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UNITED NATIONS
ECONOMIC COMMISSION FOR AFRICA

REPORT ON A MISSION TO
THE SOCIALIST PEOPLE'S LIBYAN ARAB JAMAHIRIYA
(5 - 24 October 1982)

by

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Addis Ababa

This report is the sole responsibility of the writer. It has been submitted to the Department of Technical Co-operation, United Nations, which may alter or supplement these findings.

I. INTRODUCTION

1. The mission was made at the request of the government to see the experimental work in Census Mapping already being carried out by the Census and Statistics Department (CSD); to assist and advise them about the feasibility of undertaking the work to completion before enumeration; to advise on a methodology and to make suggestions for post-census work.

2. The schedule of the mission was:

4/5 October 1982 - Addis Ababa to Tripoli
10 October 1982 - Field trip to Gharian
11 October 1982 - Field trip to Zawia
16 October 1982 - Field trip to Mizda
24/25 October 1982 - Tripoli to Addis-Ababa

II. CONSULTATIONS

3. During the mission discussions were principally held with the persons whose names are given as Appendix A.

III. BACKGROUND

4. The most recent Population and Housing Census was held in July-August 1973 during which a total population of 2.25 million was recorded. Of this a total of 1.35 million (60%) was classified as urban.

5. The next Census is scheduled for July-August 1983, by which time the population is expected to be about 3.3 million. DTCD are assisting CSD with the forthcoming census under LIB/82/006, and ECA Regional Advisers, having collaborated in the past, will also be helping with the 1983 census programme.

Administrative Divisions

6. In 1973 there were 10 Mohafadas (provinces), 46 Baladiyas (districts), 163 Mudariyas (sub-districts) and 663 Mahallas (People's councils). Most Mahallas have a population of between 1,000-5,000. Following decentralisation measures in 1980 the provinces were abolished and the Baladiyas reduced to 25. The Baladiya boundaries at this time were radically altered by either combining or splitting up the old units.

7. The present 25 Baladiyas are now sub-divided into 115 Farah Baladiyas (sub or branch Baladiyas) and 669 Mahallas (People Councils). These divisions have little correspondence with those existing at the time of the last Census.

IV. PROGRESS

Purposes of Census Mapping

8. During a meeting of the Census Committee the Regional Adviser noted that mapping for a Population and Housing Census is different in context and emphasis from Survey Department mapping. For example, topographic maps depict vertical displacement (e.g. contours) in addition to horizontal distances and are precisely drawn according to geographical co-ordinates and grids, with one sheet aligned next to the other in a block form. Sometimes they are printed in 6 colours or more and because of their complexity it may take up to 4 years to produce one sheet. They are thus quickly out of date.

9. Census maps on the other hand should primarily emphasise the current administrative boundaries and census sub-divisions, plus roads and localities, so that overlapping or omissions do not occur during enumeration. Hills and other physical features which figure prominently on topo-sheets, are indicated for identification purposes only. (e.g. heights of hills are not shown).

10. Census maps are usually based on the administrative divisions (e.g.: a sub-baladiya) and because they are approximate and details are not necessarily to scale are less costly to produce. And due to the necessity for a complete coverage of localities, roads and boundaries, they are often the most up-to-date maps to be found in a country.

11. In 1973 a good census was conducted basically without the aid of maps. This may not be possible in 1983 as such great changes have taken place in the intervening years. For example:

(a) The radical alterations to the administrative boundaries which have sometimes resulted in their cutting across the more traditional Mahalla boundaries;

(b) Due to historical land ties, "enclave Mahallas" can be found;

(c) There are instances of two Mahallas in the same Baladiya with identical names;

(d) The former Mukhtar Mahallas (chiefs) who were hereditary functionaries of long standing are now elected officials (Secretary for the Popular Committee of the Mahalla) who may be unfamiliar with their areas;

(e) The 10 provincial Geographical Code Books (gazetteers) giving boundary descriptions for 1973 were made on the basis of existing law. These, however, are now out of date as they were made without maps and the administrative divisions have changed. The books are now being updated in the field, as 25 books (one for each baladiya) have to be ready before the census;

(f) With the socio-economic developments of the last decade many new settlements have sprung up and old ones have been abandoned. Some new settlements have been built across the traditional boundaries (e.g.: in Gharian);

(g) With these rapid changes, the concept of the Kabillas (clans) is disappearing, and with it local knowledge of Mahalla sub-divisions.

