ANNEX

Table 3.1.2.1 Average monthly precipitation in MONGOLIA (mm) (1961-1992)

Station	Aimag	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	May-Sept.
Altai	Govi altai	2.6	1.8	6.1	10.6	11.4	28.3	44.5	42.7	16.1	7.8	3.0	1.6	176.5	
Aryaiheer	Ovorhangai	0.8	1.2	4.3	7.5	14.7	34.9	84.5	65.0	20.0	6.8	2.9	1.6	244.2	219.1
Baitag	Hovd	2.5	2.5	2.9	4.5	5.7	8.1	14.8	9.7	7.6	4.0	6.9	4.1	73.3	
Bayndelger	Sukhbaatar	1.1	1.6	3.1	6.6	12.5	30.7	54.8	47.1	21.6	5.3	2.6	1.8	188.8	
Baynhongor	Baynhongor	2.0	2.8	4.2	8.6	14.4	33.4	56.2	48.2	18.3	7.1	2.8	1.3	199.3	
Bayn-Ovoo	Hentii	1.7	2.0	3.2	11.3	15.3	44.0	74.9	71.3	27.8	10.7	6.0	3.6	271.8	
Bayn uul	Zavhan	3.6	2.5	3.4	6.6	11.5	28.9	50.2	41.2	19.3	7.7	6.0	7.0	187.9	
Baruunharaa	Selenge	4.0	3.3	4.2	9.1	19.9	54.0	80.3	73.6	37.4	10.3	5.8	4.9	306.8	265.2
Baruunturuun	Uvg	3.8	3.4	6.5	13.0	16.6	31.8	54.4	45.3	24.7	13.3	9.5	6.3	228.6	
Baruun-urt	Suhbaatar	1.7	1.5	2.2	6.7	13.0	34.3	61.8	51.2	19.4	5.4	2.7	1.9	201.8	
Binder	Hentii	1.4	2.2	2.9	9.4	18.6	66.5	96.8	83.9	34.0	9.5	4.3	1.9	331.4	
Bulgan	Bulgan	1.4	2.0	3.4	10.5	20.9	57.6	109.3	83.9	34.0	11.9	3.8	2.0	340.7	305.7
Tsetserlg	Arhangai	2.0	2.7	6.1	16.9	32.7	69.0	90.1	82.2	27.0	13.5	6.0	2.8	351.0	
Choibalsan	Dornod	1.8	1.9	3.1	6.7	14.3	39.1	76.3	65.3	27.3	7.9	3.5	2.8	250.0	
Choir	Dornod	0.6	1.6	1.6	4.5	10.3	32.6	60.2	53.3	19.5	5.7	4.1	2.0	196.0	
Tsogt-Ovoo	Umnegovi	0.6	1.4	1.5	4.5	7.3	12.9	27.9	23.3	12.7	3.5	2.2	1.0	98.8	
Dadal	Hentii	1.9	2.5	3.8	15.4	29.0	61.1	116.6	2.0	45.6	14.3	4.8	2.4	299.4	
Dalanzadgad	Umnegovi	1.5	1.1	3.4	5.4	11.9	18.2	35.2	31.3	13.4	4.5	2.1	1.2	129.2	
Dorvoljin	Zavhan	0.9	1.0	1.0	2.5	3.0	17.1	33.8	25.1	7.8	2.7	1.3	1.2	97.4	
Erdenetsagaan	Sukhbaatar	2.3	2.5	5.5	8.0	17.6	43.9	74.3	71.7	29.6	9.2	4.6	3.2	272.4	
Erdenemandal	Arhangai	1.5	1.7	2.2	9.2	21.2	62.9	92.1	75.5	21.0	7.7	2.6	2.0	299.6	
Eroo	Selenge	3.2	2.0	2.1	5.4	14.1	58.5	85.8	84.9	29.8	9.6	3.6	2.9	301.9	273.1
Galuut	Baynhongor	1.7	2.1	4.1	7.2	12.2	33.9	67.0	61.9	17.4	6.5	2.8	1.2	218.0	
Halh gol	Dornod	2.3	2.7	4.0	10.5	15.1	44.3	95.3	64.3	31.0	11.0	4.4	3.1	288.0	
Har us	Uvs	0.7	0.5	1.9	4.4	6.8	24.9	44.6	27.0	12.3	2.5	1.3	1.4	128.3	
Hatgal	Hovsgul	1.2	0.9	2.3	8.4	15.0	48.5	81.8	72.9	36.2	12.0	5.6	1.0	285.8	
Hovd	Hovd	1.5	0.9	2.4	6.1	10.0	26.6	38.0	23.1	10.8	4.7	1.8	1.8	127.7	
Hujirt	Ovorhangai	1.1	2.0	3.9	10.1	24.9	53.5	91.7	73.0	25.6	7.5	3.5	2.2	299.0	268.7
Hutag	Bulgan	2.2	1.7	2.9	8.6	22.2	54.5	104.3	85.0	35.6	11.6	3.9	2.2	334.7	301.6
Maanit	Tov	0.8	1.2	1.4	5.3	12.3	42.4	73.4	65.9	23.4	5.0	3.5	1.2	235.8	217.4
Mandalgovi	Dundgovi	0.5	1.5	1.9	3.4	10.7	24.7	39.9	48.3	15.9	4.9	2.2	1.2	155.6	
Moron	Hovsgul	1.4	1.1	0.9	9.0	14.9	47.1	72.0	64.6	17.6	5.5	2.1	1.7	237.9	
Olgii	Baynulgii	0.7	0.6	1.4	4.6	10.9	25.1	34.2	20.1	12.6	3.1	0.8	0.8	114.9	
Ondorhaan	Hentii	1.3	2.6	2.6	8.0	15.1	48.6	77.6	70.6	23.6	8.4	3.4	2.7	264.5	
Saihan	Umnugovi	2.4	1.6	4.0	7.5	10.3	14.3	25.2	25.9	12.3	4.4	4.4	3.2	115.5	
Saishand	Dornogovi	0.6	1.2	1.7	3.3	8.3	16.3	34.5	31.0	11.1	4.6	2.2	1.5	116.3	
Erdenesant	Tov	1.6	2.8	3.8	9.9	19.7	50.0	81.2	69.9	30.9	7.1	5.6	3.3	285.8	251.7
Tarialan	Hovsgul	2.0	1.4	2.1	7.0	17.9	52.6	104.4	79.5	25.3	5.4	2.4	1.4	301.4	
Tooroi	Govialtai	1.2	1.3	0.8	1.9	1.7	7.2	13.2	12.5	4.4	2.1	0.5	0.7	47.5	
Tosontsengel	Zavhan	2.8	2.3	4.5	8.3	12.8	41.8	60.4	47.0	19.7	10.3	7.2	5.9	223.0	
Ulaanbaatar	Ulaanbaatar	1.7	2.0	3.4	8.1	13.7	47.8	70.8	65.8	27.1	7.8	3.9	2.4	254.5	225.2
Ulaangom	Uvs	1.9	1.8	3.6	4.0	6.6	29.2	37.8	22.3	14.0	5.0	7.2	4.3	137.7	
Uliastai	Zavhan	2.2	1.7	4.9	9.3	14.9	34.1	62.2	48.9	22.7	9.4	4.8	3.3	218.4	
Zamiin uud	Dornogovi	2.0	1.2	1.7	3.9	7.2	15.0	35.7	32.6	14.1	5.9	2.0	1.2	122.5	
Zuunmod	Tov	1.8	2.2	3.6	8.7	14.9	51.2	76.7	71.9	27.4	7.5	4.6	2.5	273.0	242.1
Average														218.5	

Source:MONGOLIA Hydorometeorological Recearch Institute

Table 3.1.2.2 Average annual precipitation in study area(mm)(1961-1992)

Station	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Erdenesant	1.6	2.8	3.8	9.9	19.7	50.0	81.2	69.9	30.9	7.1	5.6	3.3	285.8
Maanit	0.8	1.2	1.4	5.3	12.3	42.4	73.4	65.9	23.4	5.0	3.5	1.2	235.8
Baruunkharaa	4.0	3.3	4.2	9.1	19.9	54.0	80.3	73.6	37.4	10.3	5.8	4.9	306.8
Ulaanbaatar	1.7	2	3.4	8.1	13.7	47.8	70.8	65.8	27.1	7.8	3.9	2.4	254.5
Eroo	3.2	2.0	2.1	5.4	14.1	58.5	85.8	84.9	29.8	9.6	3.6	2.9	301.9
Hutag	2.2	1.7	2.9	8.6	22.2	54.5	104.3	85.0	35.6	11.6	3.9	2.2	334.7
Bulgan	1.4	2.0	3.4	1.5	20.9	57.6	109.3	83.9	34.0	11.9	3.8	2.0	340.7
Hujirt	1.1	2.0	3.9	10.1	24.9	53.5	91.7	73.0	25.6	7.5	3.5	2.2	299.0
Arvaikheer	0.8	1.2	4.3	7.5	14.7	34.9	84.5	65.0	20.0	6.8	2.9	1.6	244.2
Average													289.3

Table 3.1.2.3 Precipitation of during the crop cultivation period(mm)(1961-1992)

Station	Aimag	May	June	July	Aug.	Sept.	Total
Erdenesant	Tov	19.7	50.0	81.2	69.9	30.9	251.7
Maanit	Tov	12.3	42.4	73.4	65.9	23.4	217.4
Baruunkharaa	Selenge	19.9	54.0	80.3	73.6	37.4	265.2
Ulaanbaatar	Ulaanbaatar	13.7	47.8	70.8	65.8	27.1	225.2
Eroo	Selenge	14.1	58.5	85.8	84.9	29.8	273.1
Hutag	Bulgan	22.2	54.5	104.3	85.0	35.6	301.6
Bulgan	Bulgan	20.9	57.6	109.3	83.9	34.0	305.7
Hujirt	Ovorhangai	24.9	53.5	91.7	73.0	25.6	268.7
Arvaikheer	Ovorhangai	14.7	34.9	84.5	65.0	20.0	219.1
Bogd	Ovorhangai	13.3	19.6	30.6	29.0	15.9	108.4
Average							243.6

Table 3.1.2.4 Monthly average Wind velocity (m/s) (1982-1992)

Station	April	May	June	July	Aug.	Sept.	Oct.	Average
Hujirt	2.9	2.6	2.3	1.4	1.3	1.6	1.3	1.9
Eroo	2.1	1.8	1.5	0.9	0.7	1.0	0.8	1.3
Hutag	2.5	2.3	1.6	1.3	1.2	1.4	1.2	1.6
Maanit	5.1	5.0	4.7	4.2	3.5	3.6	3.2	4.2
Bogd	4.3	3.8	3.2	2.6	2.4	2.4	2.6	3.0
Erdenesant	3.8	3.0	2.4	2.1	1.7	2.2	2.2	2.5
Arvaikheer	5.1	4.7	4.0	3.3	3.1	3.4	3.4	3.9
Baruunkharaa	2.7	2.5	2.1	1.6	1.5	1.9	1.7	2.0
Bulgan	3.0	2.6	2.0	1.5	1.3	1.5	1.5	1.9
Average	3.5	3.1	2.6	2.1	1.9	2.1	2.0	2.5

Table 3.1.3.1 Surface run-off and amount of ground water in study area

No.	Aimag	Available Ground-water Resource (1,000,000m3/year)	Available surface-water Resource (1,000,000m3/year)	River Drainage area (1000km²)	Remark
1	Arhangai	528	2,680	55	
2	Bayan Olgii	526	2,896	46	
3	Bayanhongor	310	1,512	116	
4	Bulgan	347	1,165	49.1	Study area(1)
5	Gobi Altai	201	809	142	
6	Dornogobi	70	108	111	
7	Dornod	397	699	123.5	
8	Dundgobi	58	102	78	
9	Zavhan	470	2,982	82	
10	Ovorhangai	318	1,060	63	Studu area(2)
11	Omnogobi	70	143	165	
12	Suhbaatar	86	116	82	
13	Selenge	386	2,886	43	Study area(1)
14	Tov	495	3,411	83	Study area(1)
15	Uvs	113	1,212	69	
16	Hovd	125	1,630	76	
17	Hovsgol	975	7,099	101	
18	Hentii	599	2,272	82	
	Total	6,074	32,782	1,566.6	①
Totale of study area		1,546	8,522	238.1	②
%		25	26	15	③=②/①
North of study area(1)		1,228	7,462	175.1(11%)	
South of study area(2)		318	1,060	63(4%)	

Source:Institute of Water Policy

Table 3.2.1

Red Data Book in Mongolian (Precious Animals and Plants)

1. Endangered Wildlife Species(Animals)

1) Red dogs
2) North otter
3) Gobi beer
4) Przewalskii horse
5) Mongolian saiga
6) Saiga
7) Wild camel

2. Thrcatend Wildlife Species(Animals)
1) Piver beaver
2) Jerboas
3) Thick-tailed pigmy
4) Kozlov's pigmy jerboa
5) Long-eared jerboa
6) Forest dormice
7) Marbled polecat
8) Snow leopard
9) Chinese desert cat
10) Wild ass
11) Wild boar
12) East sibirian elk
13) Ussurian elk
14) Rein-deer
15) Goitred gazelle
16) Altai mountain wild sheep

3. Endangered Wildlife Species (Birds)
1) Sibirian white crane
2) White happed crane
3) Hooded crane
4) Houbara crane
5) Relic mew gull
6) Reed's parrotbill

4. Threatened(becoming rare)Birds
1) Daimatian pelican
2) Spoon bill
3) Black stork
4) Whooper swan
5) Mute swan
6) Swan goose
7) Bar-headed goose
8) Osprey
9) White-tailed eagle
10) Himalayan griffon
11) English pheasant
12) Great bustard
13) Little whimbrel

5. Reptiles
1) Siberia salamander
2) Asia grass frog

6. Amphibians
1) Gobi rock gecko
2) Racerunner
3) Tatary sand boa
4) Slender racer

7. Fishes
1) Acipencer baeri baicalensis
2) Coregonus autumnalis

8. Plants
1) Lance-shaped
2) Swiss centaury
3) Alpine saw-wort
4) Sweet flag
5) Juniper
6) (Dorogostai)alpen saw-wort
7) Oleaster
8) Sibirian fir
9) Onion species
10) Plant species of Mongolian Gobi
11) Pheasant's eye (Mongolian)
12) Spear-grass
13) Poplar
14) Przewalski's gymnocarpous
15) Rock-jasmine
16) Bilberry
17) Pagoda-tree

Source:MNE 1991

Table 3.2.2 National Nature Protection Area(Whole Country)

Name	Number	Year		Area /1000ha
I Nature Protection				
1. bogudahann Mt.	1	1978	*	39.8
2. ihegobisimumadora	2	1975		5,089.0
3. narahaann	3	1957	*	3.0
4. burugann River	4	1965		3.1
5. hanngatohairuhann	5	1965		545.2
6. horugo,horugointogo	6	1965		3.2
7. batohann	7	1957	*	8.0
8. eruinamu	8	1965		6.2
9. borugan Mt.	9	1965		2.6
10. huhusurehin Lake	10	1977		23.7
11. toogotoruga Mt.	11	1965	*	0.2
12. orann Mt.	12	1965	*	0.4
13. rahatinwandaada	13	1965		32.7
14. hannhenty	14	1992	*	1,227.0
15. eejiheruhann	16	1992		22.5
16. nemuruge	18	1992		311.2
17. dornodo mongolia Plain	19	1992		570.4
18. mongolian dogooru	20	1992		103.0
19. otohonntenngelu	21	1992		95.5
20. obisu Lake	27	1993		771.6
sub total				8,858.3
II National Nature Parks				
1. hovsgel Lake	17	1992		838.0
2. gorhi terelj	24	1993	*	286.4
3. gobigorubannsehan	28	1994		410.0
sub total				1,534.4
III Nature Conservation				
1. hosuti Mt.range	25	1993	*	90.0
2. ogutomu Mt.	22	1993		30.0
3. syarugamanhan	26	1993		316.8
sub total				436.8
IV Historic-Cultural				
1. hisuinnemann lake	15	1992	*	11.5
2. ganga Lake	23	1993		28.8
sub total				40.3
Total				1,036,270.0

* : Study Area、 Source:MNE 1994

Table 3.2.3

Nature and Environmental Protection Zone(Study Area)

kind	content of control	national	study area	entry	area
Natural Reserve	Forbid to enter central area, be able to enter circumference for the purpose study	20 place km² 88,583	Bogd Uul Nagalhaan Bathaan dogotoruga Oraan Haanhenti Subtotal	1978 1957 1957 1965 1965 1992	398km² 30 80 2 4 12,270 12,780
National Nature Parks	Possible to enter for the purpose of research	3 place km² 15,344	Gorhi Terelj	1993	2,864
Resource Reserve	Usually, these area can not use ,but in an emergency ,available for grass land	3 place km² 4,368	Hosuti	1993	900
Historical & Cultural Resources	preserved ruins	2 place km² 403	Fisuineman Nuur	1992	114
Total		28 place km² 108,698	9 place		16,658km²

Table 3.4.2.3 Present Condition of Irrigation Areas

Surveyed and Registered Areas (unit:ha)

Name of Aimag	①	Surveyed Area	Unsuitable Area Lack of Waterdue to Soil		Registered ①	Area	Irrigation Facilities Constructed ①	②	①	③	①	Total	Cultivated Area as of 1993 ①	②	①	③	①	Total
Selenge	58	49,193.0	8,324.0	8,450.0	47	32,419.0	8	5,617.0	14	3,395.0	22	9,012.0	8	4,338.0	9	68.5	17	4,406.5
Darkhan-Uul	5	2,342.0	410.0	200.0	5	1,732.0	5	1,185.0	-	-	5	1,185.0	5	1,185.0	-	-	5	1,185.0
Tov	84	21,289.0	3,169.0	7,376.0	53	10,744.0	12	3,614.0	15	527.4	* 27	4,141.4	10	2,508.0	15	344.8	* 25	2,852.8
Ulaanbaatar	8	3,382.0	2,012.0	300.0	6	1,070.0	5	746.0	-	-	5	746.0	4	626.0	-	-	4	626.0
Bulgan	82	61,582.0	15,432.0	3,210.0	76	42,940.0	4	264.0	20	1,774.0	24	2,038.0	2	136.0	11	62.5	13	198.5
Orkhon	1	547.0	-	-	1	547.0	1	547.0	-	-	1	547.0	1	547.0	-	-	1	547.0
Ovorhangai	75	27,586.0	3,268.0	3,320.0	58	20,998.0	5	8,600.0	19	438.0	* 24	9,038.0	4	3,565.0	10	188.0	14	3,753.0
Total	313	165,921.0	32,615.0	22,856.0	246	110,450.0	40	20,573.0	68	6,134.4	*108	26,707.4	34	12,905.0	45	663.8	* 79	13,568.8

Unsurveyed Areas (unit: ha)

Name of Aimag	①	Surveyed Area	Unsuitable Area Lack of Waterdue to Soil		Registered ①	Area	Irrigation Facilities Constructed ①	②	①	③	①	Total	Cultivated Area as of 1993 ①	②	①	③	①	Total
Selenge																		
Darkhan-Uul									4	62.1	4	62.1			4	62.1	4	62.1
Tov									8	14.9	8	14.9			8	14.9	8	14.9
Ulaanbaatar							1	240.0	9	174.0	10	414.0			9	174.0	9	174.0
Bulgan									1	11.0	1	11.0			1	11.0	1	11.0
Orkhon									1	30.0	1	30.0			1	30.0	1	30.0
Ovorhangai																		
Total							1	240.0	23	292.0	24	532.0			23	292.0	23	292.0

Total

Name of Aimag	①	Surveyed Area	Unsuitable Area Lack of Waterdue to Soil		Registered ①	Area	Irrigation Facilities Constructed ①	②	①	③	①	Total	Cultivated Area as of 1993 ①	②	①	③	①	Total
Selenge	58	49193	8324	8450	47	32419	8	5617	14	3395	22	9012	8	4338	9	68.5	17	4406.5
Darkhan-Uul	5	2342	410	200	5	1732	5	1185	4	62.1	9	1247.1	5	1185	4	62.1	9	1247.1
Tov	84	21289	3169	7376	53	10744	12	3614	23	542.3	* 35	4156.3	10	2508	23	359.7	* 33	2867.7
Ulaanbaatar	8	3382	2012	300	6	1070	6	986	9	174	15	1160	4	626	9	174	13	800
Bulgan	82	61582	15432	3210	76	42940	4	264	21	1785	25	2049	2	136	12	73.5	14	209.5
Orkhon	1	547			1	547	1	547	1	30	2	577	1	547	1	30	2	577
Ovorhangai	75	27586	3268	3320	58	20998	5	8600	19	438	* 24	9038	4	3565	10	188	14	3753
Total	313	165,921.0	32,615.0	22,856.0	246	110,450.0	41	20,813.0	91	6,426.4	*132	27,239.4	34	12,905.0	68	955.8	*102	13,860.8

Note;① stands for Number of areas, ②,③ Stand for area of Mechanical and Gravity irrrigation areas respectively.

