/class room ratios 2. Local knowledge of conditions in schools	Plan measures to get new classrooms built at selected schools

	Identify places where new schools are needed most urgently	1. Maps of schools, their potential catchment areas, and settlements outside the catchments 2. Local knowledge of settlements and numbers of children in each settlement	Plan activities with communities in identified areas and with authorities and funding sources to get new schools established
	Schools most in need of building maintenance	1. Tables and/or maps showing enrolments per school and indices of building conditions	Plan measures to have maintenance work done in selected schools
	Schools most in need of water and/or sanitation	1. Tables of schools with no water and/or sanitation and high enrolments	Plan measures to get water and sanitation supplied
Enrolments	Identify schools offering a limited range of grades and far from other schools with higher grades	1. Maps and tables showing ranges of grades offered.	Identify schools and clusters of schools where higher grades are a priority, and plan how these should be provided
	Identify schools with high attrition rates	1. Tables showing enrolments in each grade 2. Local knowledge of circumstances leading to drop-out	Plan measures to encourage parents to keep their children at school

Et cetera

Appendix 2: Profile and diagnosis of Districts

Each profile should consist of 2-4 pages, providing baseline information about the district and drawing attention to problems, especially those that could or should be solved by District Education Officers, Community Education Committees (CECs) and District Councils etc. This also means that problems that are beyond their scope should **not** be emphasized.

The contents of such a profile could include:

1. A small map to show approximate boundaries of the district in Somalia
2. Basic statistics: total number of formal primary, alternative primary and secondary schools.
3. Number of schools and enrolments in major towns and villages, and remainder in rural areas. List and highlight areas where there are enrolment problems, for example areas with lots of schools that offer no higher primary grades.
4. Enrolment trends: graphs showing total pupils per grade, gender disparities, and lists of schools with particular gender problems, and schools that have high numbers of pupils in their last grades and to which higher grades could be offered.
5. Physical facilities: table of all schools sorted by total enrolments, and highlighting particular problem schools: those with large enrolments and no classrooms or high pupil:classroom ratios; those with high enrolments and no water or sanitation, for example.
6. Staffing: table of all schools sorted by total enrolments, and highlighting particular problem schools where there is a shortage of teachers, too few qualified teachers etc.
7. Et cetera.

Appendix 3: Terms of Reference and Specific school mapping work plan

Visit 1:

- 10 work days in Nairobi to consult, collect and check all existing digital data/mapped information from agencies holding these data, and then compile a GIS database
- 7 work days in Somaliland to collect additional digital data), support the enumerators on identification of settlement locations – their patterns and demographic strength, identify social and cultural parameters and more specifically school locations, school population, school resources – physical, human, infrastructural using GPS devices and provide guidance on the collection of co-ordinates of both the surveyed schools and all other formal education institutions in the areas they cover
- 7 work days in Puntland to collect additional digital data), support the enumerators on how to identify settlement locations – their patterns and demographic strength, identify social and cultural parameters and more specifically school locations, school population, school resources – physical, human, infrastructural using GPS devices and provide guidance on the collection of co-ordinates of both the surveyed schools and all other formal education institutions in the areas they cover

(After the consultant's departure and immediately after the PES, UNICEF staff will work closely with the MOE (s) staff to capture off all the PES forms and to email them to the consultant.

- 15 days in Namibia collating and checking the co-ordinates, names and unique school codes data to get comprehensive GIS databases

By then all the PES forms will be captured, and the data checked. It is possible that the process of PES data processing will not be complete before the Visit 2.

Visit 2:

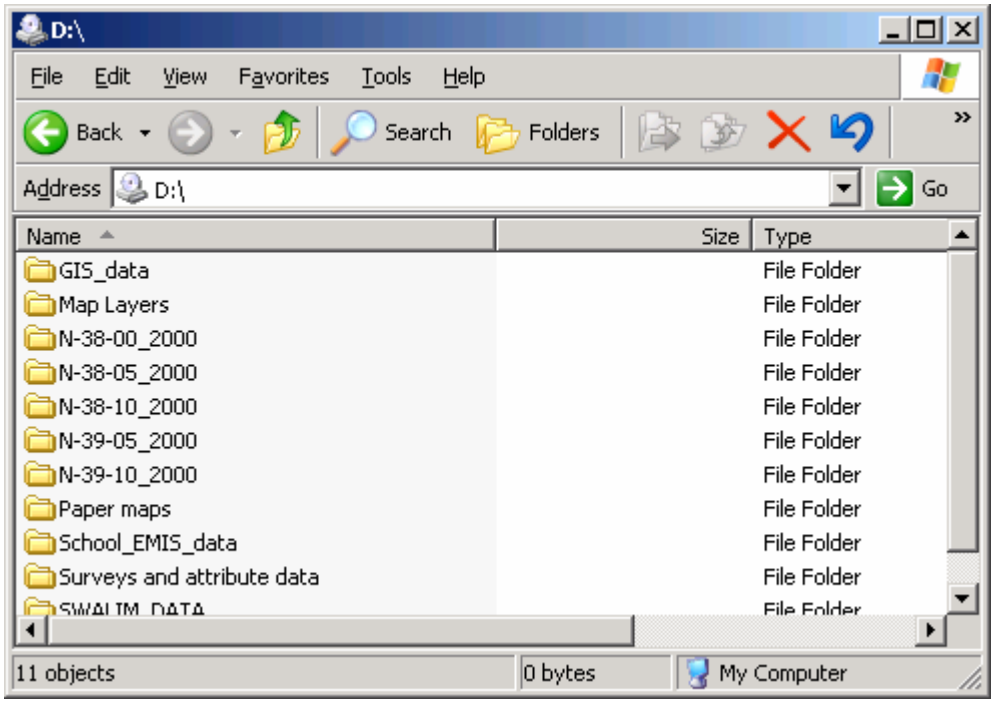
- 2 days in Nairobi for planning, administrative matters and consultation;
- 16 days in Nairobi receiving and linking previously received and the late PES data to the school co-ordinates assembled earlier in Namibia, map production and printing
- 15 days in Somaliland to carry out on-the-job training on analyses that derive from the PES data, and the use of GIS, start implementation in the use of maps for school planning by communities and education officials e.g. relating enrolment to resources, relating school space needs and school age population, location of children, distance from school etc..
- 15 days in Puntland to carry out on-the-job training on analyses that derive from the PES data, map and the use of GIS, start implementation in the use of maps for school planning by communities and education officials e.g. relating enrolment to resources, relating school space needs and school age population, location of children, distance from school etc.
- 3 days in Nairobi report writing and debriefing.

End of report

Report and description of data assembled for school mapping in Somalia

John Mendelsohn
July 2007

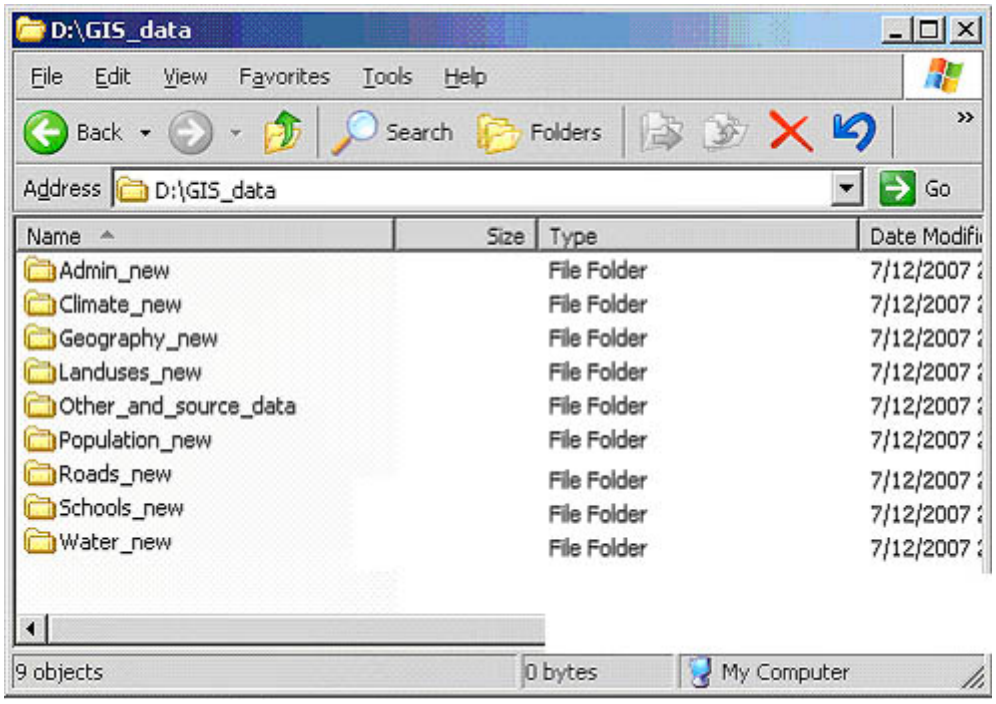
The contents of a DVD sent to UNICEF (Somalia) in Nairobi are described here. The data on the DVD have been compiled from various sources over the past few months, and the compilation represents a deliverable product in terms of my agreement with UNICEF. The main contents of the DVD are as follows:



The main sets of GIS (geographical information system) data for purposes of the school mapping project are contained in the folder GIS_data, which will be described in more detail below. Information and data in the other folders are:

- Map_layers: assorted sets of data from the Dynamic Atlas compendium of data assembled by SWALIM in Nairobi.
- N-38-00_2000, N38-05_2000, N38-10_2000, N39-05_2000 and N39-10_2000: satellite images, each spanning 5 by 5 degrees of latitude and longitude covering different areas of Somalia. The images are in compressed MrSid formats, and are projected in either UTM Zone 38 or Zone 39.
- Paper maps: scans and pdf images of assorted maps of Somalia
- School_EMIS_data: copies of the MS Access files of the PES survey in 2007, and also the survey of secondary schools conducted by UNESCO in 2006, and results of the Grade 7 examination at all schools in Somaliland.
- Surveys and attribute data: data from assorted surveys in Somalia
- SWALIM DATA: original copies of GIS data provided by SWALIM for the school mapping project.