12. For the above reasons alone, it is considered essential that census maps be produced. Resources committed to the mapping programme would be well utilised, resulting in an accurate census.

Other Uses of Census Maps

13. Besides the 1983 enumeration itself, which is the immediate concern, the census maps can be the starting point for other exercises. For example:

- (a) 1983 Census Post Enumeration Survey;
- (b) Census final report maps (indicating population density, population distribution, population change etc);
- (c) Compilation of a statistical atlas;
- (d) 1984 Agricultural Census, 1985 Industrial Survey;
- (e) For Household Surveys sampling frame;
- (f) Recording new boundaries of urban agglomerations (e.g.: Consultant's town planning areas)
- (g) For other Secretariat's use (e.g.: Utilities, Agriculture, Health, etc.).

Consultant's Planning Regions

14. Survey maps and planning studies indicating present conditions and proposals for up to the year 2,000 are being made by 3 consultant companies. For planning purposes only the country has been divided into 4 planning regions. The regions, relevant companies, baladiyas and projected populations (Libyans only) for 1983 are given as Appendix B.

15. The UN Habitat physical planning project coordinates the activities of the consultants under the direction of the Secretariat of Utilities, and also produces maps and studies of its own. For example, they are presently putting forward proposals for basing the baladiyas on scientific criteria. The Regional Adviser was informed however, that changes, if any, would only be made after the census.

Available Base Maps

16. From meetings with the Chairman of the Census Committee, the Director General of CSD, the UN Physical Planning project, Director General Surveys Department, Polservice and Finnmap, it has been ascertained that the following material can be made available to CSD by request to Secretariat of Utilities and to Survey Department:

(a) 1:50,000 scale of entire coastal area, Originally prepared by US Army Map Service (AMS) and updated in the past 4 years by the consultants under the direction of the Survey Department. However, they do not show any boundaries;

(b) 1:250,000 base maps with the new baladiya and sub-baladiya boundaries plotted by the consultants. (Note: the boundaries should be checked in the field by CSD staff in case of errors);

(c) 1:10,000 ortho-photomaps (127 sheets) from Zuwarah to Misurata, prepared by Finnmap;

(d) 1:10,000 and 1:1,000 of Tripoli by Polservice. (Note: The ideal census urban scale of 1:5,000 is being made available to CSD by special request);

(e) 1:5,000 and 1:1,000 base maps for 183 Master Plans and Layout Plans of towns, including all baladiya and sub-baladiya centres, and smaller settlements, by the consultants;

(f) 1:1,000 Benghazi maps (470 sheets) with reductions to 1:5,000 and 1:10,000 by Doxiades.

17. There are also aerial photographs, mosaics and remote sensing images available locally, but their use is not recommended at present due to the lack of time and trained manpower.

18. In addition, there are 1:2,000,000; 1:1,500,000; 1:1,000,000 and 1:500,000 AMS World Series small scale planning maps (wall maps). They are mostly out-of-date and their present availability in the country is not known, but they could probably be purchased in Britain if required for a particular purpose.

19. It will be apparent from the above list, however, that sufficient mapping material is available in the country to enable census maps to be made, and further base maps would not be required under normal circumstances.

Available Equipment

20. Limited stocks of drawing pens, tracing paper and ancillary items are available locally. If anything is in short supply it can be obtained from UN under project LIB/82/006.

21. The maps have to be stored, however, and horizontal and vertical plan filing cabinets would have to be acquired by CSD. These and other items were included in a suggested equipment list giving full specifications, prices and suppliers. The list-which took post census mapping into account-has been deposited with CSD, and the total cost, including 20 per cent allowed for airfreight, amounted to \$17,681 (L.D.5,234).

Work Already Completed/In Progress

22. Some work has already been carried out partly on an experimental basis under the guidance of the UN Sr. Statistician, Project/Co-ordinator. Maps have been traced in the office by a Statistician (Mr. P.C. Alexander) but his standard of work would improve greatly if he had more equipment and materials available. The work has been much

assisted by Mr. Idris Aburakis (C.S.D.) particularly in his cross-checking of village and Mahalla names in the consultants reports (in English) and in the Geographical Code Books, which are in Arabic.