* ; Number of areas takes a count of double if the areas irrigated by both Mechanical and Gravity system.

Table 3.4.2.5 INVESTIGATION OF SOIL LOSS

NAME OF PROFECTURE	NAME OF COUNTY OR FARM	TOTAL AREA 1000ha	AREA OF LOSS 1000ha	AREA OF LOSS %	EXTENT OF SOIL LOSS A LIT TLE %	A LIT TLE ha	MID DLE %	MID DLE ha	STR ONG %	STR ONG ha
BULGAN	BAIN-AGT	6.2	3.5	56.5	5.7	200	22.9	802	71.4	2,499
	BAINNUUR	0.8	0.6	75.0	83.3	500	16.7	100	0.0	0
	BUGAT	4.1	0.0			0		0		0
	BUREGHANGAI	7.6	0.5	6.5	100.0	500		0		0
	GURUVANBULAG	7.9	7.9	100.0	62.0	4,898	27.8	2,196	10.2	806
	DASHINCHILEN	4.6	3.1	67.4	71.0	2,201	25.8	800	3.2	99
	ENGETTOLGOI	20.5	6.3	30.8	19.3	1,216	45.2	2,848	35.5	2,237
	MAGSARJAV	21.6	6.0	27.8	56.7	3,402	43.3	2,598		0
	MOGOD	2.3	1.1	47.6	90.9	1,000		0	9.1	100
	ORHON	4.5	0.5	11.1	100.0	500		0		0
	SAIHAN	6.7	1.2	17.9	91.7	1,100	8.3	100		0
	SANSAR	18.1	10.4	57.4	90.4	9,402	1.9	198	7.7	801
	TESHIG	8.9	2.1	23.6	57.1	1,199	42.9	901		0
	ULAANTOLGOI	6.6	0.0			0		0		0
	HANGAL	2.6	0.4	15.4	75.0	300	25.0	100		0
	HISHIGUNDUR	3.7	1.4	37.8	100.0	1,400		0		0
	SUBTOTAL	126.8	45.0	35.0	62.1	27,945	23.5	10,575	14.4	6,480
DVORHANGAI	BAISUNDUR	1.5	1.5	100.0	20.0	300	20.0	300	60.0	900
	BURD	2.8	2.0	71.4	85.0	1,700	15.0	300		0
	ZUIL	2.8	2.8	100.0	42.9	1,201	57.1	1,599		0
	ULZIIT	1.3	1.3	100.0	38.5	501	61.5	800		0
	TARAGT	2.2	2.2	100.0	27.3	601	72.7	1,599		0
	UINGA	0.7	0.7	100.0	85.7	600	14.3	100		0
	HAIRHANDULULAAN	0.6	0.6	100.0	66.7	400	33.3	200		0
	HARHORIN	29.7	19.1	64.3	50.3	9,607	22.5	4,298	27.2	5,195
	HUJIRT	1.5	0.5	33.3	100.0	500		0		0
	SUBTOTAL	43.1	30.7	71.2	50.2	15,411	30.0	9,210	19.8	6,079
SELENGE	ALTANBULAG	13.5	9.4	69.6	17.0	1,598	29.8	2,801	53.2	5,001
	BARUUNHARAA	11.8	2.3	19.5	34.8	800	30.4	699	34.8	800
	BAISHARRAT	17.8	10.9	61.2	49.5	5,396	30.3	3,303	20.2	2,202
	BURGALTAI	21.0	0.4	1.9		0		0	100.0	400
	ERUU	23.9	5.2	21.7	84.6	4,399	11.5	598	3.9	203
	ZUUNBUREN	20.2	8.4	41.6	63.1	5,300	31.0	2,604	5.9	496
	ZUUNHARAA	17.5	6.5	37.1	27.7	1,801	36.9	2,399	35.4	2,301
	ZELTER	13.9	4.8	34.5	33.3	1,598	43.8	2,102	22.9	1,099
	NAIRAMDAL	42.0	31.1	74.0	81.6	25,378	17.4	5,411	1.0	311
	NOMGON	26.1	18.0	69.0	71.1	12,798	21.7	3,906	7.2	1,296
	ORHON	27.1	18.9	69.7	47.6	8,996	22.8	4,309	29.6	5,594
	ORHONTUUL	24.4	3.7	15.2	45.9	1,698	40.6	1,502	13.5	500
	TUDER	9.3	0.5	5.3	80.0	400		0	20.0	100
	TSAGAANTOLGOI	6.6	0.3	4.5	66.7	200	33.3	100		0
	SHAAMAR	4.3	3.2	74.4	37.5	1,200	46.9	1,501	15.6	499
	ENHTAL	21.5	13.7	63.7	98.0	13,426	1.0	137	1.0	137
	SUBTOTAL	300.9	137.3	45.6	62.0	85,126	22.8	31,304	15.2	20,870
TOV	ALTANBULAG	5.8	5.7	98.3	91.2	5,198	8.8	502		0
	ATAR	21.1	17.0	80.6	58.8	9,996	31.8	5,406	9.4	1,598
	ARHUST	20.1	9.1	45.3	95.6	8,700	4.4	400		0
	BAIN	0.9	0.9	100.0	100.0	900		0		0
	BAINDELGER	5.4	4.3	79.6	37.2	1,600	53.5	2,301	9.3	400
	BAINCHANDMANI	4.2	0.0			0		0		0
	BAINTSOGT	27.4	20.4	74.4	58.8	11,995	38.7	7,895	2.5	510
	BATSUMBUR	3.4	1.4	41.2	64.3	900	28.6	400	7.1	99
	BORNUUR	8.2	0.5	6.1	20.0	100	80.0	400		0
	BUREN	0.9	0.1	11.1	100.0	100		0		0
	BAYANJUUL	0.7	0.0			0		0		0
	JARGALANT	38.3	7.1	18.5	81.7	5,801	18.3	1,299		0
	ZAAMAR	16.0	11.0	68.7	60.9	6,699	34.5	3,795	4.6	506
	ZALUUCHUUD	33.9	29.6	87.3	59.5	17,612	15.5	4,588	25.0	7,400
	LUN	4.6	4.3	93.4	46.5	2,000	51.2	2,202	2.3	99
	MUNGUNMORIT	2.4	1.9	79.2	89.5	1,701	10.5	200		0
	NUHURLUL	15.9	14.6	91.8	66.4	9,694	15.1	2,205	18.5	2,701
	OCTIABRI	10.7	5.3	49.5	60.4	3,201	15.1	800	24.5	1,299
	UNDURSHIREET	3.1	2.4	77.4	62.5	1,500	12.5	300	25.0	600
	SERGELEN	4.7	4.7	100.0	78.7	3,699	21.3	1,001		0
	UGTAAL	36.0	30.3	84.2	51.5	15,605	39.9	12,090	8.6	2,606
	ERDENESANT	22.2	13.3	59.9	92.5	12,303	7.5	998		0
	CACHUURT	1.4	0.9	64.3	66.7	600	33.3	300		0
	PARTIZAN	3.5	0.3	8.6	66.7	200	33.3	100		0
	SUBTOTAL	290.8	185.1	63.6	64.9	120,130	25.5	47,201	9.6	17,770
	TOTAL	761.6	398.1	52.3	62.4	248,612	24.7	98,290	12.9	51,198

Table-3.4.3.1 Livestock Numbers in the Study Area (1985~1994) (Unit:1,000heads, %)

Aimag	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Bulgan	934.6	872.3	846.6	889.4	943.0	998.2	1,021.2	1,066.1	1,036.8	1,078.8
Selenge	410.1	414.6	429.4	448.5	477.7	512.6	500.0	481.9	456.6	496.4
Tov	1,362.1	1,390.1	1,408.6	1,457.2	1,589.3	1,711.4	1,653.2	1,687.9	1,620.4	1,629.9
Ovorhangai	1,675.7	1,726.2	1,749.3	1,777.6	1,937.6	2,061.6	2,022.2	2,046.0	2,106.2	2,346.2
Ulaanbaatar	80.2	87.8	93.7	99.6	118.1	143.5	206.3	275.1	266.2	277.4
Darkhan	61.9	59.0	59.2	68.1	80.3	109.2	137.4	145.5	130.3	139.5
Erdenet	26.0	27.6	30.1	36.4	43.1	53.5	73.0	92.1	105.6	110.9
S.A.Total	4,550.6	4,577.6	4,616.9	4,776.8	5,189.1	5,590.0	5,613.3	5,794.6	5,722.1	6,079.1
National Total	22,485.5	22,644.0	22,741.1	23,122.2	24,674.9	25,856.9	25,527.9	25,693.9	25,174.7	26,808.1
Share/ S.A.	20.2	20.2	20.3	20.7	21.0	21.6	22.0	22.6	22.7	22.7

Source: MOFA, and Statistical Year Book 「Mongolian Economy and Society in 1993」

Table-3.4.3.2 Change of Private Livestock Numbers in Mongolia (1960~1994) (Unit: 1000 heads)

Item	1960	1970	1980	1985	1990	1991	1992	1993	1994
Total Numbers	23,001	22,575	23,772	22,486	25,857	25,528	25,694	25,175	26,808
of which private	5,415	5,006	4,161	4,996	8,243	14,003	18,081	22,565	24,527
State (%)	2.7	4.6	6.4	7.6	9.5	45.1	29.6	10.4	8.5
Negdel (%)	73.8	73.2	76.1	70.1	58.6				
Private(%)	23.5	22.2	17.5	22.3	31.9	54.9	70.4	89.6	91.5

Source: MOFA, and Statistical Year Book 「Mongolian Economy and Society in 1993」

Table－3.4.3.3 Outline of the Mechanized Dairy Farm in the Study Area (1991)

Aimag	Cow-scale ～Numbers	Cattle Numbers (heads)				Milk Production (t,kg)				Death (Head)		
		Cows	Other	Total	Calving	Year	Head	Lowest	Highest	Total	Calf	Cow
Tov	400cows ～10	377	324	701	295	830	2,140	1,561	2,863	150	93	19
	800〃～5	716	683	1,399	533	1,485	2,017	1,463	3,227	286	158	29
	1,200〃～1	736	604	1,340	581	1,512.2	1,820	-	-	359	235	41
	Total 16	8,083	7,261	15,344	6,192	17,238.6	2,133	-	-	3,293	1,958	373
Selenge	400〃～4	369	479	848	300	819.6	2,135	1,705	2,572	125	76	18
	800〃～3	603	612	1,215	511	964.4	1,617	978	2,399	344	207	48
	Total 7	3,284	3,753	7,037	2,733	6,171.5	1,914	-	-	1,531	926	217
Ovorhangai	400〃～1	363	-			438	1,207	-	-	-	-	-
Ulaanbaatar	400〃～2	355	311	666	280	804.3	2,278	1,990	2,566	97	52	22
	800〃～3	713	614	1,327	577	1,882.2	2,611	2,284	3,061	272	165	36
	Total 5	2,849	2,463	5,312	2,291	7,219.1	2,478	-	-	1,010	597	150
Darkhan	200〃～1	184	288	472	-	-	-	-	-	-	-	-
	800〃～1	646	794	1,440	483	935.0	1,447	-	-	203	138	30
	Total 2	830	1,082	1,912	483	935.0	1,447	-	-	203	138	30
Erdenet	1,200〃～1	806	822	1,628	621	1,830.2	2,270	-	-	555	183	127
Total	(19,000〃) 32	15,852	15,381	31,233	12,320	33,394.4	2,107	-	-	6,592	3,802	897

Source : MOFA
Note : Total doesn't include Ovorhangai Aimag because the data is in 1993.

Table-3.4.3.4 Numbers of Nomadic Households and Age Composition of Nomads (1988~1994)

Item	1988	1989	1990	1991	1992	1993	1994	1994/1988
Households(natio.)	66,323	68,963	74,710	114,938	143,440	153,647	167,260	2.52
-do- (S.A.total)	13,940	15,368	16,837	24,922	36,591	36,802	39,405	2.83
-do- (3 cities)	659	786	756	1,443	4,577	3,922	3,961	6.01
Nomads(natio.)	127,557	135,420	147,508	244,973	330,076	347,921	377,148	2.96
-do- (S.A.total)	26,189	28,316	31,897	47,208	83,539	79,994	85,377	3.26
-do- (3 cities)	1,080	1,087	1,047	2,399	15,567	11,557	10,940	10.13
Age(natio.)16~35	50.6	51.0	55.7	56.5	52.9	53.7	54.3	1.07
36~55/60	45.5	45.0	40.3	31.2	29.4	27.6	28.2	0.62
56/61~	3.9	4.0	4.0	12.3	17.7	18.7	17.5	4.49

Unit: house, people, %
Source: MOFA,and Statistical Year Book 「Mongolian Economy and Society in 1993」

Table-3.4.3.5 Composition of Private Livestock Numbers by Nomadic Households (1990~1994)

Class	1990	1991	1992	1993	1994	Composition (%)	
						1992	1994
less than 10 heads	76.4	64.8	58.9	48.3	46.8	19.5	16.2
11~30	88.1	70.8	69.2	57.0	53.8	23.0	18.6
31~50	42.6	49.5	50.2	43.7	42.0	16.7	14.5
51~100	42.6	61.5	66.3	63.4	62.9	22.0	21.8
101~200		29.6	42.8	51.4	53.2	14.2	18.4
201~500	0.5	4.8	13.7	24.6	28.2	4.5	9.8
501~1,000			0.4	1.3	2.1	0.1	0.7
more than 1,001			[7]	[47]	[144]		

Unit: 1,000 households, [ ]=household numbers
Source: MOFA, and Statistical Year Book 「Mongolian Economy and Society in 1993」

Table-3.4.3.6 Fodder Production in Mongolia (1980~1994) (Unit: 1,000t)

Fodder	1980	1985	1987	1989	1990	1991	1992	1993	1994
Hay harvest	1,125.4	1,280.6	1,235.4	1,166.4	866.4	885.5	668.8	689.7	691.8
of which SEFF	201.6	112.4	206.7	209.4	155.1	158.1	77.5	39.8	0.7
〃 Private	86.3	109.8	115.4	160.4	147.0	251.6	338.3	456.4	-
Used straw	80.1	187.9	110.0	99.0	58.3	54.6	31.9	26.7	22.3
Handmade fodder	20.2	21.7	25.6	25.6	12.0	10.1	6.6	7.6	11.6
Mixed fodder	79.8	142.6	145.6	169.4	57.5	23.6	21.0	15.1	13.8
Mineral fodder	39.8	76.9	66.4	49.2	42.4	15.4	12.9	16.8	18.9
Total (FU)	677.8	1,060.0	1,145.8	1,027.3	696.4	562.1	403.7	410.9	373.3

Source: Statistical Year Book 「Mongolian Economy and Society in 1993」 and MOFA

Table 3.6.2 Institution of CES

Aimag	Institution of place	Capacity	Steam Boilers	Turbine	Diser Generator
Ulaanbaatar	No.1 a stop				
	No.2	21.5 MW	75T/hour 3 boilers 35T/hour 2 boilers	12 MW×1 6 MW×1 3.5 MW×1	
	No.3	148 MW	75T/hour 6 boilers 220T/hour 7 boilers	12 MW×4 25 MW×4	
	No.4	540 MW	420T/hour 8 boilers	80 MW×3 100 MW×3	
Darkhan Uul	No.1	48 MW	75T/hour 9 boilers	12 MW×4	
Orkhon	Supply from CES				
	Total	757.5 MW			
Tov	Bayan Onjuul	220 KW			100 KW×1 60 KW×2
	Buren	220 KW			100 KW×1 60 KW×2
	Delgerhaan	120 KW			60 KW×2
Bulgan	Teshiga	220 KW			100 KW×1
Selenge	Supply from CES				
Dvorhangai	Bayangol	180 KW			60 KW×3
	Bogd	220 KW			60 KW×2 100 KW×1
	Sant	180 KW			60 KW×3
	Taragt	300 KW			100 KW×3
	Tugrug	180 KW			60 KW×3
	Guchin Us	180 KW			60 KW×3
	Baruunbayan Ulaan	180 KW			60 KW×3
	Hairhandulaan	180 KW			60 KW×3
	Bayanteeg	1,890 KW			630 KW×3
	Nariinteer	220 KW			60 KW×2 100 KW×1
	Uyanga	280 KW			60 KW×3 100 KW×1
	Bayanondor	180 KW			60 KW×3
	Total	4,930 KW			
	G.Total	762.43 MW			

