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UNITED NATIONS

ECONOMIC and SOCIAL COUNCIL

Distr.
LIMITED

E/CN.14/TEL/9
21 February 1972

Original : ENGLISH

ECONOMIC COMMISSION FOR AFRICA

TELECOMMUNICATIONS DEVELOPMENT

SUGGESTED TARGETS FOR THE SECOND DECADE

The planned pan-African Telecommunication network, covering some 16,000 kilometers of route at an estimated capital cost of US$ 80 million, and involving about 33 countries of the Region is scheduled to be completed in 1975. The network is expected to improve communications over eighty per cent of the Region and a preliminary estimate indicate that all the routes of the network will be profitable within five years of starting operations; that is at the end of the current decade and efficient profit-generating network should be providing substantially improved communications between the preponderant majority of the member countries of the Region.

Important though intra-African and inter-regional social and commercial traffic may be, and although return on investment in long-distance telecommunication services may be attractive (it being estimated that for 20 per cent of total investment, long-distance telecommunication services provide about 45 per cent of total revenue), an efficient international network without an equally adequate and efficiently operated national network in any member country of the Region will have limited usefulness. That telecommunication services are an important infrastructure for development is generally recognized, but as to how this importance is to be assessed in terms of investment priorities is a matter for each member country of the Region. From Table 1 below, where the total development investment as a percentage of GDP for one member country may, for 1968/69, be as much as 400 times the investment of another member country of the Region, the need for some kind of a generally accepted development investment target seems to be called for.

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The low investment rate and uneven development in telecommunication services, of the sizeable few, as seen in Table 1, seem to be characteristic of the Region as a whole. Figures for telephone density, that is the number of telephones per hundred of the total population, for the developing regions are generally low in comparison with similar figures for the other regions of the world. But comparative figures of the rate of growth of telophone density in developing regions should give fair indication as to the relative ratings of telecommunications in the priority systems of the developing regions. Table 2 gives the picture as to the regional distribution of the world's telephones. From it can be seen how well below the world's average are the figures for telephone density for Africa and Asia. It is of interest to note however that whereas up to January 1962, Africa had the edge on telephone density figures, by January 1970, Asia had outstripped Africa, over-doubling her telephone density against a minimal increase of twelve per cent for Africa over the nine-year period.

The growth of telephones in the region over a nine-year period is shown in Table 3 below:

The International Telecommunications' GAS-5, (the General Autonomous Study Group 5), has established a close relationship between number of telephones and the per capita income in a nation. It is felt generally however, that in developing countries where rates of population growth are generally so high as to muffle any significant increases in per capita income the GDP is a better measure than the per capita income. To evaluate the adequacy of telecommunication services in the ECAFE region, the ECAFE has evolved an index of measurement, based on the correlation between the GDP and number of telephones, an index of measurement known as the utilisation factor is the number of telephones for each 100,000 of GDP. The utilisation factor then is an index measuring telecommunication development in relation to economic development and Table 4 gives the computed U.F. for countries of the region as at 1st January 1970.