23. Field work and spot checks have been carried out by, for example, the Field Supervisor (Mr. Mohamed Shaban) in Sebha Planning Region, and by the Director, Research and Development Division (Mr. Said Juma) in Gharian Baladiya. In the absence of census mapping expertise, it is commendable that this work has been started.

24. In particular, the following operations can be noted:

(a) Sebha: 5 baladiya maps for the Geographical Code Books, and sub-baladiya maps for Murzuk Baladiya have been drawn. In addition, working sheets for the Sebha Geographical Code Book have been produced. These consist of tables listing mahallas and sub-baladiyas in 1973 and 1979 with descriptions of how the present divisions have been formed;

(b) Gharian: Sub-baladiya and Mahalla boundaries are being plotted on field maps in consultation with local officials. Similar work is being carried on in Ghadames (Nalut) and Jefren Baladiyas;

(c) Zawia: Work was originally started 4 years ago for a proposed Household Survey and is being presently up-dated.

Field Trips

25. Three field trips were made in the company of the UN Senior Statistician/Project Coordinator, the two Statisticians and a CSD driver.

26. The first, of 275 km (172 miles) was to Gharian, the headquarters of Gharian Baladiya, to see sketches being made as part of the preparations for the revision of the Geographical Code Books. The Regional Adviser attended a meeting of the Secretaries of the Popular Committees for the Mahallas at which questions on the boundaries for Gharian sub-Baladiya were asked by the Director of Research and Development Division (CSD) and the Town Planning Officer, Gharian. A sketch map was built up according to the answers of the Secretaries.

27. The second, of 161 km (101 miles) was to Zawia, the headquarters of Zawia Baladiya, to see the corresponding work for that area. An actual field check was also made of a mahalla boundary, and distances in kilometres and identification points (landmarks) were added to a sketch map.

28. The third, of 376 km (235 miles) was to Mizda, the headquarters of Mizda Sub-Baladiya, (one of five in Gharian Baladiya) where a meeting of the Secretaries of the Popular Committees of the Mahallas was attended by the Regional Adviser. Again, the Mahalla boundaries were revised by enquiry rather than by actual field visits. It would be better to plot the boundaries actually in the field with the help of the Secretaries, and to put the information on Survey Department base maps (e.g. 1:50,000). This would result in more accurate Geographical Code Book descriptions.

V. PROGRAMME OF WORK (PRE-CENSUS MAPPING)

29. The programme should be designed in such a way that the work is completed by the end of May 1983 at the latest, and should take into account the personnel, vehicles, equipment and other resources to be allocated.

Drawing and Photocopying

30. There are two basic methods by which the maps can be produced; drawing and photocopying from a master. Actual drawings specifically made for Census purposes are generally preferable to the photocopying of existing Survey Department material. This is particularly true for rural and hilly areas where the contours may obscure census details and confuse rather than clarify matters for census staff. And for desert areas it is often quicker to draw a simple map consisting only of the boundaries and the few scattered settlements and major routes, than to resort to photocopying with its more lengthy preparatory time.

31. Photocopying from a master, however, is preferable for densely populated urban areas, where the drawing of a maze of streets and small dwelling units would take on inordinate length of time. Furthermore, the master copies can provide the basis of a permanent set of census maps after the enumeration.

Baladiya Maps for the Geographical Code Books

32. These are simple outline maps showing the relevant baladiya and sub-baladiya boundaries, main settlements, roads and tracks and will be distributed to census field officers. They are drawn to a common sheet size of 33 x 44cm (approx A3), so that a copy can be folded up into a pocket on the inside cover of the book.

33. The scale of the map depends on the size of the baladiya itself, i.e. small baladiyas will be at a larger scale than large baladiyas. This method of varying scales is practical as the smaller baladiyas (in terms of area) are generally the more densely populated ones along the coast and so the scale can be larger.

34. The idea is a good one as it gives an initial countrywide coverage showing the spatial distribution of the sub-baladiyas and larger settlements. When the maps for the individual baladiya books have been completed, a map of the whole country can be produced in similar fashion for the complete one-volume edition of the Geographical Code Book. After the census these baladiya maps can be redrawn more accurately and neatly.