Source:Ministry of Energy, Geology and Mining Power Department

Table 3.6.4. State of use of wells in study area

Aimag	Deep wells				Wells				G.Total			
	Total of wells	Number of used	Breakdown other	Rate of used(%)	Total of wells	Number of used	Breakdown other	Rate of used(%)	Total of wells	Number of used	Breakdown other	Rate of used(%)
Selenge	185	167	18	0.90	1,798	1,773	25	0.99	1,983	1,940	43	0.98
Darhan uul	56	37	19	0.66	524	509	15	0.97	580	546	34	0.94
Tov	663	569	94	0.86	1,876	1,572	304	0.84	2,539	2,141	398	0.84
Ulaanbaatar	0				96	84	12	0.88	96	84	12	0.88
Bulgan	263	164	99	0.62	413	264	149	0.64	676	428	248	0.63
Orhon	10	9	1	0.90	2	1	1	0.50	12	10	2	0.83
Ovorhangai	271	111	160	0.41	1,758	1,215	541	0.69	2,029	1,326	703	0.65
Total	1,448	1,057	391	0.73	6,467	5,418	1,047	0.84	7,915	6,475	1,440	0.82

Source:MOFA

Table 3.7.1.1 Number of Employees by Ministries and Agencies, Budget for 1994 and Monthly Salary (National Treasury)

Name of Ministry/agency	Number of Vice-Minister	Number of Employees	Budget for 1994 (unit:1000 TG.)	Monthly Salary (unit:1000 TG.)	
				From Jan.1,1994	From July 1,1994
1.Ministry of Nature and Environment	1	65	14,301.7	672.1	928.1
2.Ministry of Foreign Relations	1	100	34,339.4	1,015.0	1,401.6
3.Ministry of Infrastructure	1	98	23,766.8	971.6	1,341.7
4.Ministry of Finance	1	67	21,434.1	702.4	970.0
5.Ministry of Culture	1	41	13,509.1	415.3	573.6
6.Ministry of Trade and Industry	1	108	44,362.5	1,269.2	1,752.8
7.Ministry of Legal Affairs	1	51	14,704.1	533.8	737.2
8.Ministry of Population Policy and Labor	1	56	15,890.1	588.5	812.7
9.Ministry of Food and Agriculture	1	65	16,993.8	672.4	928.6
10.Ministry of Science and Education	1	71	18,523.9	763.0	1,053.7
11.Ministry of Welfare	1	46	14,276.8	474.4	655.1
12.Ministry of Energy, Geology and Mines	2	99	30,994.0	1,058.0	1,461.1
13.National Development Board	1	69	20,529.0	781.9	1,079.7
14.State Statistical ofiice	1	67	15,837.0	666.6	920.7
15.Agency for Radio and Television Broadcasting Services	3	50	-	479.2	661.7
16.Acting Agency of Information "Mongolian Telegraphic Communication"	1	100	39,920.0	930.8	930.8

Source: Attachment No.2 of the Government Resolution No.24, Jan. 28 1994

Notes;1.The above numbers of employees do not include ones of janitors, whose salary and costs are included.

2.The budget for Agency for Radio and Television Broadcasting Services is included in the Govanment regular budget compiled by the Ministry of Finance.

Table 3.7.1.2 Budget for Headquaters of Ministry of Food and Agriculture (1994,1995)

(Unit:1000 Tg.)

	1994		1995
	Estimates	Expected results	Planned
1.National Department of Veterinarians	5,923.0	5,872.4	8,779.9
2.Spending for Preventive Measures	1,050,000.0	1,050,000.0	1,024,664.7
3.Department of Biological Analysis and Standardization of Domestic Animals	15,000.0	15,000.0	20,000.0
4.Department of Health of Domestic Animals	12,679.7	13,000.0	20,000.0
5.Department of Improvement of Domestic Animals at the level of Prefecture and City	51,100.0	51,100.0	94,170.5
6.Department of Improvement of Veterinarians	95,300.0	95,300.0	207,842.8
7.Spending for Protection of Superior Livestock	35,800.0	35,800.0	40,590.0
8.Artificial Crossbreeding Centers	-	5,000.0	60,370.2
9.Department of Livestock Inspection by Veterinarians	-	-	6,858.6
10.Department of Plant Protection	17,800.0	14,026.2	34,693.1
11.Spending for Plant Protection Measures	7,200.0	7,200.0	234,600.0
12.Department of Inspection of Crop Seeds	34,164.4	34,164.4	45,303.8
13.Laboratories Managed by the Ministry	16,918.0	24,200.0	30,300.0
14.Harvest Committee	2,861.0	2,600.0	3,000.0
15.Spending for External Measures	65,000.0	65,000.0	70,400.0
16.Internal Expenditure in the Spending for External Measures	5,400.0	5,400.0	7,865.0
17.Government Subsidies to Excellent Counties	-	170.85	209,566.7
18.Spending for Profitable Livestock	1,300.0	18,000.0	32,298.0
19.Spending for Prizes Awarded to Superior Nomads	1,700.0	2,200.0	11,290.0
20.Spending for Prizes Awarded to Superior Farmers	800.0	800.0	5,964.0
21.A Food Laboratory	25,000.0	17,000.0	25,000.0
22.National University of Agriculture	182,000.0	170.000.0	477,200.0
Breakdown; ·University	-	-	168,200.0
·Research Institute	-	-	199,800.0
·Darkhan Experiment Station	-	-	37,900.0
·Dornod Research Institute	-	-	43,500.0
·Hovd Research Institute	-	-	27,800.0
Total	1,625,946.1	1,631,833.85	2,670,757.3

Source:MOFA

Table 3.7.2.1 Budget of Bulgan Aimag

(Unit:Tg)

	Year	Budget (Planned)	Budget (Actual)
Total of Bulgan Aimag	1993	764,240,200	743,243,200
	1994	1,227,980,000	1,227,789,000
Div. of Food Agri.& Natu. Environment	1993	52,256,000	50,399,100
	1994	65,451,100	65,010,000

Table 4.3.2.1. Data for selecting new introducing crops

Items / Crops	Family name	Profitability			Yield	Marketability			Economic		
		A	B	C		A	B	C	A	B	C
Rain-fed cultivation											
wheat	Gramineae	○			0.9	○			○		
barley	Gramineae	○			0.7						
2rowed barley	Gramineae	○						○			
oat	Gramineae	○			0.4						
millet	Gramineae	○									
corn	Gramineae			○							
corn(green)	Graminoae	○									
soibean	Leguminosae			○							
soybean(green)	Leguminosae	○									
sunflower	Composite			○							
sunflower(green)	Composite	○									
buckwheat	Polygonaceae	○						○			
potato	Solanaceae	○			7.5	○			○		
rape	Cruciferae	○			0.64			○			
pea	Leguminosae	○			0.2			○	○		
bean	Leguminosae	○						○	○		
flex	Liliaceae	○			0.6			○			
licorice	Leguminosae	○						○			
Irrigated cultivation											
rice	Gramineae			○							○
cabbage	Cruciferae	○			15.0	○			○		
tunip	Cruciferae	○			6.6	○			○		
carrot	Umbelliherae	○			4.6	○			○		
chinese onion	Liliaceae	○			3.0	○			○		
onion	Liliaceae	○			7.0		○		○		
garlic	Liliaceae	○			3.5		○		○		
chive	Liliaceae	○							○		
garlic chives	Lliaceae	○			1.5	○	○		○		
shallot	Liliaceae	○									
water melon	Cucurbitaceae		○				○		○		
pumpkin	Cucurbitaceae		○				○		○		
japanese radish	Cruciferae		○		12.71		○		○		
radish	Cruciferae	○			2.50		○				
beet	Chenopodiacae	○			3.5		○		○		

swiss chard	Composite	○									
lettuce	Compositae	○			2.0		○		○		
celery	Umbelliferae	○									
celeriac	Umbelliferae	○					○				
chinese cabbage	Cruciferae		○		6.0		○		○		
Brassica spp.	Cruciferae	○					○		○		
kohlrabi	Cruciferae		○								
stem lettuce	Compositae		○		3.0						
cauriflower	Cruciferae		○								
broccoli	Cruciferae		○		1.2						
spinach	Chenopodiacae	○					○		○		
Chinese artichoke	Labiatae	○			4.0	○			○		
rhubarb	Polygonaceae	○									
sugarbeet	Chenopodiaceae		○		23.0		○				
seabuckthorn		○				○			○		
blackcurrant		○				○			○		
apple	Rosaceae	○					○				
Green house cultivatio											
tomato	Solanaseae	○			110.0				○		
cucmber	Cucurbitaceae	○			155.0				○		
watermelon	Cucurbitaceae	○							○		
sweet pepper	Solanaceae		○						○		
chinese(bunching)onion	Liliaceae	○							○		
cabbage	Cruciferae	○							○		
strowberry	Rosaceae		○						○		

Table 4.3.2.2 Outline of crop cultivation

Crops	Varieties	Seed kg/ha	Depth sowing	Fertilizer(kg/ha) S.F[1]	N	P_2O_5	K_2O	Main diseases	Main pests
wheat	ORKHON	170-	6-8cm	(Rain-fed)				(Diseases of cereal crops)	(pests of cereal crops)
	SARATOVSKAYA-29	220		exlow	90	60	60	sumat(Ustilago,Tilletia)	Oscinella pusilla
	SARATOVSKAYA-36			low	60	40	40	rust(Puccinia)	Bubio niyribentris
	GREKUM-114			mid	40	30	30	powder mildew(Erysiphe)	Hadene basilinea
	SKALA			high	30	15-20	0	leaf blight(Septoria)	
	LUTETSENS-758			exhigh	0	0	0	leaf spot(Helminthosporium)	
	ALBIDIUM-43			(irrigated)					
	SARRUBRA			exlow	140	100	100		
	BURYATSKAYA-34			low	120	80	80		
	Ookhon-85			mid	80	50	60		
	DARKHAN-15			high	60	15-20	0		
	KALINA-SONA			exhigh	0	0	0		
	YUNTSO								
	NARODNAYA FIRM								
	ALMAZ FIRM								
barley	VINES								
	ALAG-ERDENE								
oat	ALTAN-BOROO								
potato	ASTILLA	2000-	10cm	exlow	120	120	150	late blight(Phytopthora)	(pests of vegetable crops)
	KARATA	3000		low	80	80	120	early blight(Macrosporium)	Colaphellus alpinus
	ZAVKHAN-35			mid	60	60	100	scurf(Rhizoctonia)	Eurydema gableri
	PRIEKULSKII RANI			high	40	40	80	ring rot(Corynebacterium)	Phylotreta undulata
	BERLIHINGEN			exhigh	20	40	60	bacterial soft rot	Ph.vittata
	ZAVKHAN-35							virus diseases(PVX,Y,L)	Hylemyia antiqud,onion
	KARATA								Eumeris strigatus,onion
cabbage	NOMER PERVII-147	6-8	1-2cm	(early-cabbage)				downy mildew(Olpidium)	Delia floralis,cabbage
	BELORUSSKAYA-85			exlow	300	300	240	foot rot(Phoma)	Plutella maculipennis,cabbage
	KHURGALAG			low	200	200	160	gray mold(Botrytis)	Mamestra brassicae,cabbage
				mid	160	100	100		Loxostege sticticalis
				high	120	60	60		Bothynoderes punetiventri
				exhigh	60	40	40		Cassida nebulosa,sugar beet

cabbage				(cabbag) exlow180 180 150 low 120 120 100 mid 100 100 80 high 70 45 60 exhigh40 30 40		Rhyzoglyphus echinopus (pests of crops in green house) Tetranychus urticae,mite T.cinnabarinus,mite Trialeurodes vaporariorum white fly Thrips tabaci,thrips
carrot	NANTOKUAYA-4 SHANTENE 2461	4.5-6	1.5-3 cm	(vegetables) exlow120 100 140	(diseases of other vegetables) Phoma rostrupii,carrot	
raddish	ROZOVI KRASNIS BELIM KOHCHIKOM KRASNI VOLIKAN ALTANBULAG	18-22	1-2cm	low 80 80 90 mid 60 70 60 high 40 60 60 exhigh20 40 40	scrotial rot(Sclerotinia) gray mold(Botrytis) leaf spot(Cercospora),turnip rust(Puccinia),onion downy mildew(Peronospora), Botrytis allii,onion bacterial soft rot(Erwinia) Penicillium glaucum,galric late blight(Phythopthora) tomato leaf spot(Septoria) leaf mould(Cladosporium) powder mildew(Erysiphe) stem garmy blight(Ascochyta) anthracnose(Colletotrichum) bacterial spot(Pseudomonas)	
turnip (yellow)	KRASNOSELSAYA SHVEDSKAYAJOLTAYA	2-3	2-3cm			
tunip (red)	EGIPETSKAYA PLOSKAYA BORDO 237					
onion	STRIGUNOVSKII BESSONOVSKII	12-18 450-60	2-3cm 4-5cm			
galric	ULIASTAI KHOVD	500-80	2-3cm			
chineseonion	ALTAI					
chive	KHARAA					
chinese artichoke	SUVD	60-80	6-8cm			
stem lettuce	SELENGE					
tomato	NEVSKII SIBIRSKII SKOROSPEOLI	10-12	1.5-2 cm			

cucumber	MUROMSKII-36 ALTAISKII RANNII 166	6-8	2-3cm			
beet	EGIPETSKAYA					
alfalfa	BURGALTAI			(fodder crops) exlow130 200 180 low 120 150 150 mid 100 120 100 high 50 60 70 exhigh30 20 50		(pests of fodder crops) Acrididae,grass hopper Meloidae,beetles Epicauta,beetles Lytta caragana,beetles Mylabris,include 7 species Adelpocoris linealatus Bruchophagus rodii,alfalfa Bruchus pisorum,beetles,pea Acyrthosipon pisi,pea
seabuckthorn	MASLICHNAYA VITAMINNAYA				(main diseases of fruit trees) Venturia inalgualis,apple Septoria ribis,apple Cronartium ribicola,thorn	(pests of fruit trees) Aphis pomi,aphids Dcheria dispar,apple Pandemis ribeana ハマキ Abraxas grossulariata Ragoletis batava Gelechia hippophaella
blackcurrant	PRIMORSKAYA CHAMPION DARKHAN SHAAMAR					
apple	RANETKA PURPUROVAYA BORAVINKA					

1)S.F : Soil fertility

Table 4.3.3.1 Unit Crop Yield by PSARI Experiment(t/ha)

Year	Wheat	Potato	Cabbage	Turnip	Carrot	Garlic	Onion	Sugarbeet
1990	1.4	11.3	44.1	7.1	-	-	6.1	
1991	1.1	12.6	38.1	7.0	4.2	6.6	11.1	
1992	1.6	10.6	25.7	11.8	0.6	8.0	3.1	
1993	1.3	8.2	24.5	11.3	5.4	3.5	2.3	30.7
1994	1.5	12.4	15.5	5.4	0.2	2.2	-	24.4
(2000)	1.5	12.5	48.0	16.0	14.0	5.5	6.0	

Table 4.3.3.2 Wheat Production in Main Countries(1,000t,1,000ha,t/ha

Year		1987	1988	1989	1990	1991	V.C
World Total	Planted/A	220888	218085	226598	232250	223806	2.2%
	Production	510462	506909	542722	601723	550993	6.3%
	Yield	2.31	2.32	2.40	2.59	2.46	4.2%
France	Planted/A	4932	4825	5013	5148	5154	2.5%
	Production	27415	29677	31813	33312	34483	8.1%
	Yield	5.56	6.15	6.35	6.47	6.69	6.2%
Germany	Planted/A	1671	1743	1777	1671	1670	2.6%
	Production	9932	11922	11032	11053	11948	6.6%
	Yield	5.94	6.84	6.21	6.61	7.15	6.6%
Poland	Planted/A	2133	2179	2195	2281	2437	4.8%
	Production	7942	7582	8462	9026	9269	7.5%
	Yield	3.72	3.48	3.86	3.96	3.80	4.3%
England	Planted/A	1994	1886	2083	2013	1981	3.2%
	Production	11941	11720	14030	14000	14300	8.5%
	Yield	5.99	6.21	6.74	6.95	7.22	6.9%
USSR	Planted/A	46684	48058	47676	48214	45976	1.8%
	Production	83312	84445	92307	109600	80000	11.8%
	Yield	1.78	1.76	1.94	2.27	1.74	10.5%
Canada	Planted/A	13486	12978	13627	14393	14515	4.2%
	Production	25992	15996	24578	32709	32822	23.5%
	Yield	1.93	1.23	1.80	2.27	2.26	20.0%
USA	Planted/A	22646	21525	25167	28037	23347	9.4%
	Production	57363	49320	55428	74475	53915	14.8%
	Yield	2.53	2.29	2.20	2.66	2.31	7.0%
China	Planted/A	28809	28786	29842	30754	30151	2.6%
	Production	85845	85433	90810	98232	95003	5.5%
	Yield	2.98	2.97	3.04	3.19	3.15	3.0%
Japan	Planted/A	271	282	284	260	245	5.4%
	Production	864	1021	985	952	860	6.9%
	Yield	3.19	3.62	3.47	3.66	3.51	4.8%
Mongol	Planted/A						
	Production						
	Yield	1.29	1.37	1.29	1.10	1.04	10.3%