Table 1

Telecommunications Development: Investment as a percentage of GDP for 1968/1969

Country	Telephones 1968	Telephones 1969	Investment 1968/1969 (million US.$)	GDP 1968 (million US.$)	Investment as a % of GDP
Algeria	156,038	169,188	8.02	2,925	0.3
Botswana	298	3,536	1.98	61	3.2
Burundi	2,966	3,415	0.27	166	1.6
Cameroon	5,000	5,852	0.52	883	0.05
Central African Republic	2,800	-	-	169	-
Chad	3,976	4,177	0.12	226	0.05
Congo (K.)	21,919	22,092	0.11	1,273	0.008
Congo (B.)	9,333	9,812	0.29	170	0.17
Dahomey	4,800	-	-	218	-
Ethiopia	36,034	41,106	3.09	1,441	0.21
Gabon	4,300	6,694	1.46	212	0.68
Gambia	1,494	1,586	0.06	39	0.15
Ghana	45,850	53.934	4.98	1,834	0.27
Guinea	6,600	-	-	315	-
Ivory Coast	24,811	-	-	1,072	-
Kenya	65,166	72,277	4.31	1,206	0.36
Lesotho	1,844	1,995	0.09	72	0.12
Liberia	3,600	6,051	1.49	330	0.45
Libya	31,700	34,790	1.88	3,067	0.06
Madagascar	23,993	25,258	0.77	670	0.11
Malawi	10,174	11,519	0.82	243	0.33
Mali	7,800	-	-	396	-
Mauritania	1,300	-	-	173	-
Mauritius, etc.	15,996	16,793	0.49	153	0.32
Morocco	160,326	153,662	-	2,755	-
Niger	3,073	3,298	0.14	312	0.04
Nigeria	75,900	81,440	3.4	3,866	0.09
Rwanda	1,389	1,433	0.03	137	0.02
Senegal	29,072	29,264	0.12	727	0.02
Sierra Leone	6,300	6,193	-	340	-
Somalia	4,800	-	-	151	-
Equatorial Guinea	1,451	-	-	64	-
Sudan	44,508	45,539	0.63	1,535	0.04
Swaziland	4,461	4,822	0.22	76	0.28
Tanzania	31,300	31,587	0.18	858	0.02
Togo	2,900	4,567	0.16	229	0.07
Tunisia	61,923	68,908	4.26	934	0.46
Uganda	25,716	27,666	1.19	699	0.17
U.A.R.	365,000	-	-	5,285	-
Upper Volta	1,309	1,398	0.05	247	0.02
Zambia	48,645	51,958	5.68	1,162	0.49

Table 2

REGIONAL DISTRIBUTION OF WORLD'S TELEPHONES IN THE SIXTIES

Region	Number of Telephones		Percentage increase	Share of world total (percentage) (1970)	Increase during the decade based on 1962 share of world total	Telephone density per 100 people	
	January 1962	January 1970				January 1962	January 1970
North America	79,830,600 a/	124,105,000	55	48.6 a/	7.6 %	41.0 a/	54.7 a/
Middle America	1,075,900 a/	2,512,000	134	1.0 a/	0.2 %	1.6 a/	2.8 a/
South America	3,337,600 a/	5,308,000	59	2.1 a/	(-) 0.2 %	2.3 a/	2.3 a/
Europe	43,172,700 a/	83,714,000	94	32.8 a/	1.9 %	7.7 a/	12.9 a/
Africa	2,005,300 a/	3,136,000	56	1.2 a/	(-) 0.2 %	0.8 a/	0.9 a/
Asia	9,053,400 a/	31,019,000	243	12.2 a/	5.4 %	0.6 a/	1.5 a/
Oceania	3,224,500 a/	5,406,000	68	2.1 a/	(-) 0.2 %	20.2 a/	27.4 a/
World	141,700,000 a/	255,200,000	80	100.00 a/		4.9 a/	7.1 a/

a/ Source: The World's Telephones; American Telephone and Telegraph Co.

Table 3

Number of Telephones in the ECA Region

January 1962 - January 1970

Country	No. of Telephones January 1962	No. of Telephones January 1969	Percentage increase	No. of Telephones January 1970	Percentage increase on 1962	Percentage increase on 1969
Algeria	205 061	156 038	(-) 19	169 188	(-) 17	8
Botswana	983	2 966	200	3 536	260	19
Burundi	2 242	3 200	43	3 415	52	6
Cameroun	7 800	5 000	36	5 852	(-) 25	17
C.A.R.	1 529	2 800	83	-	-	-
Chad	1 907	3 976	108	4 177	119	5
Congo (Braz.)	5 706	9 333	64	9 812	72	5
Congo (Kinshasa)	30 000	21 919	(-) 27	22 092	(-) 26	1
Dahomey	2 150	4 800	123	-	-	-
Ethiopia	12 628	36 034	185	41 103	225	14
Gabon	2 068	4 300	108	6 694	224	56
Gambia	700	1 494	113	1 586	127	6
Ghana	26 234	45 850	75	53 934	106	18
Guinea	4 000	6 600	65	-	-	-
Ivory Coast	9 199	24 811	170	-	-	-
Kenya	42 467	65 166	53	72 277	70	11
Lesotho	-	1 844	-	1 995	-	8
Liberia	2 300	3 600	57	6 051	163	68
Libya	12 357	31 700	157	34 790	182	10
Madagascar	14 549	23 993	65	25 258	74	5
Malawi	-	10 174	-	11 519	-	12
Mali	3 000	7 800	160	-	-	-
Mauritania	300	1 300	333	-	-	-
Mauritius	9 481	15 996	69	16 793	77	5
Morocco	130 989	160 326	22	153 662	17	(-) 4
Niger	1 700	3 073	81	3 298	94	7
Nigeria	47 998	75 900	58	81 440	70	7
Rwanda	573	1 389	142	1 433	150	3
Senegal	22 378	29 072	30	29 264	31	1