Larger Format Maps-Rural Areas

35. These are being drawn on 75 cm and 100 cm tracing paper. There will be baladiya, sub-baladiya and mahalla maps at various scales for distribution to Mahalla Census Field Officers (Moawans) and Supervisors (Musajils) but not to Enumerators (Adads). Survey Department and Consultants maps should be used as a basis wherever available, and where time allows tracings based on an administrative division indicating boundaries, settlements and main communication routes should be made from the base-maps.

Production of Urban Area Maps - 1:10,000/1:5,000

36. It is suggested that about 6 paper prints be made of each Survey Department map. A set is then taken to the field to have the baladiya, sub-baladiya and mahalla boundaries plotted. It will be easier if these are initially plotted at 1:10,000 and later transferred to the 1:5,000 series. (Note: if larger scales are used (e.g. 1:1,000) much greater quantities of printing paper are required, but basically the maps only show the same details as the more compact 1:5,000).

37. If the mahallas are compact they may go onto one 1:10,000 or 1:5,000 sheet, but usually the boundaries will cross from one sheet to another in the same way as rural boundaries. After the boundaries have been plotted the sheets are cut up accordingly and stuck together on the reverse with cello tape.

38. If the mahalla is spread out over a wide area the map can be left in two parts. But an overlap may be needed; the amount of overlap depending on the layout of the mahallas, -i.e. that an entire mahalla, for example, is shown on either the north or the south portion-not half and half.

39. New names and other details are added and obsolete ones are deleted from the master print. Some prominent buildings can be named (e.g. Paint Factory) and street names should be indicated where possible. The map is finally given a title and drawing number, indexed in a book and carefully filed.

40. Before photocopying, a strip of paper showing a bar scale and a legend can be stuck to each master map in turn. When the copies have been made it is unstuck and attached to the next master. The copies should be made on the largest size paper that the CSD Minolta EP 710 can take, namely A3 paper measuring 297 x 420 mm (11.7 x 16.5"). The copies are then distributed as required by the Census Committee.

Census Mahallas

41. Whether tracing on photocopying, the concept of "Census Mahallas" may apply as new developments bring about a problem with some traditional mahalla boundaries. For example, a new settlement may be built around a well which marks the mahalla boundary, and so the settlement is cut in two by the boundary line. It may be better in this case to adjust the boundary (for census purposes only) to form a "census mahalla", whereby the settlement is recorded as being in only one mahalla. This could be the one having the majority of buildings. The adjustment would speed up enumeration and make tabulation easier.

Urban Master Plan and Layout Plan Areas

42. The actual Consultant's Master Plans and Layout Plan maps show future proposals on them. Thus if these plans are used they may cause confusion as the overlay obliterates existing detail underneath. So when ordering the material from Survey Department only the base maps for the relevant locality should be requested.

43. Another problem that may occur is where a mahalla boundary goes beyond the border of the map or map series. This may cause confusion to the mahalla census officer unless an extra piece of paper is added to the map so that the boundary is shown in its entirety. This is possible if the mahalla is small, but if there is no chance of adding extra paper due to the large size of the mahalla, the supervisor should be given a smaller scale map in addition.

Urban Area - Definition

44. The Regional Adviser was informed that where a town or settlement is covered by a Master Plan or Layout Plan, this will be designated as an urban area. A mahalla making up part of that urban area is to be considered as entirely urban in concept if the majority of the population is living under urban conditions. This means that no attempt is to be made at this stage to establish town boundaries or town planning areas to encompass the urban areas, as these would perhaps cut right across a traditional mahalla. This would be more serious than merely adjusting a small part of the mahalla boundary when forming a "Census Mahalla".

Sketches

45. On occasions where suitable base maps do not exist, resort will have to be made to sketching. The sketches should show an approximate North point and approximate scale and include landmarks (e.g. wells or prominent buildings) together with their names. Distances in kilometres should also be shown with the figures written along the roads and tracks. As in the case of maps, the sketches should include a title and a drawing number.