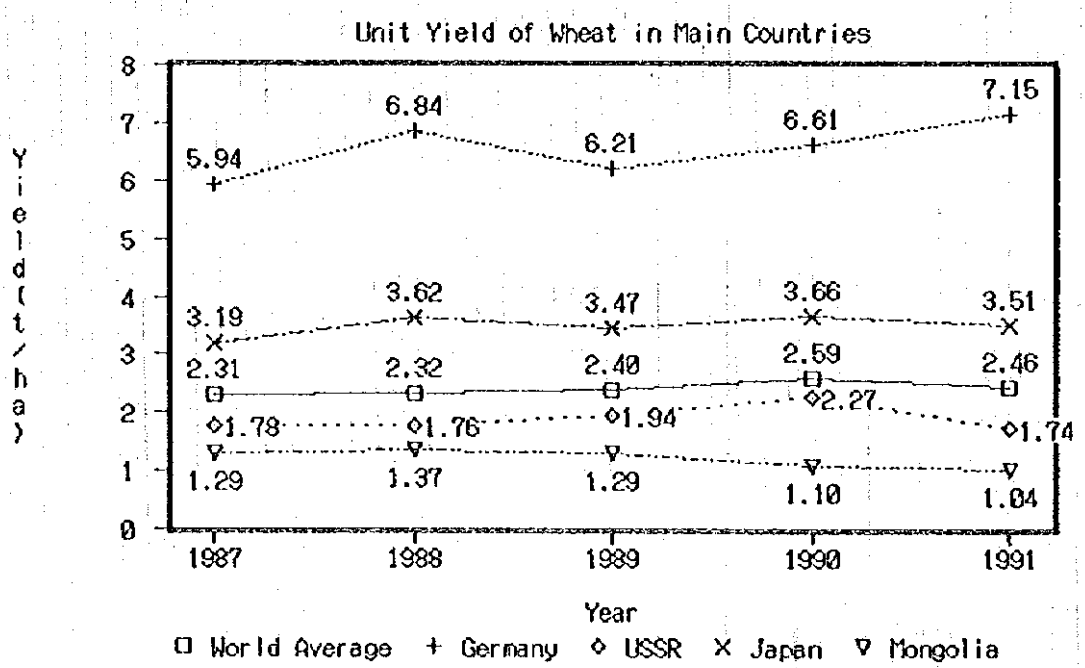


Table 4.3.3.3. Factors and conditions affecting crop yield per unit in Mongolia

Factors	Conditions in Mongolia	1994	2010
1.Climate			
①Tempreture	Average monthly temperature is 0℃(Nov.-Mar.),and 8.3-14.3℃(May-Sept.). Cultivation period is from May to Sept. i.e.97-108 days. Maximum temperature reached 24-28.2℃. Occasionally it dropped under 0℃ causing crop damage in cultivation period. Monthly minimum temperature recorded -40℃ in January. Soil borne diseases are said to be reduced by low temperature in winter. Transplanting of vegetable seedlings nursed in green house has effect to prolong cultivation period.	0	+
②Sunshine	The peak of duration of sunshine is 293.1 hours in May. Such long day time accererates plant growth.	0	0
③Rain,Snowfall	Amount of precipitation fluctuated between 217.4-305.7mm in growing period of May-Sept. The amount barely enogh to grow stable crops such as wheat, potato and so on. Excess rainfall in ripening season caused crop damage. Average days of annual snowfall was 52.1-143 days. Snowfall in September makes wheat difficult to be harvested.	—	+
④Frost	Number of days without frost was 99-112. The unpredictable occurrence of frost and hail during late spring (until mid-June) and early autumn (from early Sept.) caused severe damage to crops.	—	+
⑤Wind	The mean wind velocity is in the range of 1.3-4.2m/s from August to October.Strong wind occurred in April and May, the beginning of cultivation period with maximum velocity of 5.1s/m. In the overall study area,proportion of direction of N and NW was the greatest. Wind causes injury to leaves and stems of growing crops,soil erosion, reducing soil organic materials and so on. Setting of windbreak increased crop yield by 20-30%. Making ditchs crossing to wind direction in field is effective to prevent soil erosion.	0	+
⑥Humidity	The averge monthly humidity is low range from 47.2 to 67.2%. Daily temperature difference is large which result in making dew on the crops in the early morning. It stimulate the occurrence of potato late and early blight, Sclerotinia diseases and so on.	—	+
2.Soil	Most soil samples collected in study area were classified as being calcificated black brown soil or fine calcificated brown soil. Both of them correspond to FAO's Kastanosems. It is typically fine light and silty texture, around 30cm deep. The silty texture varies from loamy sand to clay loam.	0	0
①pH	Most of the soil was slightly acidic. It was judged that the soils were suited for raising crops	0	0
②Content of organic matters	Most of the soil samples (70%) fall into class II (containing 1.1-2.5%) or class III (under 1.1%). There are correlation between content of organic matter and productivity (1.18%-0.19t/ha, wheat yield; 2.16%-1.8t/ha).	—	+
③Nitrate nitrogen(NO_3)	Judging from Mongolian standard, soils from 60% of all sites analized showed a lack of this compound.This was found to be particularly so for soil in Overhangai Aimag where are a lot of sandy soil to loam-like soil.	0	+

④Phosphoric acid (P_2O_5)	Lack of available phosphoric acid was found in 40% of soil sample analized, particularly lacking in soil from Overhangai Aimag.	−	+
⑤Exchangible potassium(K_2O)	The content of exchageable potassium (K_2O) was sufficient in most of the soil samples.	−	+
⑥Exchangeable magnesium(MgO)	The content of exchageable magnesium (MgO) was sufficient in most of the soil samples.	0	+
⑦Water soluble salts	Water soluble salts showed value of zero in most of the soil. There was little salinization taking place in arable land soil. Slight salt accumulation was observed in irrigated soil in Darkhan-uul Aimag.	0	0
⑧Water content of soil	The average annual precipitation rages from 217.4-305.7mm. The potential evapotranspiration duri ng the growing season varies from 400mm to 450mm. The potential evapotraspiration exceed the rainfall.	0	0
3.Farm land			
①Altitude	The topography of the region rises gently from over 600m in the lowest point Suhbaatar, climbs to 1,800m at Arvaiheer to the south of 1,300m at Ulaan Baatar.	0	0
②Conditions for creation of farmland	Cumulative temperature of 1300℃ or above, annual precipitation of 250mm or more,gradient of slops of 6 degree or less because of using heavy farm machinery (84.1% of farming land is under 3 degree) along loads for transportation,and along the banks of the Selenge river and its tributary rivers are the conditions for creation of farmlands.	0	0
③Creation of farm land	To prevent wind erosion and retain water during the planting season, half of all cultivated land is usually left fallow,consisting alternate strip of cultivated land and fallow land. wheat farms are created usually about 60m× 500m or more in wide and some fields is created 10 ha.in area.	0	+
④Soil erosion	Strong wind coincides with spring ploughing season, blows away fertile topsoil. Large numbers of animals gathers at a few well for water. In such areas, overpasturage occurs,leading to change in vegetation and soil erosion. Soil loss caused by passing vehicles through steppe leads gully erosion due to strong rain fall. Most forest felling has taken the form of compllete clearance, which leads to soil erosion caused by rain fall. Countermeasures such as mulching,legume and manure cultivation, setting of wind break is necessiated.	−	+
⑤Tillage methods	Plant residues were buryed by mould boardplough. This resulted in soil erosion,especially in the dry years. Soil conservation tillage was introduced in mid 1960s with sweep and strip tillage. Non-tillage cultivation modified to be suited for Mongolia land might be introduced.	−	+

4.Irrigation	The area of cultivated land in this study area is 787,000ha in total. The area of irrigated land is small being about 14,000 ha (1.8%), the area of non-irrigated land is 773,000ha,while registered project in irrigable acrage were 110,400ha. Yield of wheat is estimated 1.2-1.4t/ha (rain-fed), 2.5-3.5t/ha (irrigated). Soil fertility is said to be reduced by wheat cultivation with irrigation.	−	+
5.Use of fertilizer and Agricultural chemicals ① Fertilizer	Until the end of the 1980s, chemical fertilizers and agricultural chemicals (pesticides, fungicides, and herbicides) were regularly applied on farm land. From the 1990s, a drastic reduction in the application took place. Approximately 89,000-90,000t of fertilizers were used in 1988-1990. According to the national project, 30% of 1988s consumption in 1995 and 88% of that in 2000 is planned to use. By the chemical application, yield in 1995 will be increased by 5-8%. The unit yield of wheat was 1.36t /ha, and that of potato was 13.2t/ha in 1980.	−	+
②Animal manure	Among the 157 million ha of Mongolia's total area, 120 million ha is occupied by natural grass lands and only about 1.2 milion ha is utilized as arable land for crop production. Within the arable land, only about 0.6 million ha is actually planted, and the remaining area is unplanted fallow land. That means plenty of animal manure is there. But lack of transportation and unavailability and excessive cost of fuel, use of animal manure fell drastically in these years.	−	+
③Use of N-fixing bacterium	N-fixing bacterium is applied experimentally in a few farms, resulting in an approximately 20-30 % increase in yield of wheat and potatoes. It is applied 10L/ha or seed dressing at 2-3L/seed/ha	+	+
④Use of Agricultural chemicals	Until 1990, the chemicals were imported every year by 80-140t, but in these 3 years, they were not imported. According to the Plant Protection Institute, 75 plant diseases, 92 pests, 80 weeds are listed. They cause yield reduction by 19-20% anually.	−	+
6.Windbreak facilities	Planting trees such as Populus spp.,Salix spp.,Elegnus spp.in 2-3 lines is useful for windbreak. Hippophae rhamnoi known as sea buckthorn is used successfully as a windbreak and to stabilize sand dunes. The tree possesses a strong capacity to fix atmospheric nitrogen in its root nodules when associated with the Actinomycetes.	0	+
7.Rotation	A system of rotation for wheat production with bare fallows is wheat-fallow -wheat. And relatively moist year a fallow-wheat-wheat system is effective. But such rotation system are unsustainable without fertilizers. Legumes, green manure crops should be induced in a rotation. Root nodules is not observed on exotic legume crops. Rhizobium is thought to be difficult to overyear. Inoculation may be necessary for them.	0	+

8.Fallow	Farmland is fallowed to keep water in the soil of non-irrigated cultivation land, maintaining fertility of such soil and control weeds in the land.Water 15-20% larger in quantity than water in cropping land is kept in the soil layer at a depth of 1 meter in fallowed land. Fallowed land is plowed once or twice during spring-summer seasons to prevent weeds and kept rain water in the soil. But plowing is not done due to a shortage of machines and fuel, and weeds are often growing. Cultivation of legume crops, or green manure crops should be done as cover crops preventing soil erosion and to keep soil organic materials.	−	+
9.Farming operation at proper time	The total number of farm machine and fuel was inadequate for field operations such as sowing, and harvesting in proper period of time. Sowing was finished in 15 days and harvesting was done in 23-32 days in 1989.	−	+
①Sowing operation	According to PSARI's investigation, proper sowing time for wheat is 4/25-5/20 in central region and 5/15-5/30 in steppe regions. If sowing time is delayed, yield is reduced by 10-20%.	−	+
②Harvesting operation	Sudden snowfall in September leads to significant delay on harvesting operation. Most harvesting is carried by windrowing than direct combining due to windrowing is less losses if it snows. Direct combining is said to be more efficient than the other.	−	+
10.Possibility of using horses in farm land	Large number of horses about 2.4 million are existing in Mongolia. They have possibility to be used instead of mashines and saving fuel.	?	?
11.Variety	Breeding of varieties of important crops suited for Mnogolia is proceeding. In Study legion, Wheat variety Orkhon is cultivated by about 60%,and Skala is done by about 40%.	+	+
12.Seed and seedlings	Seed and seedling of crops and fruit trees are multiplied by public institutes, and are sent to corporation, a subordinate organization of MOFA. At present large propotion of seed is imported.	−	+
13.Cooperation between crop and livestock sector	Smaller scale crop cultivation sector and smaller units of livestock sector will be cooperative ; The former supplies fodder, and the latter supplies animal manure. At present there is no positive interrelation between the two sectors.	0	+
14.Crop damage caused by domestic animal	Frequently animal grazing done before harvest gives damage to crop cultivation. Countermeasures such as fencing of crop areas is nesessary to be taken.	0	+

-:Deteriorated in comparison to the conditions in 1986
0:Unchanged　　+:Improved

Table 4.3.4.1 Planned Irrrigation Areas to be developed by 2000 and 2010

Areas Surveyed by the Government of Mongolia

Aimag	AREAS TO BE DEVELOPED BY 2000						AREAS TO BE DEVELOPED FROM 2001 TO 2010						TOTAL					
	MECHANICAL		GRAVITY		TOTAL		MECHANICAL		GRAVITY		TOTAL		MECHANICAL		GRAVITY		TOTAL	
	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)
SELENGE	7	3,802.0	9	68.5	16	3,870.5			16	7,416.5	16	7,416.5	7	3,802.0	17	7,485.0	24	11,287.0
DARKHAN-UUL	5	889.0			5	889.0							5	889.0			5	889.0
TOV	10	1,422.0	10	225.7	20	1,647.7	1	78.0	6	421.3	7	499.3	10	1,500.0	12	647.0	22	2,147.0
ULAANBAATAR	4	499.0			4	499.0							4	499.0			4	499.0
BULGAN	2	135.0	9	60.5	11	195.5	3	330.0	20	4,040.5	23	4,370.5	4	465.0	20	4,101.0	24	4,566.0
ORKHON	1	547.0			1	547.0							1	547.0			1	547.0
OVORHANGAI	4	3,565.0	7	92.0	11	3,657.0	1	765.0	11	88.0	12	853.0	4	4,330.0	15	180.0	19	4,510.0
TOTAL	33	10,859.0	35	446.7	68	11,305.7	5	1,173.0	53	11,966.3	58	13,139.3	35	12,032.0	64	12,413.0	99	24,445.0

Unsurveyed Areas

Aimag	AREAS TO BE DEVELOPED BY 2000						AREAS TO BE DEVELOPED FROM 2001 TO 2010						TOTAL					
	MECHANICAL		GRAVITY		TOTAL		MECHANICAL		GRAVITY		TOTAL		MECHANICAL		GRAVITY		TOTAL	
	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)
SELENGE																		
DARKHAN-UUL			4	62.1	4	62.1									4	62.1	4	62.1
TOV			8	14.9	8	14.9									8	14.9	8	14.9
ULAANBAATAR	1	240.0	9	174.0	10	414.0							1	240.0	9	174.0	10	414.0
BULGAN			1	11.0	1	11.0									1	11.0	1	11.0
ORKHON			1	30.0	1	30.0									1	30.0	1	30.0
OVORHANGAI																		
TOTAL	1	240.0	23	292.0	24	532.0							1	240.0	23	292.0	24	532.0

Total

Aimag	AREAS TO BE DEVELOPED BY 2000						AREAS TO BE DEVELOPED FROM 2001 TO 2010						TOTAL					
	MECHANICAL		GRAVITY		TOTAL		MECHANICAL		GRAVITY		TOTAL		MECHANICAL		GRAVITY		TOTAL	
	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)
SELENGE	7	3,802.0	9	68.5	16	3,870.5			16	7,416.5	16	7,416.5	7	3,802.0	17	7,485.0	24	11,287.0
DARKHAN-UUL	5	889.0	4	62.1	9	951.1							5	889.0	4	62.1	9	951.1
TOV	10	1,422.0	18	240.6	28	1,662.6	1	78.0	6	421.3	7	499.3	10	1,500.0	20	661.9	30	2,161.9
ULAANBAATAR	5	739.0	9	174.0	14	913.0							5	739.0	9	174.0	14	913.0
BULGAN	2	135.0	10	71.5	12	206.5	3	330.0	20	4,040.5	23	4,370.5	4	465.0	21	4,112.0	25	4,577.0
ORKHON	1	547.0	1	30.0	2	577.0							1	547.0	1	30.0	2	577.0
OVORHANGAI	4	3,565.0	7	92.0	11	3,657.0	1	765.0	11	88.0	12	853.0	4	4,330.0	15	180.0	19	4,510.0
TOTAL	34	11,099.0	58	738.7	92	11,837.7	5	1,173.0	53	11,966.3	58	13,139.3	36	12,272.0	87	12,705.0	123	24,977.0

Table 4.3.5.2 Outline of Model Farm Management Plan by Farming Type

Farm Management Type / Planned		Wheat Company non-irrg.	Vegetables 1 open field	Vegetables 2 green house	Fruits irrgated	Potato non-irrg.	Multiple Wheat+Potato non-irrg.	Wheat Small Farm non-irrg.
Number of Households		40	70	80	20	65	60	8
Number of Farm Worker		3,150	8,230	24,660	2,800	2,580	2,550	630
Area of Arable Land	Planted	2,500	140	3	50	300	1,320	500
	Fallow	2,500				300	1,320	500
	Other			3	20			
	Total	5,000	140	6	70	600	2,640	1,000
Planted Area by crop		Wheat-2,500	Cabbage-70	Tomato-1.5	Chatturga-20	Potato-300	Wheat-1,200	Wheat-500
			Onion- 30	Cucumber-1.5	Other- 30		Potato-120	
			Turnip- 18					
			Carrot- 17					
			Garlic- 5					
Number of Main Agricultural Implements on Farm	Tractor	14	3	3	1	12	10	2
	Combine	10				12	12	2
	Seeder	14	3			6	12	2
	Cultivator	14	2		2	4	14	2
		Thresher 1	Irrigation 3	Smal Truck 3	Sprayer 5	Slector] 1	Sprayer 3	
Main Agricultural Facilities and their Scale	Office	Brick12*8m	Brick12*8m	Brick12*8m	Brick12*8m	Brick12*8m	Brick12*8m	Brick 8*6m
	Garage	Brick24*16m	Brick16*12m	Brick16*3 m	Brick24*16m	Brick16*12m	Brick24*12m	Brick24*10m
	Storage	Wood 8*6m	Brick24*18m			Brick24*18m	Brick24*18m	
				Green House	Windbreak fo			
				30,000m2	rest 5,000m			
Agricultural Gross Income (Thousand Tg)		170,000	92,150	26,700	56,400	198,000	160,800	34,000
Expenditures (Thousand Tg)		160,100	58,760	25,170	44,920	134,580	138,070	33,300
Profit (Thousand Tg)		9,900	33,390	1,530	11,480	63,420	22,730	700

Table-4.4.5.1 Livestock Farming Management Plan by Farming Type

Section	Nomadic herder	Dairy farm	Pig farm	Poultry farm
Farming Type	Individual	Farm company	Farm company	Farm company
Livestock	(5-Type) 102 head	Cow 200 head	Sow 30 head	Hen 10,000head
Feeding system	all season grazing	Summer:grazing Winter:housing	all season housing	all season housing
Feeding	·Grass ·Supplementary feed (in Winter)	·Grass+formula feed ·Hay+silage+formula feed	Formula feed	Formula feed
Facility	Shelter	Cow barn, Calf barn Bunker silo, etc.	Farrowing barn, fattening barn Compost yard, etc.	Hen barn, Chick barn, Manure handling, etc.
Machinery	Horse carriage	Tractor, Harvester, Mower, Baler	Loader, Truck	Loader, Truck
Products	Cattle 2 head, Sheep 13 head, Wool 88kg	Milk 570t	Fattening pig 420 head	Egg 143t
Farm Business	(1,000Tg)			
Gross income	592	65,184	12,443	63,671
Expenditures	397	57,368	12,056	59,053
Profit	195	7,816	386	4,618
Technical goal	-	Milk 3,000l/Cow/Year Feed cost/Milk 30%<	Delivery times/Year 2.0> Selling head/Sow/Year 14>	Egg laying rate 70 %> Egg/Hen/Year 15kg>
Measures	① Improvement of live weight ② Decrease of mortality	① Increase of roughage ② Renewal of facilities ③ Improvement of feeding technology	① Effective sow replacement ② Renewal of facilities ③ Improvement of feeding technology	① Effective hen replacement ② Renewal of facilities ③ Improvement of feeding technology