Table 3 (cont'd)

Country	No. of Telephones January 1962	No. of Telephones January 1969	Percentage increase	No. of Telephones January 1970	Percentage increase on 1962	Percentage increase on 1969
Sierra Leone	4 610	6 300	37	6 193	34	(-) 2
Somalia	2 015	4 800	138	-	-	-
Sudan	26 548	44 508	68	45 539	72	2
Swaziland	2 029	4 461	120	4 822	138	8
Tanzania	17 986	31 300	74	31 587	76	1
Togo	2 256	2 900	29	4 567	102	57
Tunisia	27 866	61 923	122	68 908	147	11
Uganda	13 915	25 716	85	27 666	99	8
U.A.R.	245 200	365 000	49	-	-	-
Upper Volta	1 300	1 309	0.6	1 398	8	7
Zambia	-	48 645	-	51 958	-	7
Equato~~rial Gu~~inea	-	1 451	-	-	-	-

Table 4

UTILIZATION FACTOR AS OF 1 JANUARY 1970

Countries	No. of Telephones[a] 1 January 1970	Population[b] (millions)	Telephone Density per 100 people	GDP for 1970[c] (million US$)	Utilization factor
Algeria	169,188	14,012,000	1.25	3,224	5.2
Botswana	3,536	623,000	0.55	67	5.2
Burundi	3,415	3,600,000	0.10	183	1.8
Cameroun	5,852	5,786,000	0.10	971	0.6
C.A.R.	N.A.	1,522,000	-	186	-/
Chad	4,177	3,706,000	0.12	249	1.7
Congo (Braz.)	9,812	936,000	1.11	187	5.2
Congo (Kinshasa)	22,092	21,638,000	0.13	1,400	1.6
Dahomey	N.A.	2,686,000	-	240	-
Ethiopia	41,106	25,046,000	0.16	1,585	2.6
Gabon	6,694	481,000	1.37	233	2.9
Gambia	1,586	364,000	0.44	43	3.7
Ghana	53,934	9,026,000	0.63	2,017	2.6
Guinea	N.A.	3,921,000	-	346	-
Ivory Coast	N.A.	4,310,000	-	1,179	-
Kenya	72,277	10,098,000	0.69	1,327	5.4
Lesotho	1,995	1,043,000	0.21	79	2.5
Liberia	6,051	1,171,000	0.52	363	1.7
Libya	34,790	1,880,000	1.83	3,374	1.0
Madagascar	25,258	6,932,000	0.38	737	3.4
Malawi	11,519	4,443,000	0.26	267	4.3
Mali	N.A.	5,038,000	-	436	-
Mauritania	N.A.	1,171,000	-	190	-
Mauritius, etc.	16,793	861,000	2.02	168	10.0
Morocco	153,662	15,779,000	1.01	3,031	5.1
Niger	3,298	3,848,000	0.08	343	1.0
Nigeria	81,440	66,174,000	0.13	4,253	1.9
Rwanda	1,433	3,587,000	0.04	151	1.0
Senegal	29,264	3,925,000	0.76	800	3.7
Sierra Leone	6,193	2,644,000	0.24	374	1.6
Somalia	N.A.	2,820,000	-	166	-
Equatorial Guinea	N.A.	285,000	-	70	-
Sudan	45,539	15,779,000	0.29	1,688	2.7

Table 4 (cont'd)