Data within the GIS_data folder have been grouped into several sub-folders as described in the table below:



Sub-folder	File name	Source
Admin_new	clan_boundaries.shp	SWALIM
	district_boundaries.shp	SWALIM
	district_capitals.shp	SWALIM
	ethic_group_boundaries.shp	SWALIM
	hargeisa_subdistrict_boundaries.shp	UN Habitat
	region_boundaries.shp	SWALIM
	region_capitals.shp	SWALIM
	zone_boundaries.shp	SWALIM
Climate_new	climate.shp	SWALIM
	mean_temp.shp	SWALIM
	potential_evap.shp	SWALIM
	rainfall.shp	SWALIM
Geography_new	all rivers.shp	SWALIM
	catchments.shp	SWALIM
	geology of somalia.shp	SWALIM
	landform.shp	SWALIM
	major rivers.shp	SWALIM
	sea deapth-somalia.shp	SWALIM
	sm-landcover-ge.shp	SWALIM
	soil of east africa.shp	SWALIM
	sub_catchments.shp	SWALIM
	strm-90-clip-somali.tif	SWALIM
Landuses_new	agriculture.shp	SWALIM

	cropped areas.shp	SWALIM
	fez.shp	SWALIM
	lgp_utm_project.shp	SWALIM
	livelihood zones-10-2004.shp	SWALIM
Population_new	gebiley settlements.shp	KEMRI and SWALIM
	household numbers from red crescent.shp	Red Crescent
	idps.shp	SWALIM
	malnutrition_2007.shp	SWALIM
	settlements-undp-1997.shp	SWALIM
	somalia health facilities.shp	WHO, Regional Office for the Eastern Mediterranean
	undp settlements in nez and nwz 2006.shp	UNDP
	undp-2006-settlements_hiran-mid-shabelle.shp	SWALIM
	undp-2006-settlements_lower-shabelle.shp	SWALIM
	unhcr_offices_jan07.shp	SWALIM
	village data with no coordinates from UNDP.xls	UNICEF & UNDP
	somalia_hf_details.txt	WHO, Regional Office for the Eastern Mediterranean
Roads_new	airfields.shp	SWALIM
	airstrip.shp	SWALIM
	airstrips.shp	SWALIM
	road.shp	SWALIM
	road0122.shp	SWALIM
	so-pry_corridors.shp	SWALIM
Schools_new	enrolment per district 2004.shp	SWALIM
	hargeisa schools_un habitat.shp	UN Habitat
	hargeisa schools_un habitat_polygons.shp	UN Habitat
	non primary schools unicef pes 2007.shp	PES 2007
	schools in somalia-unicef-1998-1999.shp	SWALIM and UNICEF
	schools in somalia-unicef-2004.shp	SWALIM
	UNDP education facilities 2005-2006.shp	UNDP
	Gebiley Schools.shp	KEMRI and SWALIM
	pes all schools12 july.shp	PES 2007
Water_new	gebiley waterpoints.shp	KEMRI and SWALIM
	swims-berkad-2007-march.shp	SWALIM
	swims-dams-2007-march.shp	SWALIM
	swims-drilled-wells-2007-march.shp	SWALIM
	swims-dug-wells-2007-march.shp	SWALIM
	swims-other-sources-2007-march.shp	SWALIM
	swims-springs-2007-march.shp	SWALIM
	swims-water-source-interventions-2007-march.shp	SWALIM
	water sources.shp	SWALIM
	waterpoints.shp	SWALIM

Next steps
Additional and corrected information needs to be obtained for several data sets. These are the PES school survey databases, for which co-ordinates for some schools remain outstanding and others need to be corrected. In addition, the complete set of EMIS data from this survey has yet to be finalized. Three sets of information remain outstanding from UNDP. These are the estimates of household numbers in each rural town or village, estimates of household numbers in each major town, city or urban centre, and co-ordinates and names of all schools in major town, city or urban centre.

Once the GIS for schools and EMIS are complete, the GIS co-ordinates and EMIS data will be linked to do such analyses as features of schools, for example those that are over-crowded, those needing more teachers, and those having high attrition.

I shall then be able to start compiling and print maps in Windhoek and Nairobi in collaboration with SWALIM. These will consist of maps of schools and contextual features in each district, region and zone. Also, with the assistance of SWALIM, a Dynamic Atlas for education in NEZ and NWZ will be produced.

The final stage will involve visiting NEZ and NWZ to disseminate the maps, install the databases and versions of the Dynamic Atlas on the computers of MoE and UNICEF (Education) staff, and to conduct training in the use of the maps and digital systems.

John Mendelsohn
13 July 2007