Table 4.7.2.1 Power Forecast of CES, Mongolia up to 2010 (1,000KW)

Years	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2005	2010
Power consumption						543	565	620	655	685	730	775	930	1082
Peak load	442	530	485	459	464	473	485	530	560	590	630	660	750	872
Reserve Power						70	80	90	95	95	100	115	180	210
Installed capacity	509	689	710	796	796	796	796	796	796	796	851	994	1428	1628
Available power	398	539	469	447	400	488	536	606	636	636	691	834	1238	1499
CFPP-2	21	15	11	10	13	13	12	12	12	12	12	0	0	0
CFPP-3	136	102	76	99	83	93	110	110	110	110	110	110	110	90
CFPP-4	195	380	335	321	269	340	360	430	460	460	460	460	430	430
Darhan CFPP	46	24	31	17	19	24	36	36	36	36	36	36	36	24
Erdent CFPP	0	18	16	16	16	18	18	18	18	18	18	18	18	12
New power plant	0	0	0	0	0	0	0	0	0	0	0	100	400	600
Egiin gol HEP	0	0	0	0	0	0	0	0	0	0	55	110	220	220
Choibalsan CFPP	0	0	0	0	0	0	0	0	0	0	0	0	24	24
Excess(power)	0	0	0	0	0	0	0	0	0	0	0	59	308	318

Source:Ministry of Energy,Geology & Mining Power Department

Table 4.7.2.2 Power plant of Central area

Aimag	Sum	①Powergeneration Capacity (KW)(1994)	②Rate of preparation (1994)(%)	③Powergeneration Capacity (KW)(2000)	④Powergeneration Capacity (KW)(2010)
Tov	Bayan Onjuul	220	64	300	450
	Buren	220	64	300	450
	Delgerhaan	120	64	160	240
Total		560		760	1,140
Bulgan	Teshig	200	53	290	440
Ovorhangai	Bayangol	180	61	250	380
	Bogd	220	61	310	470
	Sant	180	61	250	380
	Taragt	300	61	420	630
	Togrog	180	61	250	380
	Guchin us	180	61	250	380
	Baruunbayan ulaan	180	61	250	380
	Hairhandulaan	180	61	250	380
	Bayanteeg	1,890	61	2,630	3,950
	Nariinteer	220	61	310	470
	Uyanga	280	61	390	590
	Bayanondor	180	61	250	380
Total		4,170		5,810	8,770
G.Total		4,930		6,860	10,350

Source:Ministry of Energy,Geology & Mining Power Department

Table 6.1.1.2 Financial Analysis

(Seed Multiplication Improvement Project)

(Unit : US$)

	Project Cost	Gross Income	Invest. Cost	Operation Cost	Net Income
Y1	48,100		27,170	25,250	-100,520
Y2	48,100	167,935	95,110	88,390	-63,665
Y3	48,100	335,870	135,870	126,270	25,630
Y4	48,100	335,870	135,870	126,270	25,630
Y5	48,100	335,870	135,870	126,270	25,630
Y6	48,100	335,870	135,870	126,270	25,630
Y7	48,100	335,870	135,870	126,270	25,630
Y8	48,100	335,870	135,870	126,270	25,630
Y9	48,100	335,870	135,870	126,270	25,630
Y10	48,100	335,870	135,870	126,270	25,630
Y11	48,100	335,870	135,870	126,270	25,630
Y12	48,100	335,870	135,870	126,270	25,630
Y13	48,100	335,870	135,870	126,270	25,630
Y14	48,100	335,870	135,870	126,270	25,630
Y15	48,100	335,870	135,870	126,270	25,630
					%
				FIRR=	10.8

Table 6.1.1.3 Economic Analysis

(Seed Multiplication Improvement Project) (Unit : 1000US$,ha)

	Project Invest. Cost	Center Net Income	Project Propagation Adding Benefit(A.B.)						Net Benefit
			Vegetable		Wheat		Potato		
			Area	A.B	Area	A.B.	Area	A.B.	
Y1	4,846	-101	2,180	0	361,500	0	6,290	0	-4,947
Y2	4,846	-64	2,365	0	359,829	0	6,370	0	-4,910
Y3		26	2,566	0	358,166	0	6,451	0	26
Y4		26	2,784	0	356,511	0	6,533	0	26
Y5		26	3,021	302	354,863	1,774	6,616	172	2,274
Y6		26	3,278	328	353,223	1,766	6,700	174	2,294
Y7		26	3,557	356	351,591	1,758	6,785	176	2,316
Y8		26	3,859	386	349,966	1,750	6,871	179	2,341
Y9		26	4,187	419	348,349	1,742	6,958	181	2,368
Y10		26	4,543	454	346,739	1,734	7,046	183	2,397
Y11		26	4,929	493	345,137	1,726	7,135	186	2,431
Y12		26	5,348	535	343,542	1,718	7,225	188	2,467
Y13		26	5,803	580	341,954	1,710	7,316	190	2,506
Y14		26	6,296	630	340,374	1,702	7,409	193	2,551
Y15		26	6,830	683	338,800	1,694	7,500	195	2,598
									%
								EIRR=	13.2

Table 6.1.2.2 Financial Analysis

(Irrigated Agriculture Technology Dev. Project)

(Unit : US$)

	Project Cost	Gross Income	Invest. Cost	Operation Cost	Net Income
Y1	7,942		10,835	6,560	-25,337
Y2	7,942	51,228	37,923	22,960	-17,597
Y3	7,942	102,455	54,175	32,800	7,538
Y4	7,942	102,455	54,175	32,800	7,538
Y5	7,942	102,455	54,175	32,800	7,538
Y6	7,942	102,455	54,175	32,800	7,538
Y7	7,942	102,455	54,175	32,800	7,538
Y8	7,942	102,455	54,175	32,800	7,538
Y9	7,942	102,455	54,175	32,800	7,538
Y10	7,942	102,455	54,175	32,800	7,538
Y11	7,942	102,455	54,175	32,800	7,538
Y12	7,942	102,455	54,175	32,800	7,538
Y13	7,942	102,455	54,175	32,800	7,538
Y14	7,942	102,455	54,175	32,800	7,538
Y15	7,942	102,455	54,175	32,800	7,538
					%
				FIRR=	13.0

Table 6.1.2.3 Economic Analysis

(Irrigated Agriculture Technology Dev. Project) (Unit:1000US$.ha)

	Project Invest. Cost	Center Net Income	Project Propagation Adding Benefit(A.B.)						Net Benefit
			Vegetable		Wheat		Potato		
			Area	A.B.	Area	A.B.	Area	A.B.	
Y1	812	-25	2,180	0	0	0	0	0	-837
Y2	812	-18	2,365	0	0	0	0	0	-830
Y3		8	2,566	0	0	0	0	0	8
Y4		8	2,784	0	0	0	0	0	8
Y5		8	3,021	302	2	0	2	0	310
Y6		8	3,278	328	5	0	5	0	336
Y7		8	3,557	356	12	0	12	1	365
Y8		8	3,859	386	28	0	28	2	396
Y9		8	4,187	419	66	1	65	6	434
Y10		8	4,543	454	156	2	152	13	477
Y11		8	4,929	493	368	5	354	30	536
Y12		8	5,348	535	869	12	826	71	626
Y13		8	5,803	580	2,052	29	1,926	166	783
Y14		8	6,296	630	4,846	68	4,492	386	1,092
Y15		8	6,830	683	5,400	76	4,760	409	1,176
									%
								EIRR=	16.2

Table 6.1.3.2 Financial Analysis
(RIAH Technology Development Project)

(Unit : US$)

	Project Cost	Gross Income	Invest. Cost	Operat. Cost	Net Income
Y1	9,924		11,169	17,195	-38,288
Y2	9,924	44,388	39,090	17,195	-21,821
Y3	9,924	88,776	55,843	17,195	5,814
Y4	9,924	88,776	55,843	17,195	5,814
Y5	9,924	88,776	55,843	17,195	5,814
Y6	9,924	88,776	55,843	17,195	5,814
Y7	9,924	88,776	55,843	17,195	5,814
Y8	9,924	88,776	55,843	17,195	5,814
Y9	9,924	88,776	55,843	17,195	5,814
Y10	9,924	88,776	55,843	17,195	5,814
Y11	9,924	88,776	55,843	17,195	5,814
Y12	9,924	88,776	55,843	17,195	5,814
Y13	9,924	88,776	55,843	17,195	5,814
Y14	9,924	88,776	55,843	17,195	5,814
Y15	9,924	88,776	55,843	17,195	5,814
					%
				FIRR=	3.1

Table 6.1.3.3 Economic Analysis
(RIAH Technology Development Project)

(Unit : 1000US$,head)

	Project Invest. Cost	RIAH Net Income	Project Propagation Adding Benefit(A.B.)								Net Benefit
			Dairy F.		Pig F.		Poultry F.		Beef Cattle		
			Cow	A.B.	Female	A.B.	Layer	A.B.	Female	A.B.	
Y1	2,163	-38	10,000		5,500		50,400		3,200		-2,201
Y2	2,163	-22	10,600		5,700		55,300		3,400		-2,185
Y3		6	11,200		5,800		60,600		3,600		6
Y4		6	11,800		6,000		66,400		3,800		6
Y5		6	12,500	875	6,200	558	72,800	100	4,000	240	1,779
Y6		6	13,200	924	6,400	576	79,800	110	4,200	252	1,868
Y7		6	14,000	980	6,600	594	87,400	121	4,500	270	1,971
Y8		6	14,800	1,036	6,900	621	95,800	132	4,700	282	2,077
Y9		6	15,600	1,092	7,100	639	105,000	145	5,000	300	2,182
Y10		6	16,500	1,155	7,300	657	115,100	159	5,300	318	2,295
Y11		6	17,400	1,218	7,500	675	126,100	174	5,600	336	2,409
Y12		6	18,400	1,288	7,800	702	138,300	191	5,900	354	2,541
Y13		6	19,500	1,365	8,000	720	151,500	209	6,300	378	2,678
Y14		6	20,600	1,442	8,300	747	166,100	229	6,600	396	2,820
Y15		6	21,800	1,526	8,600	774	182,100	251	7,000	420	2,977
											%
										EIRR=	24.9

Table 6.1.4.2 Economic Analysis
(Herder's Water Supply Improvement Project)

(Unit : 1000US$)

	Project Inv. Cost	O/M Cost	Prod. Benefit	Net Benefit
Y1	6,784	92	737	-6,139
Y2	6,784	184	1,474	-5,494
Y3		184	1,474	1,290
Y4		184	1,474	1,290
Y5		184	1,474	1,290
Y6		184	1,474	1,290
Y7		184	1,474	1,290
Y8		184	1,474	1,290
Y9		184	1,474	1,290
Y10		184	1,474	1,290
Y11		184	1,474	1,290
Y12		184	1,474	1,290
Y13		184	1,474	1,290
Y14		184	1,474	1,290
Y15		184	1,474	1,290
			EIRR=	5.2

Table 6.1.5.2 Economic Analysis
(Milk Production Increasing Project)

(Unit : 1000US$)

	Invest. Cost	Gross Income	Prod. Cost	Opeart. Cost	Net Income
Y1	6,240	1,274	1,530	187	-6,683
Y2	6,240	1,864	1,658	203	-6,237
Y3	0	2,926	1,913	234	779
Y4	0	3,398	2,040	250	1,108
Y5	974	3,564	2,125	260	205
Y6	974	3,729	2,210	270	275
Y7	974	3,918	2,295	281	368
Y8	974	4,106	2,423	296	413
Y9	974	4,295	2,550	312	459
Y10	974	4,508	2,678	328	528
Y11	974	4,720	2,805	343	598
Y12	974	4,956	2,933	358	690
Y13	974	5,192	3,060	374	784
Y14	974	5,428	3,188	390	876
Y15	974	5,664	3,400	416	874
					%
				FIRR=	-5.6

Table 6.1.5.3 Financial Analysis
(Milk Production Increasing Project)
(Unit : 1000US$)

	Invest. Cost	Gross Income	Prod. Cost	Operat. Cost	Net Income
Y1	1,560	1,274	1,530	187	-2,003
Y2	1,560	1,864	1,658	203	-1,557
Y3		2,926	1,913	234	779
Y4		3,398	2,040	250	1,108
Y5	974	3,564	2,125	260	205
Y6	974	3,729	2,210	270	275
Y7	974	3,918	2,295	281	368
Y8	974	4,106	2,423	296	413
Y9	974	4,295	2,550	312	459
Y10	974	4,508	2,678	328	528
Y11	974	4,720	2,805	343	598
Y12	974	4,956	2,933	359	690
Y13	974	5,192	3,060	374	784
Y14	974	5,428	3,188	390	876
Y15	974	5,664	3,400	416	874
					%
				FIRR=	12.1

Table 6.1.5.4 Economic Analysis
(Milk Production Increasing Project)
(Unit : 1000US$,ton)

	Project	With Project		Without Project		Net
	Inv.Cost	Prod.(t)	Benefit	Prod.(t)	Benefit	Benefit
Y1	5,343	5,400	-387	5,400	-387	-5,343
Y2	5,343	7,900	64	5,100	-408	-4,871
Y3		12,400	849	4,800	-430	1,279
Y4		14,400	1,183	4,600	-444	1,627
Y5	779	15,100	1,257	4,400	-459	937
Y6	779	15,800	1,330	4,200	-473	1,024
Y7	779	16,600	1,426	4,000	-487	1,134
Y8	779	17,400	1,476	3,800	-502	1,199
Y9	779	18,200	1,527	3,600	-516	1,263
Y10	779	19,100	1,600	3,400	-530	1,351
Y11	779	20,000	1,675	3,200	-545	1,441
Y12	779	21,000	1,772	3,000	-559	1,552
Y13	779	22,000	1,870	2,900	-566	1,657
Y14	779	23,000	1,967	2,800	-573	1,761
Y15	779	24,000	1,973	2,700	-580	1,774
						%
					EIRR=	7.9

Figure 3.1.2.1 Nationwide Annual Average Rainfall Map

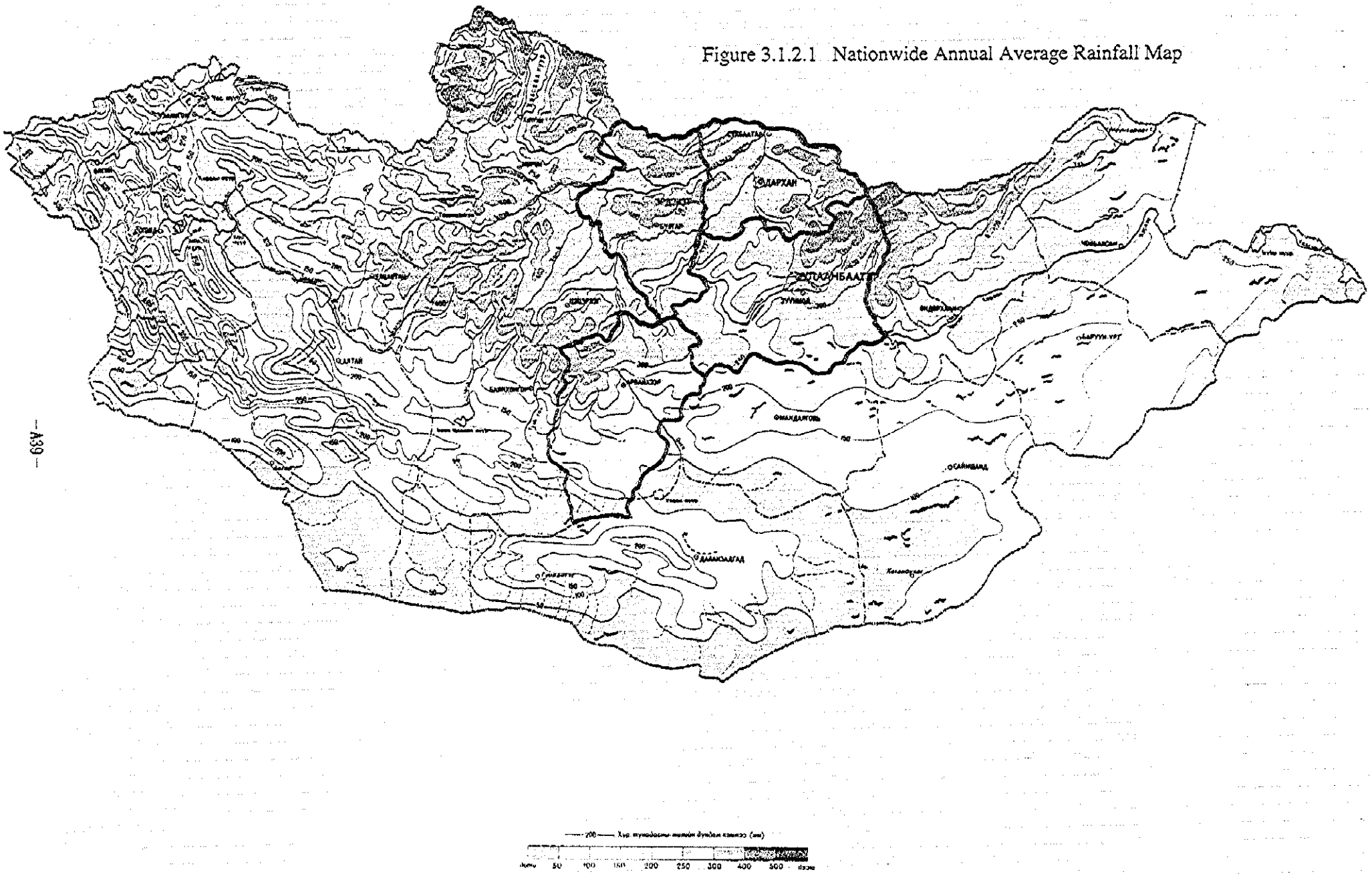
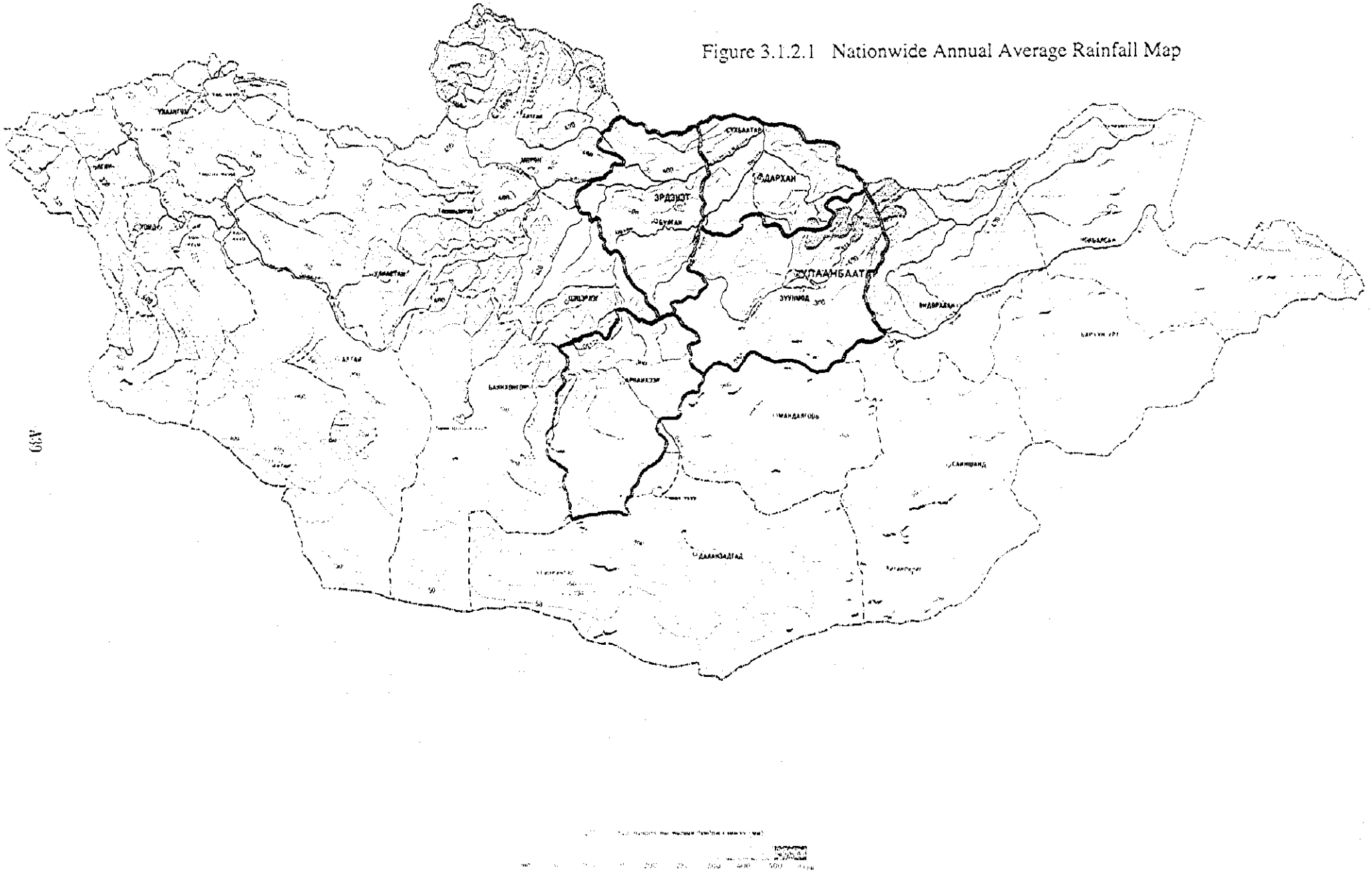