Countries	No. of Telephones[a] 1 January 1970	Population[b] (millions)	Telephone Density per 100 people	GDP for 1970[c] (million US$)	Utilization factor
Swaziland	4,822	421,000	1.15	84	5.7
Tanzania	31,587	13,236,000	0.24	944	3.3
Togo	4,567	1,861,000	0.25	252	1.8
Tunisia	68,908	5,075,000	1.36	1,027	6.7
Uganda	27,666	8,584,000	0.29	769	3.6
U.A.R.	N.A.	33,872,000	-	5,814	-
Upper Volta	1,398	5,376,000	0.03	271	0.5
Zambia	51,958	4,295,000	1.28	1,278	4.1

a/ Source: American Telephone & Telegraph Co.

b/ Source: ECA (estimated). These figures may have to be adjusted on the basis of actual economic projections

c/ Projected from ECA's Research and Statistics Division 1968 figures for GDP at current factor cost.

\- Not available

A similar table (Table 5) gives the UFs and telephone density figures (1968) for selected countries of other regions of the world.

Table 5

Telecommunications Development of some countries of the world in terms of utilization factor and telephone density

Country	GDP[a] (Mln. US.$)	Utilization factor	Telephone density
Pakistan	10,427	1.4	0.12
Ceylon	1,342	2.8	0.39
Philippines	6,997	2.6	0.54
Peru	3,300	4.2	1.2
Ecuador	870	4.9	0.84
Malaysia	2,864	5.1	1.8
Panama	625	7.4	3.6
Mexico	8,550	9.7	1.9
Czechoslovakia	13,700	10.0	10.5
Yugoslavia	3,350	12.4	2.1
Norway	6,650	13.6	24.3
Canada	52,000	14.3	37.7
New Zealand	4,689	22.0	38.4
Sweden	15,700	22.7	45.9

[a] Monthly Bulletin of Statistics (April 1968)

Source: ECAFE

It will be observed that the UFs for developed countries of the world are generally higher. A high U.F. is a normal feature of the efficiency of a modern economy and vital for rapid economic development. The average U.F. for the region, from Table 3 is of the order of 3.3; for developed countries the minimum is of the order of 9. U.F. of this order however

entails substantial investment beyond the resources of most member countries of the region. To minimise the widening telecommunication gap and keeping in view the competing demands on available resources, it is felt that U.F. targets consistent with the average U.F. figures for the region might be suggested for the current development decade. Appendix I gives an outline of these relatively simple calculations from which may be seen the suggested respective UFs of 3.5 and 6 for 1975 and 1980.

Table 6 gives figures for UFs for 1975 and 1980 for most countries of the region, based on estimates and projections of GDP and telephones. The average UFs for 1975 and 1980 of 3.5 and 6 may be seen to be theoretically achievable by 50 per cent and 30 per cent respectively of the member countries of the region on whose telecommunication services information is available.

Corresponding investment figures for the first and second halves of the decade, 1970-1975 and 1975-1980, with minimum UFs of 3.5 and 6.0 respectively are given in Table 7.

The number of telephones and utilization factor at the end of the decade are also indicated for each country of the region on whose telecommunication services information is available. Utilization factors above the minimum 6.0 are projections on current rates of development in the countries concerned. Thus it is assumed that countries of the region with rates of telecommunications development higher than the suggested utilization factors indicated will maintain their current rate of investment in telecommunication development throughout the decade. For about eighty percent, of the member countries of the region, total investment in national telecommunication development over the period is estimated at US.$ 1,380.- . This is a modest sum and calls in most cases for an investment of the order of one per cent of the average GDP in the first half and of the order of two per cent, in the second half of the current decade.

Table 6

2nd Development Decade: Projected GDP & Utilization factors for countries of the ECA region