EA Formation in Urban Areas

46. It has been the practice for the Mahalla Census Officer to split the mahalla up into Field Supervisor's areas, and for the Supervisor to make the EA's on the basis of the number of households (80 rural and 100 urban) encountered during the housing census. Without having maps to guide them in the past, the Supervisor numbers streets in a zig-zag pattern and not blocks when forming EA's. Thus the EA's may become linear in form and not compact, which would be helpful for future sample surveys where maps are used.

47. Furthermore, an EA boundary may be in the middle of a line of houses, i.e. when the Supervisor reaches 100 households. At this point he sticks a red 'T' sign on the wall to signify the end of one enumeration area and the start of another. Directions to the Enumerator are also shown by blue arrows posted or painted on the walls - a straight arrow for "enumerate this side of the street" and a right-angled arrow for "also other side of street". Thus the "boundaries" of the EA's are usually between the streets and not the streets themselves.

48. The UN Senior Statistician/Project Coordinator and the Regional Adviser wondered whether more conventional EA boundaries in block forms could not be drawn on the maps for the forthcoming census. The Census Committee noted, however, that although it may be possible

for the Supervisor to identify the positions of his 'T' signs and arrows on large-scale maps, they would not advocate a change in their system of forming EA's. They noted that the method had been successful in the past, and that instructions for the 1983 census had already been written on this point.

Updating Census Maps During Census Enumeration

49. This is a good way to have the latest details of the field situation. During training it can be stressed to the supervisors that they have to make alterations to their maps if necessary. Some may be reluctant for fear of being incorrect, and some may feel that as they have so many other responsibilities - particularly if their area is difficult - that they do not have time. Thus coverage may be very uneven.

50. Another problem is getting the map back from the field after enumeration. It is the job of the Mahalla Census Officer to see that all the maps are collected up in his area and returned to the Census Mapping Unit for the new details to be added to the original drawings.

Short-Term Expert in Census Mapping

51. During the mission the Regional Adviser advised the Statistician making the drawings at CSD on the use of the planimeter, and also on drawing techniques, scales, legends, title boxes and index numbers for completed drawings.

52. But to assist the staff of CSD with the mapping programme over the next few months, a short-term UN expert would be required. The UN Senior Statistician/Project Co-ordinator noted that this would be initially for a period of about 3 months. He could be appointed under LIB/82/006.

53. It would have to be made clear to the person who takes up the position, however, that he would have to play an active role in both the field work and actual map production, to ensure its timely completion.

Post-Census Mapping

54. It is only after the census that the drawings can be improved, new ones made and new materials utilised. For example, if the drawings are left on tracing paper, they will gradually deteriorate in the heat and the paper will crack. They are also susceptible to fire, water and insects. They should therefore, be redrawn on draughting film, a polyester (plastic) material that is both durable and stable.

55. For adapting Survey Department mapping to entirely suit census mapping needs, and to enable maps, charts and graphs for all statistical purposes to be produced, it would be necessary to have a permanent Census Mapping Unit within the CSD.

56. For this, extra equipment would be required. For example, an optical pantograph would be most valuable when making large scale maps in rural areas for future household surveys. Scale changes at present are being made on an Ott graphical pantograph located in the Secretariat of Utilities. This instrument, like all graphical pantographs, is very inaccurate when making enlargements.

57. A UN expert in Census Mapping would also be needed for a period of about one year to put the unit on a sound basis. This could perhaps be a continuation of the initial 3 month period, if a suitable candidate is found. The UN Statistician noted that the one year period could also be provided under LIB/82/006. The expert would be required to train local staff and to assist in the production of, for example, the census final report maps. A fellowship could also perhaps be arranged so that a CSD staff member could attend a short course in census geography. A suitable course is held in July-August each year at the University of East Anglia, U.K., and courses in mapping are tenable in Holland and elsewhere in Europe.

VI. CONCLUSION

58. Based on information gained during meetings, discussions and field trips during the mission, it is apparent that there is a wealth of mapping material in the country and much of it is relatively up-to-date. But with the lack of trained staff, equipment and time available to CSD the problem is in gathering this material together and putting it in a form useful to the Census.

59. Despite these limitations something can be done which will be worthwhile, but it will require the drive and initiative of the Census Committee to see it through.