Figure 3.1.2.1 Nationwide Annual Average Rainfall Map



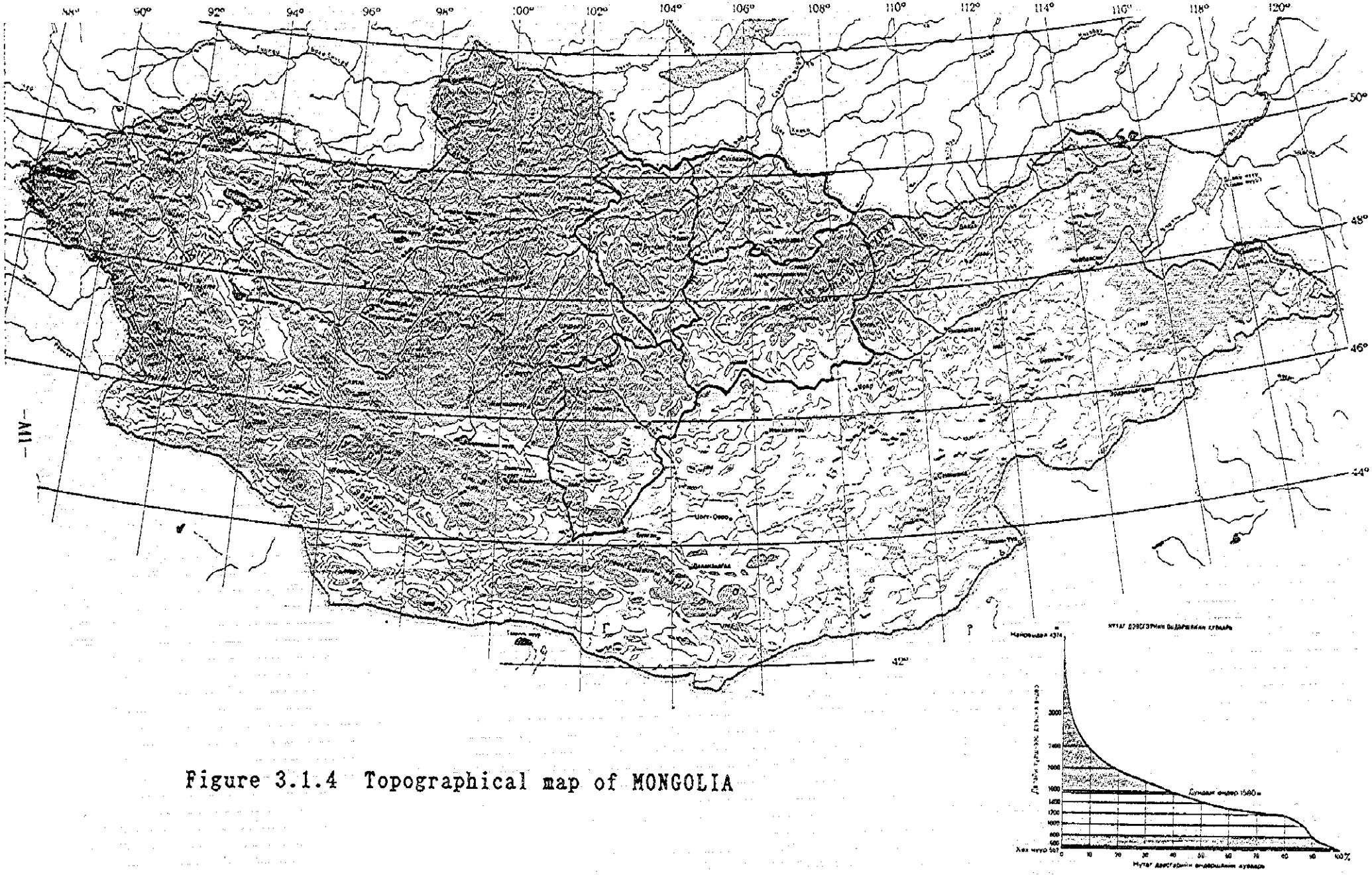


Figure 3.1.4 Topographical map of MONGOLIA

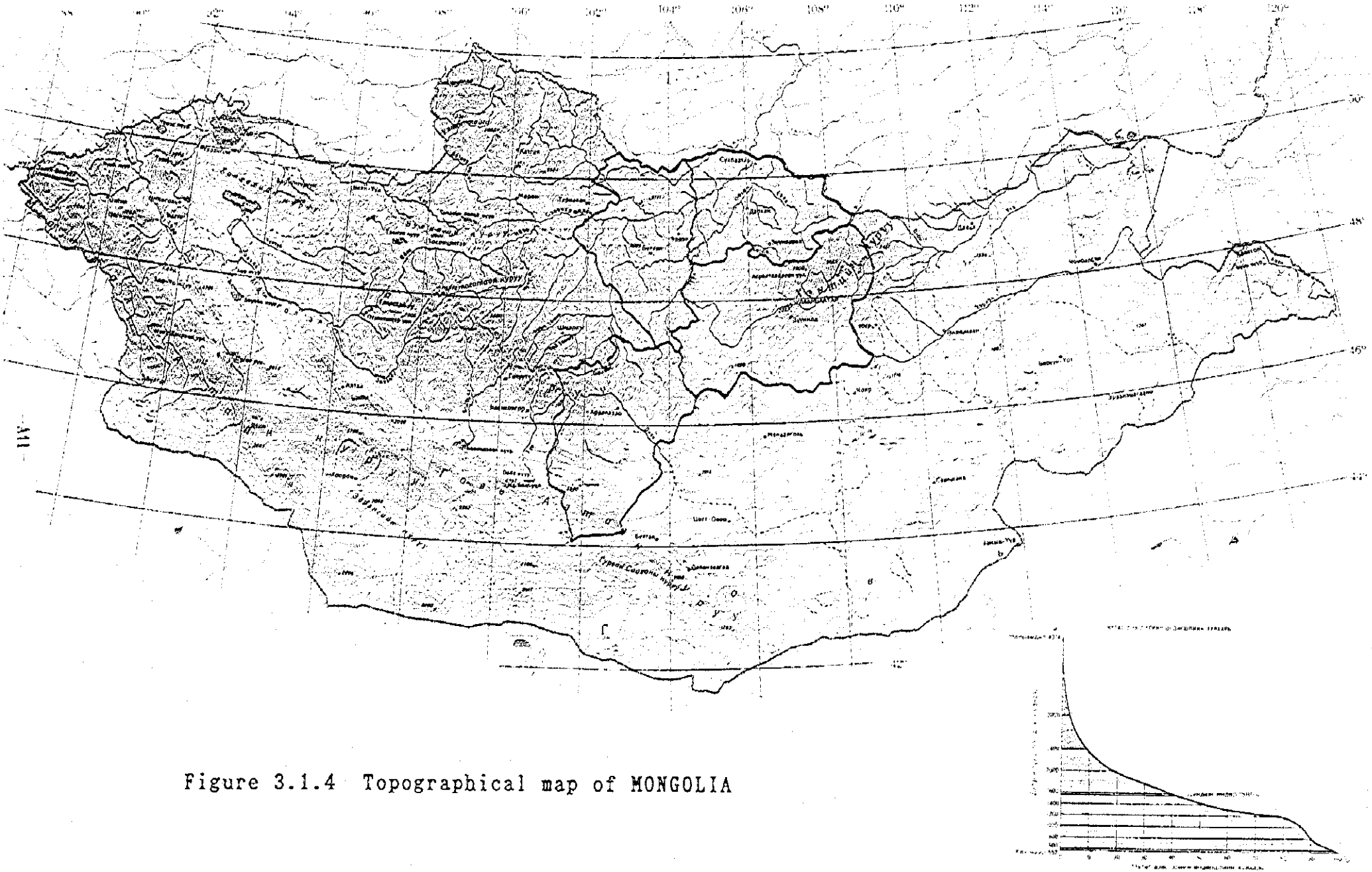


Figure 3.1.4 Topographical map of MONGOLIA

Figure 3.4.2.1 LOCATION MAP OF IRRIGATION AREAS

SELENGE, DARKHAN-UUL

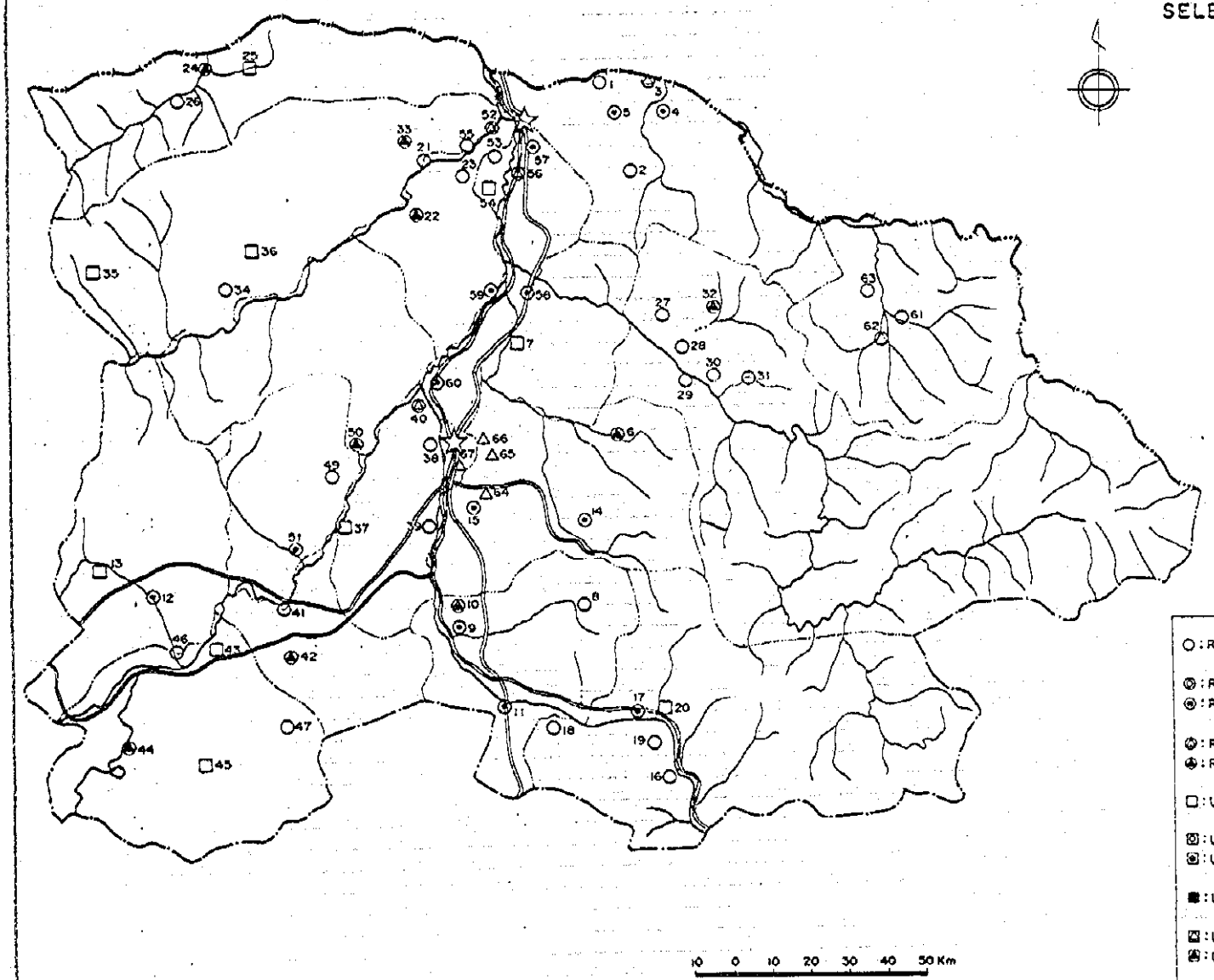
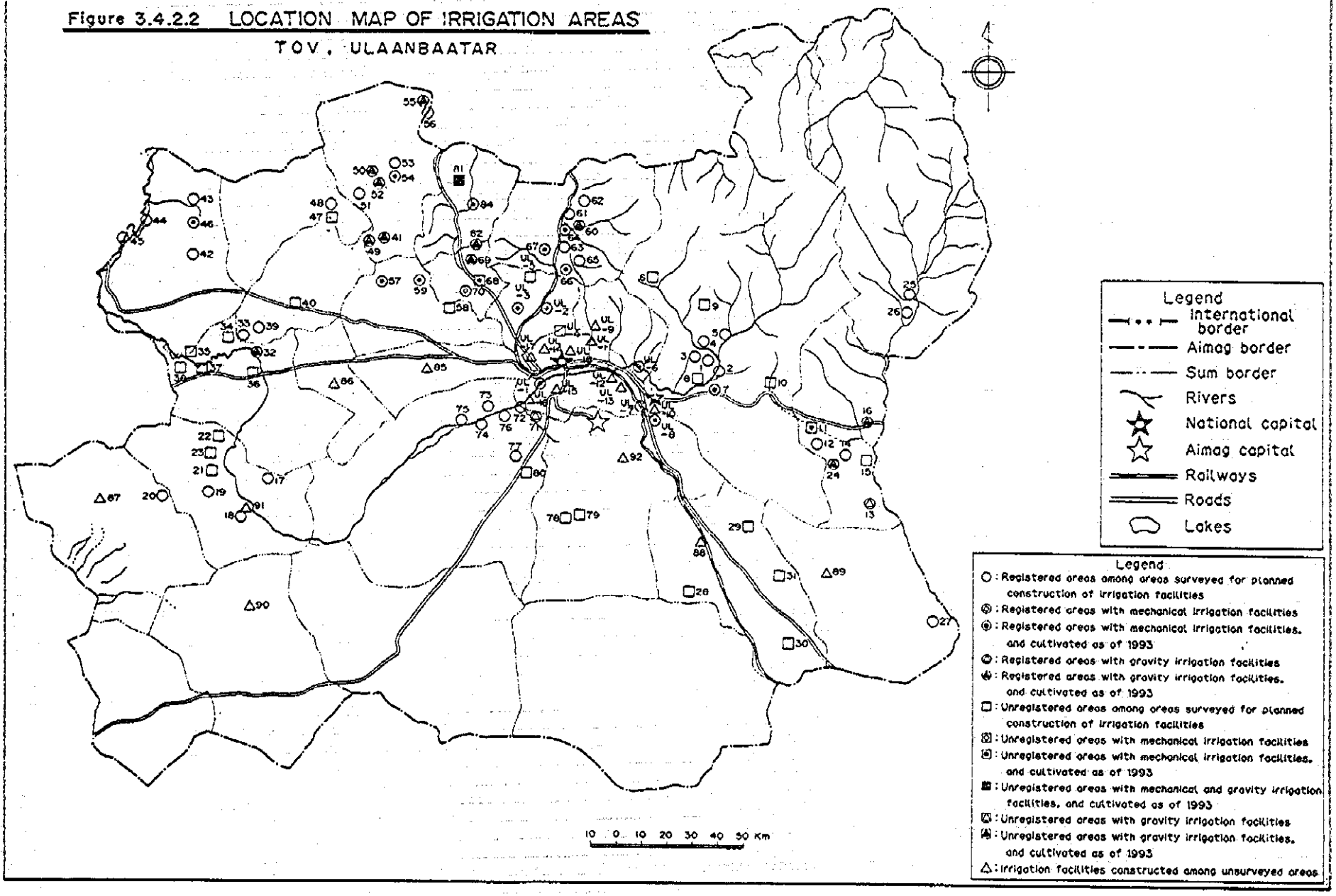