Countries	1970 GDP at current factor cost[a] (Mln.US$)	1970 No. of Tele-phones[b]	1975 GDP Projec-tions[c] (Mln.US$)	1975 No. of Tele-phones (Est.)[d]	Utiliza-tion factor 1975	1980 GDP Projec-tions[c] (Mln.US$)	1980 No. of Tele-phones (Est.)[d]	Utiliza-tion factor 1980
Algeria	3,244	169,188	4,127	244,000	5.9	5,283	351,000	6.6
Botswana	67	3,536	86	5,000	5.8	110	7,000	6.4
Burundi	183	3,415	234	5,000	2.1	300	7,000	2.3
Cameroon	971	5,852	1,243	9,000	0.7	1,591	12,000	0.8
Central African Rep.	186	N.A.	238	-	-	305	-	-
Chad	249	4,177	319	6,000	1.7	408	9,000	2.2
Congo (Brazzaville)	187	9,812	239	14,000	5.8	306	20,000	6.5
Congo (Kinshasa)	1,400	22,092	1,792	32,000	1.8	2,301	45,000	1.9
Dahomey	240	N.A.	307	-	-	393	-	-
Ethiopia	1,585	41,106	2,029	59,000	2.9	2,597	85,000	3.2
Gabon	233	6,694	298	7,000	2.3	381	10,000	2.6
Gambia	43	1,586	55	2,000	3.6	70	3,000	4.3
Ghana	2,017	53,934	2,682	78,000	2.5	3,433	112,000	3.2
Guinea	346	N.A.	443	-	-	567	-	-
Ivory Coast	1,179	N.A.	2,109	-	-	2,699	-	-
Kenya	1,327	72,277	1,698	104,000	6.1	2,173	150,000	6.9
Lesotho	79	1,995	101	3,000	3.0	129	4,000	3.1
Liberia	363	6,051	465	9,000	1.9	595	13,000	2.2
Libya	3,374	34,790	4,319	50,000	1.2	5,528	72,000	1.3
Madagascar	737	25,258	943	36,000	3.8	1,207	52,000	4.3
Malawi	267	11,519	342	17,000	5	438	24,000	5.5
Mali	436	N.A.	558	-	-	714	-	-
Mauritania	190	N.A.	243	-	-	311	-	-
Mauritius, etc.	168	16,793	215	24,000	11	275	35,000	12.7
Morocco	3,031	153,662	3,880	221,000	5.7	4,966	319,000	6.4
Niger	343	3,298	439	5,000	1.1	561	7,000	1.2
Nigeria	4,253	81,440	5,444	117,000	2.2	6,968	169,000	2.4
Rwanda	151	1,433	193	2,000	1.0	247	3,000	1.2
Senegal	800	29,264	1,024	42,000	4.1	1,311	61,000	4.6

Table 6 (cont'd)

Countries	1970 GDP at current factor cost a/ (Mln.US$)	1970 No. of Tele-phones b/	1975 GDP Projec-tions c/ (Mln.US$)	1975 No. of Tele-phones (Est.) d/	Utiliza-tion factor 1975	1980 GDP Projec-tions c/ (Mln.US$)	1980 No. of Tele-phones (Est.) d/	Utiliza-tion factor 1980
Sierra Leone	374	6,193	479	9,000	1.9	613	13,000	2.1
Somalia	166	N.A.	212	-	-	271	-	-
Equatorial Guinea	70	N.A.	90	-	-	115	-	-
Sudan	1,688	45,539	2,160	66,000	3.0	2,765	94,000	3.4
Swaziland	84	4,822	108	7,000	6.5	138	10,000	7.2
Tanzania	944	31,587	1,208	46,000	3.8	1,546	64,000	4.1
Togo	252	4,567	293	7,000	2.4	375	10,000	2.7
Tunisia	1,027	68,908	1,315	99,000	7.5	1,683	143,000	8.5
Uganda	769	27,666	984	40,000	4.0	1,260	67,000	5.3
U.A.R.	5,814	N.A.	7,442	-	-	9,526	-	-
Upper Volta	271	1,398	347	2,000	0.6	444	3,000	0.7
Zambia	1,278	51,958	1,636	75,000	4.6	2,094	108,000	5.2

a/ Estimated on the basis of 1968 figures (ECA source)

b/ As at 1st January 1970; Source: American Telephone & Telegraph Co.

c/ 5% growth rate assumed. These figures may have to be adjusted on the basis of actual economic projections.

d/ 7.5% annual increase in telephone density assumed: (ECA/ITU notes on forecasting)

Table 7

Investment as a Percentage of GDP and U.F.