60. The aim should be to produce simple maps concentrating on:

- (a) An initial country-wide coverage, i.e., the baladiya maps in the Geographical Code Books;
- (b) The large-format sub-baladiya maps, mahalla maps and sketches for the 12 baladiyas of the Tripoli planning region, (which contains an estimated 65 per cent of the total population) then the Benghazi, Sebha and Al-Khalij planning regions.

61. The depth and amount that can be achieved will essentially depend on the calibre and number of personnel engaged in the exercise, and the vehicles, equipment and materials put at their disposal.

62. CSD have a new Minolta EP710 photocopier with an enlargement and reduction facility, as well as a small offset press and process camera. They also have access to an ammonia plan printing machine. It is not clear, however, whether sufficient paper of good quality, inks, toner and ammonia for printing the census maps is presently available. If not, it is suggested that their acquisition be made a priority task, or a bottleneck may occur in the coming months.

63. The production of the Geographical Code Books are being given priority status as CSD realise that it is better to have the boundary problems solved beforehand rather than overloading the Mahalla Census Officers and the Field Supervisors at the enumeration period. The census maps will complement the Geographical Code Books, and give the CSD a graphical record of the geographical frame.

64. The task of completing census maps before enumeration in July-August 1983 is complex and the programme is already behind schedule. But given the necessary inputs and support from the Census Committee the target can be reached, though one has to conclude that mapping is feasible only as long as sights are kept to a realistic level.

65. The Regional Adviser can undertake a further short mission in early 1983 if required, to review the situation and to advise where necessary.

APPENDIX A

LIST OF PERSONS WITH WHOM DISCUSSIONS WERE HELD

Government

Mr. A.S. Zoghni	- Chairman, Census Committee
Mr. Muftah Unis	- Director General, Survey Department
Mr. Omar Muntasser Salem	- Director General, CSD
Mr. Said Juma Abushkwat	- Director, Research and Development Division, CSD
Mr. Idris M. Aburakis	- Statistician, CSD
Mr. P.C. Alexander	- Statistician, CSD
Mr. El-Bashir Ali Zenbil	- Secretary of Planning, Zawia Baladiya
Mr. Muneer El-Garari	- Secretary of Utilities, Gharian Baladiya
Mr. Moustafa M. Sitayum	- Town Planning Officer, Gharian Baladiya
Mr. Mohamed Shaban	- Field Supervisor, CSD

United Nations

Mr. A. Bashin	- Deputy Resident Representative, UNDP
Mr. N.S. Choudhry	- Senior Statistician, Project Coordinator, DTCD
Mr. Aldo Sicignano	- Assistant Resident Representative, UNDP
Mr. Dilip Pal	- Regional Planner, Habitat
Mr. Adam T. Kowalewski	- Architect/Planner, Habitat
Mr. Than Htike	- Architect/Planner, Habitat
Mr. Nihal B. Perera	- Statistician, Habitat
Mr. Peter Trulp	- Adviser on Computer Methods, UN Statistical Office, New York

Consultants

Mr. W. Piziorski	- Project Manager, Polservice (Warsaw)
Mr. Timo Linkola	- Chief Planner, Finnmap (Helsinki)

APPENDIX B

<u>Consultant</u>	<u>Planning Region</u>	<u>Baladiyas</u>	<u>Projected population (Libyans only) - 1983*</u>
PolSERVICE	Tripoli	Tripoli	940,800
		Nikat Koms	138,400
		Zawia	192,400
		El Azizia	70,700
		Tarhuna	59,700
		Homs	119,500
		Zliten	76,600
		Misurata	126,100
		Ghadames	30,700
		Jefren	65,100
		Gharian	82,800
Doxiades	Benghazi	Sofelgeen	34,700
		Benghazi	398,700
		Al-Fatha	79,200
		Gabal Akhdar	103,800
		Derna	74,800
Finnmap	Sebha	Tobruk	77,400
		Sebha	55,700
		El-Shati	37,200
		El-Joufra	20,000
		Ubari	36,000
Finnmap (Speerman)	Al Khaliij	Murzuk	31,700
		Sirte	36,800
		Agedabia	75,700
		El-Kufra	17,600
Total			<u>2,982,100</u>

* From: Demographic Parameters and Population Projections for the Libyan Population 1975-2000 A.D. (CSD)