Figure 3.4.2.2 LOCATION MAP OF IRRIGATION AREAS

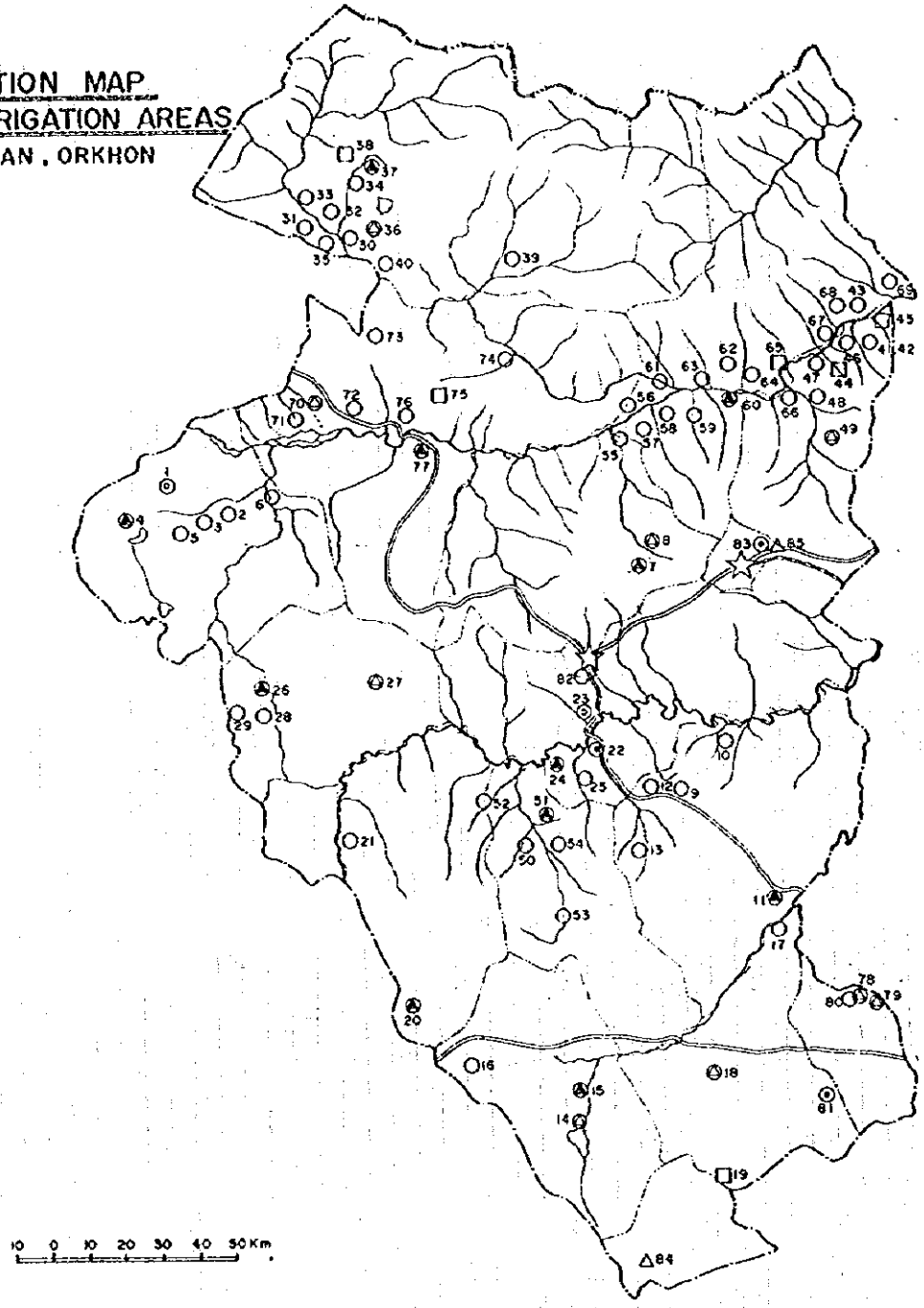
TOV, ULAANBAATAR



Figure

LOCATION MAP OF IRRIGATION AREAS

BULGAN , ORKHON



Legend

- International border
- Aimag border
- Sum border
- Rivers
- National capital
- Aimag capital
- Railways
- Roads
- Lakes

Legend

- ○ : Registered areas among areas surveyed for planned construction of irrigation facilities
- ◎ : Registered areas with mechanical irrigation facilities
- ◉ : Registered areas with mechanical irrigation facilities, and cultivated as of 1993
- ◎ : Registered areas with gravity irrigation facilities
- ◉ : Registered areas with gravity irrigation facilities, and cultivated as of 1993
- □ : Unregistered areas among areas surveyed for planned construction of irrigation facilities
- ▨ : Unregistered areas with mechanical irrigation facilities
- ▩ : Unregistered areas with mechanical irrigation facilities, and cultivated as of 1993
- ■ : Unregistered areas with mechanical and gravity irrigation facilities, and cultivated as of 1993
- ▨ : Unregistered areas with gravity irrigation facilities
- ▩ : Unregistered areas with gravity irrigation facilities, and cultivated as of 1993
- △ : Irrigation facilities constructed among unsurveyed areas

Figure 3.4.2.4

LOCATION MAP OF IRRIGATION AREAS

OVORHANGAI

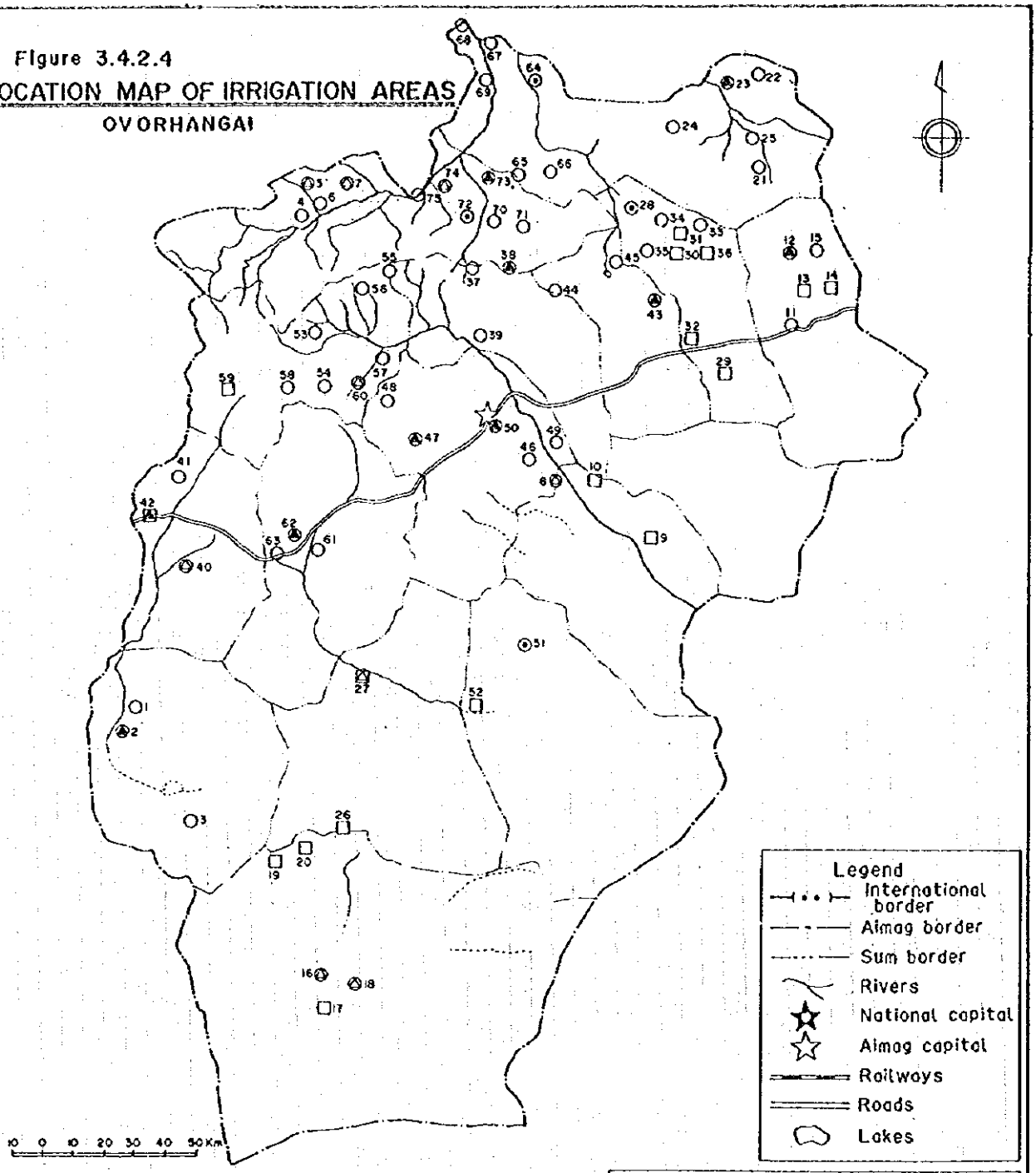


Fig. 3.6.1 Electricity supply of MONGOLIA

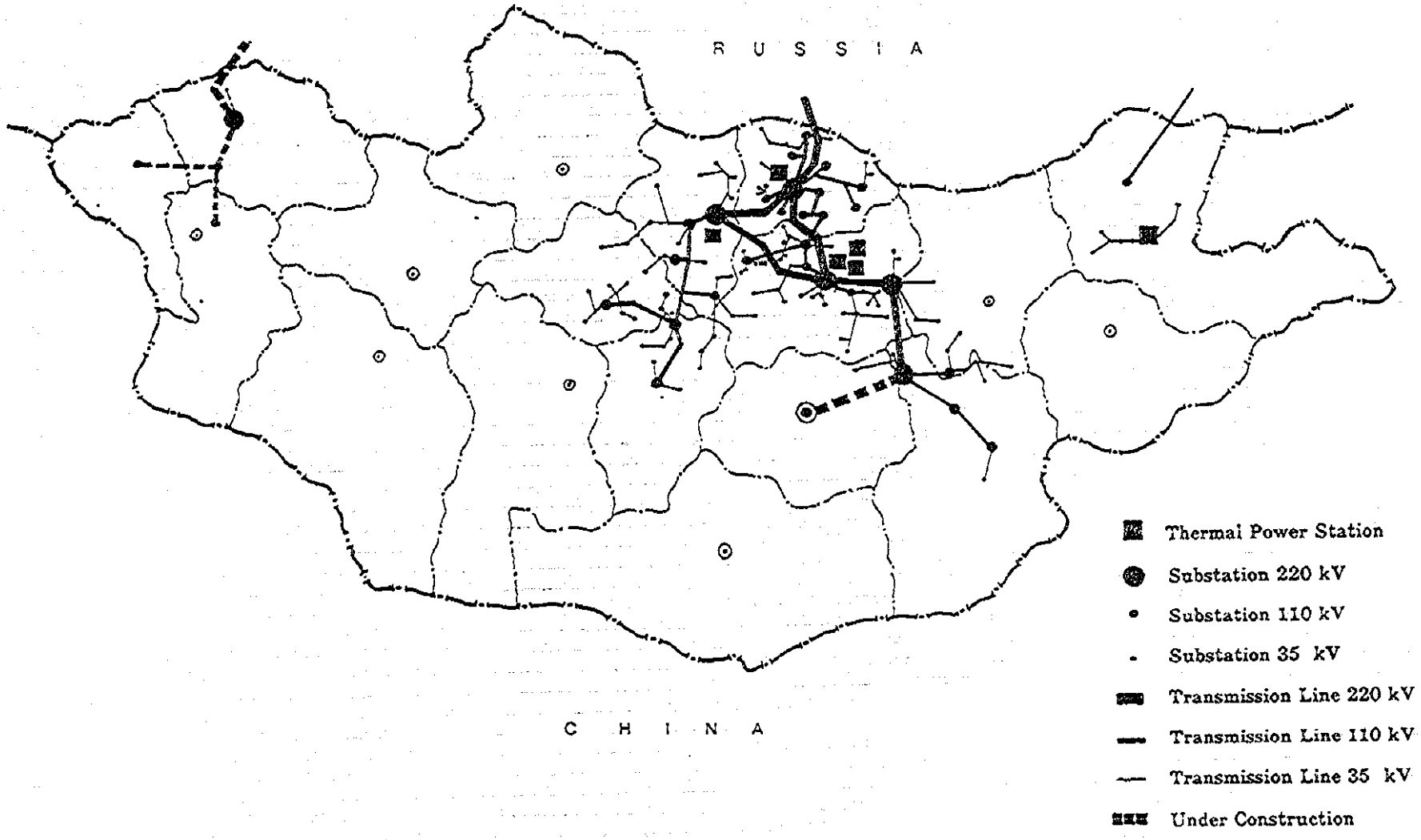


Figure 3.7.1.1 Mongolian Governmental Organization (as of March 1991)

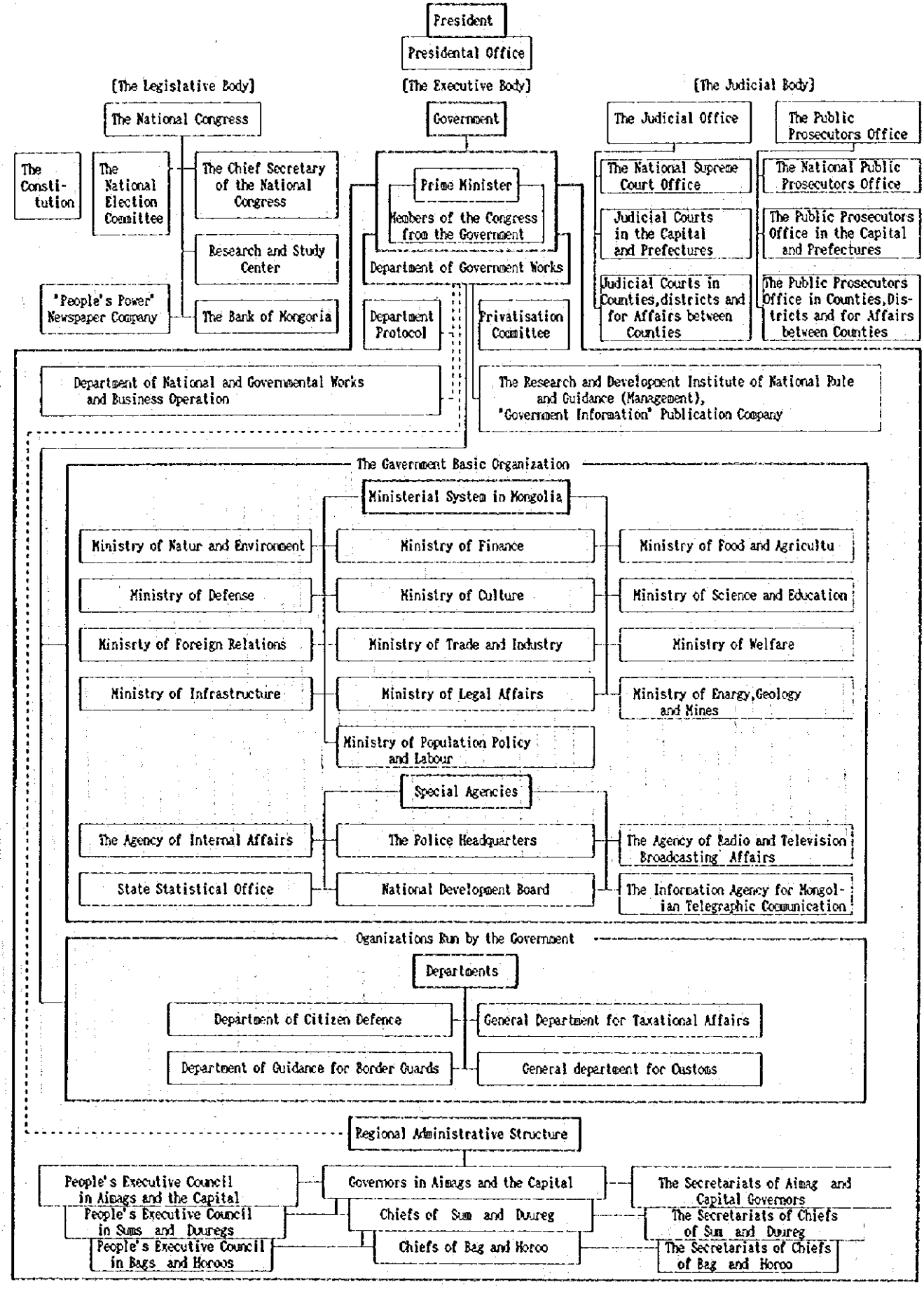
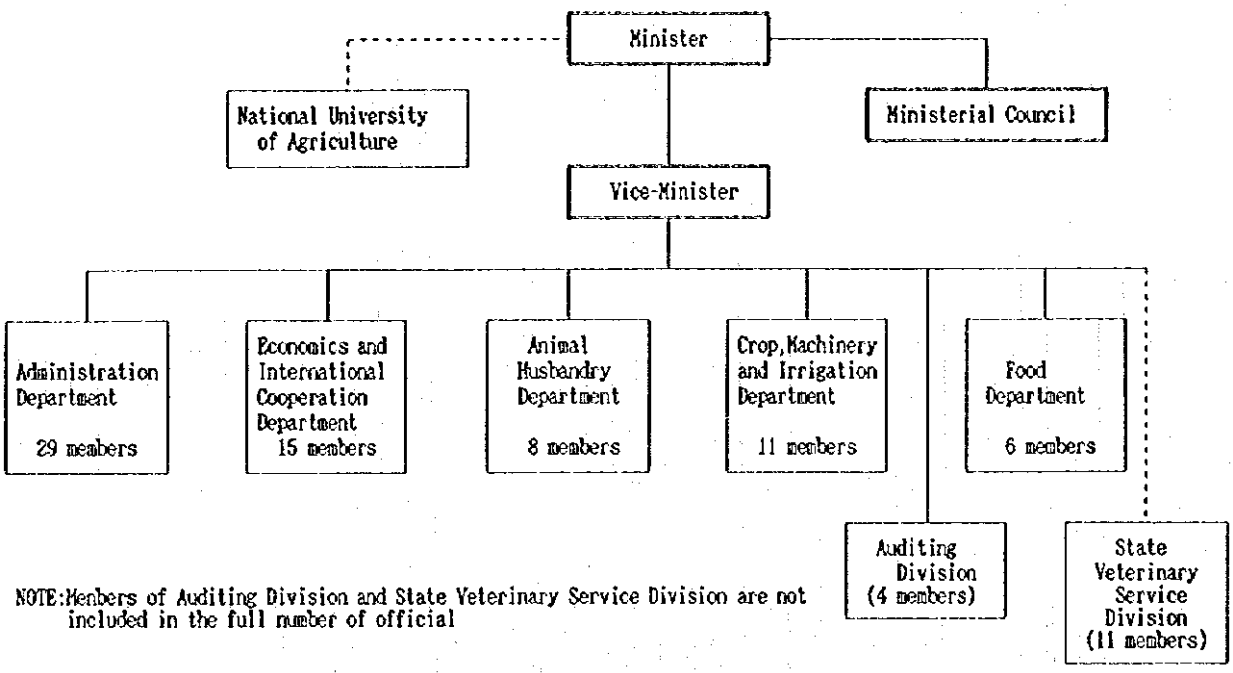