Country	Investment	Investment as % of average GDP	Investment	Investment as % of average GDP	No. of Telephones at end of decade	Utilization factor at end of decade
	1970-75 (Mln.US$)	1970-75	1975-80 (Mln.US$)	1975-80	1975-1980	1980
Algeria	45.6	1.1	65.2	1.3	351,000	6.6
Botswana	0.9	1.1	1.2	1.2	7,000	6.4
Burundi	2.2	1.1	6.7	2.5	18,000	6.0
Cameroon	19.2	1.5	35.5	2.2	95,400	6.0
C.A.R.	-	-	-	-	-	-
Chad	3.3	1.2	9.1	2.2	24,400	6.0
Congo (Braz.)	2.6	1.2	3.7	1.3	20,000	6.5
Congo (Kinshasa)	19.3	1.2	51.1	2.2	138,200	6.0
Dahomey	-	-	-	-	-	-
Ethiopia	12.1	0.7	57.9	2.2	155,800	6.0
Gabon	1.4	0.5	8.5	2.2	22,800	6.0
Gambia	0.25	0.5	1.3	2.1	4,200	6.0
Ghana	16.2	0.7	76.6	2.2	206,000	6.0
Guinea	-	-	-	-	-	-
Ivory Coast	-	-	-	-	-	-
Kenya	19.4	1.3	28.1	1.5	150,000	6.9
Lesotho	0.6	0.7	2.9	2.5	7,700	6.0
Liberia	4.8	1.1	13.3	2.2	35,700	6.0
Libya	57.8	1.5	123.3	2.2	331,700	6.0
Madagascar	6.6	0.8	22.2	2.0	72,400	6.0
Malawi	3.3	1.0	5.7	1.5	26,300	6.0
Mali	-	-	-	-	-	-
Mauritania	-	-	-	-	-	-
Mauritius	4.4	2.3	6.7	2.7	35,000	12.7
Morocco	41.1	1.1	59.8	1.4	319,000	6.4
Niger	6.02	1.6	12.5	2.2	33,600	6.0
Nigeria	49.9	1.0	155.4	2.2	418,000	6.0
Rwanda	2.7	1.6	5.5	2.2	14,900	6.0
Senegal	7.8	0.9	22.4	1.9	78,600	6.0
Sierra Leone	5.0	1.0	13.7	2.2	36,800	6.0
Somalia	-	-	-	-	-	-
Equatorial Guinea	-	-	-	-	-	-
Sudan	12.5	0.7	60.9	2.5	165,900	6.0
Swaziland	1.3	1.3	1.8	1.5	10,000	7.2
Tanzania	8.8	0.8	28.5	2.1	92,800	6.0
Togo	2.6	0.9	8.4	2.2	22,500	6.0
Tunisia	18.4	1.6	26.8	1.8	143,000	8.5
Uganda	7.5	0.9	21.7	1.9	75,600	6.0
U.A.R.	-	-	-	-	-	-
Upper Volta	5.5	1.8	9.9	2.2	2,600	6.0
Zambia	14.1	1.0	30.9	1.7	125,600	6.0

Considering the influence of telecommunications services, as basic infrastructure for generating economic activity and aiding national educational development, and the fact that the rate of development expenditure on telecommunications in a substantial number of countries of the region is greater than the minimum suggested targets, it is felt that the U.F. targets recommended should help reduce the widening technological gap in telecommunications between the rest of the world and countries of the region.

UTILIZATION FACTOR AND TARGETS FOR THE SECOND DEVELOPMENT DECADE

(Excluding South Africa, Namibia, Portuguese territories, Rhodesia and others such as Spanish Territories)

1967 - GDP for independent Africa = 38,869 x 10^6 US.$ 1/

No. of telephones for independent Africa = 1,176,118 2/

Average U.F. (independent Africa) is 1,176,118/38,8690 = 3.02

1968 - The 1967 population of independent Africa = 294,966 x 10^3 3/

Telephone density for 1967 therefore is given by 1,176,118/294,966 x 10 per 100 inhabitants = 0.398

Assuming an annual increase of 7.5% in telephone density 4/ the 1968 telephone density is 0.398 x 1.075 = 0.43

and the No. of telephones = 0.43 x (1968 population figure) the 1968 population is approx. 302,533 x 10^3 therefore the No. of telephones in 1968 is estimated at 0.43 x 302,533 x 10 = 1,300,892

and 1968 GDP for independent Africa = 40,871 x 10^6 US.$

therefore average U.F. for independent Africa is 1,300,892/408,710 = 3.2

1/ Source: ECA Research and Statistics Division

2/ Source: American Telephone and Telegraph Co.

3/ Source: ECA Population Programme Centre

4/ Source: ECA/ITU Notes on Forecasting

1970 - POPULATION OF INDEPENDENT AFRICA

West Africa			$112,372 \times 10^3$
C. Verde	242	247	- 247 "
St. Helena	5		
Portuguese Guinea	556		- 556 "
			$111,569 \times 10^3$
North Africa			$86,608 \times 10^3$
Sp. North Africa	165		
Sp. Sahara	48		
	213		- 213 "
			$86,395 \times 10^3$
East Africa			$77,971 \times 10^3$
Comoro	253		
Afars & Issas	85		
Seychelles	54		
Reunion	464		
	856		- 856 "
			$77,115 \times 10^3$
Central Africa			$41,602 \times 10^3$
Sao Tomé + Principe	61		- 61 "
			$41,541 \times 10^3$
Other Africa			$2,087 \times 10^3$
Lesotho	1,043		
Botswana	623		
Swaziland	421		
	2,087		$2,087 \times 10^3$

1970	- GDP for 1968 for independent Africa	= 40,871 x 10^5 US.$ [1]
	Assuming an average growth rate of 5% p.a., GDP for 1969 is 40,871 x 1.05 x 10^6 for independent Africa and GDP for 1970 is US.$ 40,871 x 10^6 x 1.05^2	= 45,060 x 10^6 US.$
	Estimated Telephone Density for 1968	= 0.43
	Assuming an annual increase of 7.5% telephone density for 1970 for Independent Africa is 0.43 x 1.075 x 1.075 per 100 inhabitants	= 0.497 per 100 inhabitants
	Population of Independent Africa in 1970 is 318,707 x 10^3	
	No. of telephones therefore in Independent Africa is 0.497 x 3,187,070	= 1,583,974
	Estimated average U.F. for Independent Africa therefore is 1,583,974/450,600	= 3.5
1980	- Assuming the telephone density in Africa and also Independent Africa is doubled every decade (ECA/ITU Notes on forecasting)	
	The 1980 telephone density for independent Africa is given by 2 x 0.497 per 100 inhabitants	= 0.99 per 100 inhabitants
	Population for Independent Africa in 1980	= 423,858 x 10^3
	and No. of telephones is 0.99 x 423,858	= 4,196,194

[1] Source: ECA Research and Statistics Division

1980 - POPULATION OF INDEPENDENT AFRICA

West Africa		148,262,000 x 10^3
Portuguese Guinea ..	647,000	
C. Verde	298,000	
St. Helena	6,000	
	951,000	- 951,000 "
		147,311,000 x 10^3
North Africa		119,154 x 10^3
Lesr Spanish North Africa and Spanish Sahara		
East Africa		102,385 x 10^3
Reunion.....	634	
Comoro	338	
Afars & Issas	85	
Seychelles	72	
	1,129	- 1,129 "
		101,256 x 10^3
Central Africa		53,548 x 10^3
Sao Tomé + Principe	61	- 61 "
		53,487 x 10^3
Other Africa		2,650 x 10^3
Lesotho	1,283	
Botswana	792	
Swaziland	575	
	2,650	2,650 x 10^3

GDP for Independent Africa in 1970 = $45,060 \times 10^6$ US.$

Assuming an average growth rate of 5% p.a. over 1970-80 the GDP estimated $= 45,060 \times 1.05^{10} \times 10^6$
$= 45,060 \times 10^6 \times 1.628$
$= 73,360 \times 10^6$

Average U.F. for Independent Africa for 1980 is therefore given by 4,196,194/733,690 = 5.7

Independent Africa Targets for 2nd Development Decade

Average U.F. for 1970 = 3.5

Average U.F. for 1980 = 5.7

Suggest	U.F.	of	3	for	1975
and	U.F.	of	6	for	1980