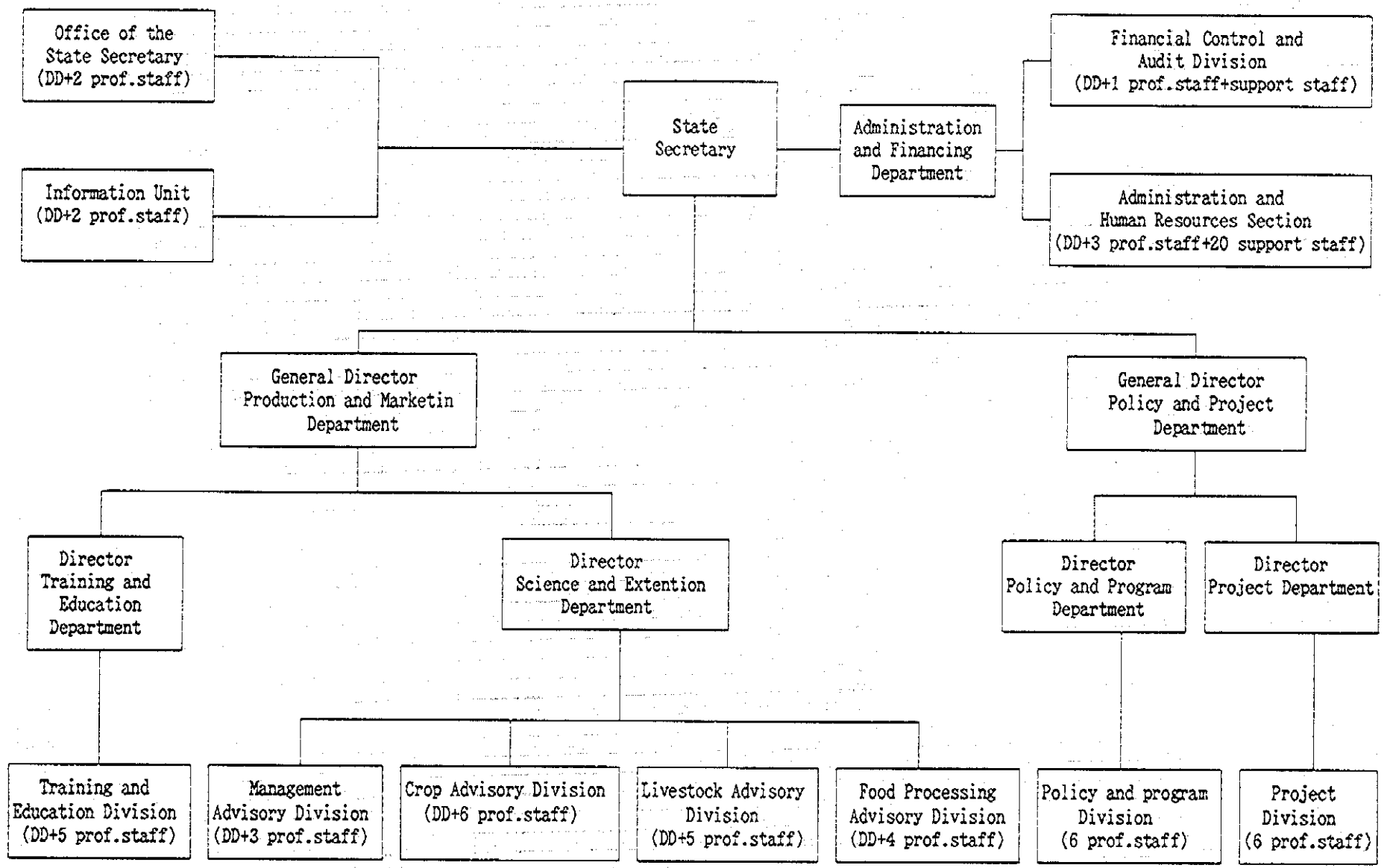
Fig. 3.7.1.2 Organizational Structure of Ministry of Food and Agriculture



NOTE: Members of Auditing Division and State Veterinary Service Division are not included in the full number of official

Fig. 3.7.1.3

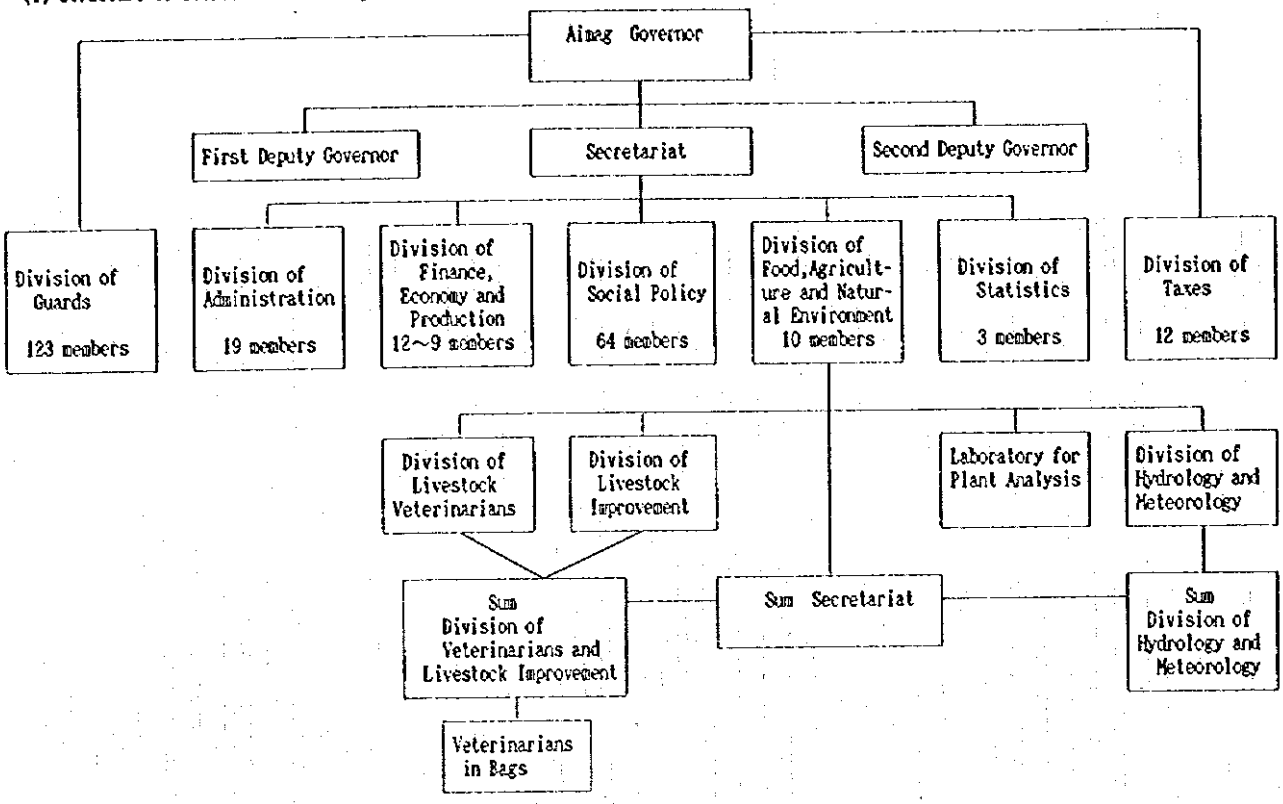
PROPOSED CENTRAL STRUCTURE OF THE MINISTRY OF FOOD AND AGRICULTURE



Note : Quorum of the MOFA would be unchanged

Fig. 3.7.2.1 Organizational Structure of Regional Administration

(1) Structure of Secretariat of Aimag Governors



(2) Structure of Aimag Administration

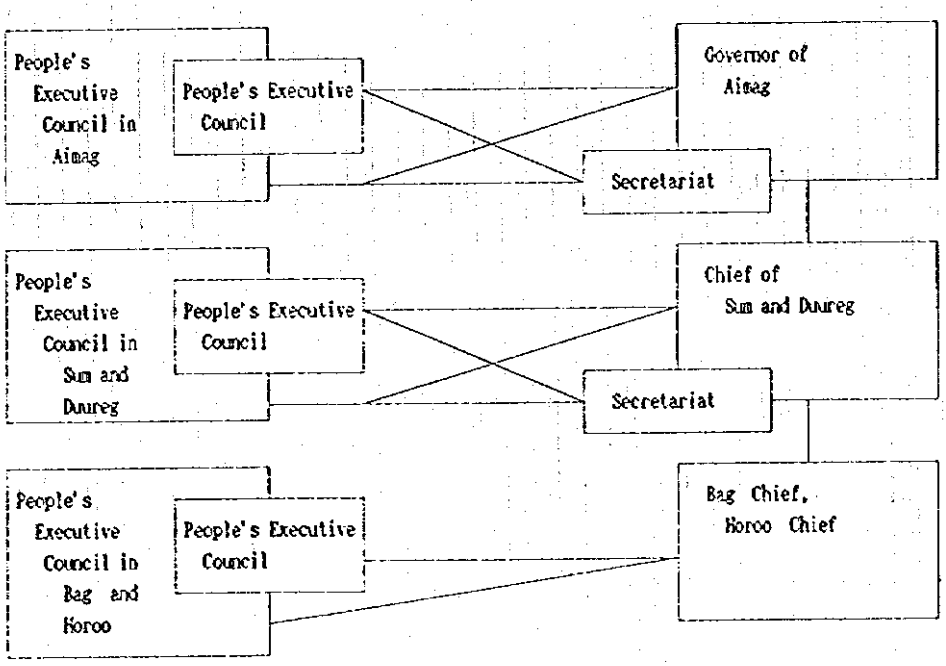


Fig 4.1.3.1 Plan of Landuse Map

Table 4.1.3.1 Land use program for 2010 (unit:1000ha)

	Selenge & Darkhan-Uul	Tov & Ulaanbaatar	Bulgan & Orkhon	Ovorhangai	Total
Arable land	335	300	111	41	787
Grass land ①	1,976	4,962	2,974	5,956	15,868
Forest area	1,821	1,284	1,415	212	4,732
② Area of land to be used as a grass resource	(270)	(190)	(390)	(50)	(900)
Urban & Industrial area	52	53	83	22	210
Natural Environment Protection area	28	727	2	20	777
Other area	231	549	373	38	1,191
③ Area of land to be used as a grass resource	(40)	(430)	(170)		(640)
Total	4,443	7,875	4,957	6,290	23,565
Area of land to be used as a grass resource ①+②+③	2,286	5,582	3,534	6,006	17,408

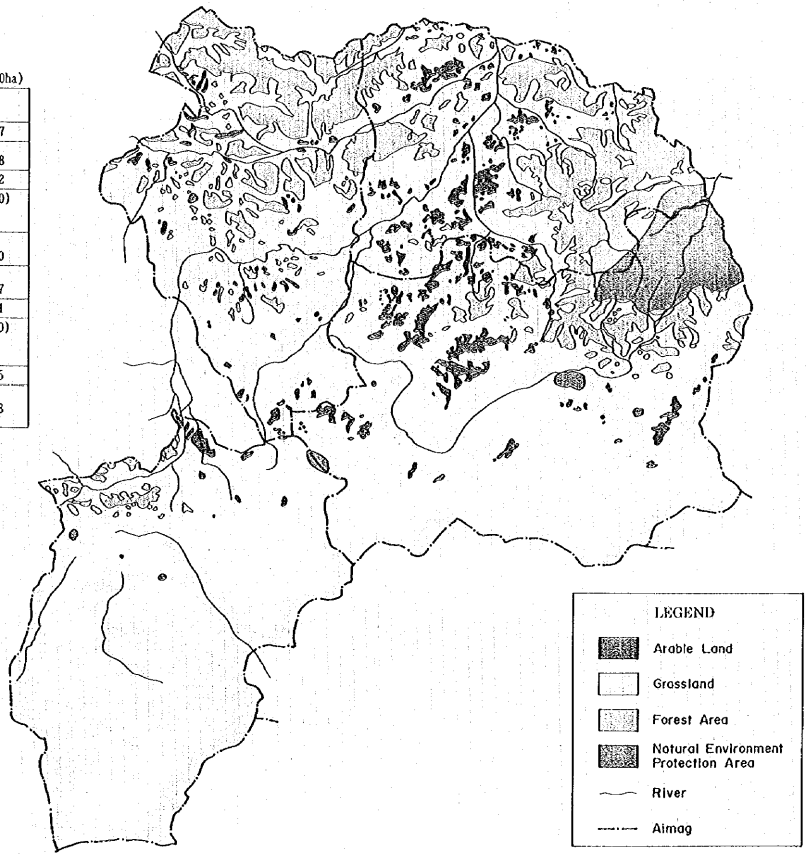


Figure 4.2.1 PROPOSED INSTITUTIONAL FRAMEWORK FOR AGRICULTURE

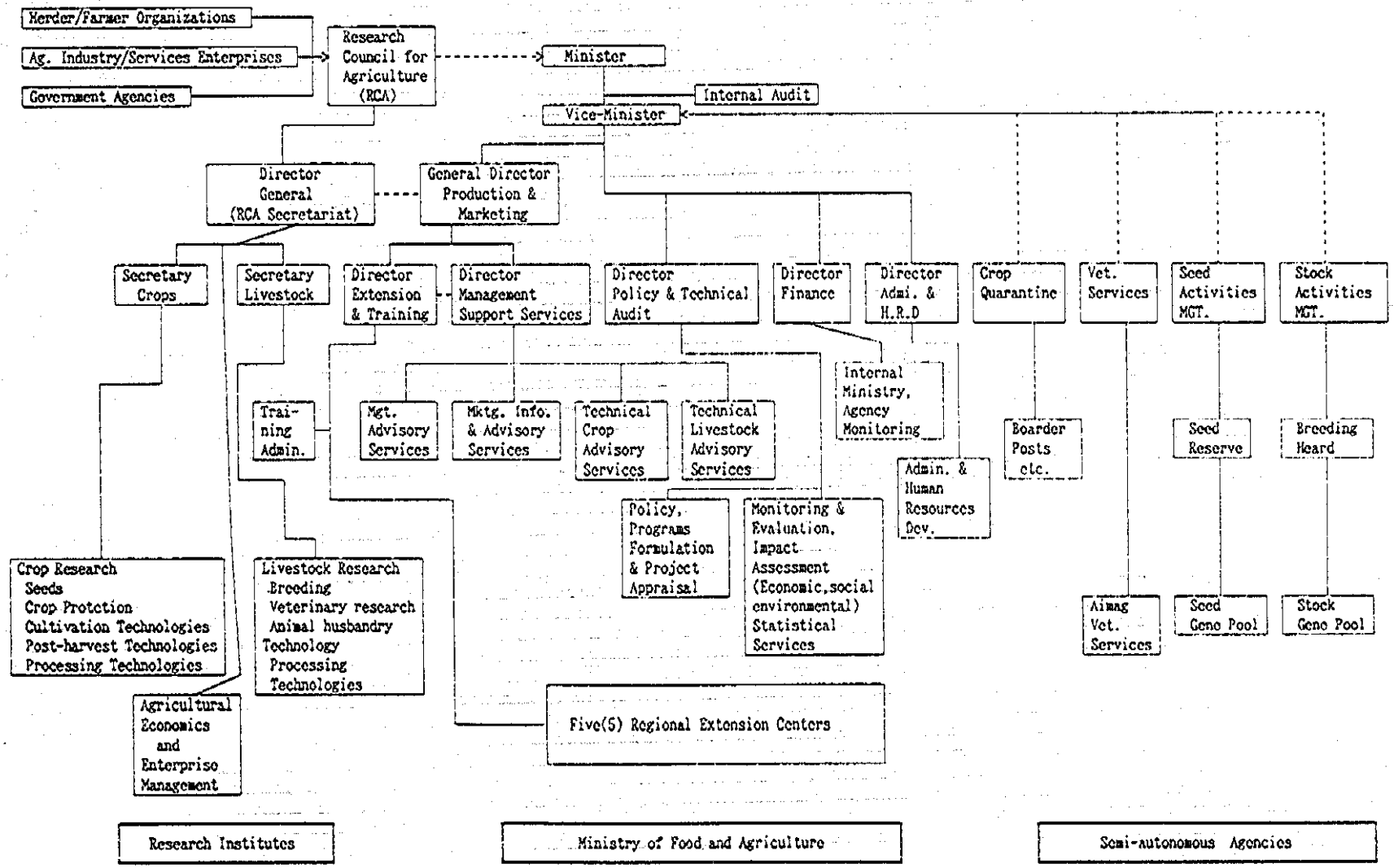


Figure 4.3.2.1 Crop Calengar ○ : Sowing △ : Transplanting × : Harvesting

Months / Crops	Jan. E M L	Feb. E M L	Mar. E M L	Apl. E M L	May E M L	June E M L	July E M L	Aug. E M L	Sept. E M L	Oct.月 E M L	Nov. E M L	Dis.K E M L
Wheat					○○				×	×		
Balrey					○○				×	×		
Oat					○○				×	×		
Potato-early						○○		××				
Potato-late						○○		×	×			
Turnip						○○			××			
Onion-1year					×				×			
Onion-2year					×				×			
Cabbage-earl				○ ○	△△		×	×				
Cabbage-late				○ ○		△△			×	×		
Cabbage-tran			○		△		×	×				
Radish					○○		×	×				
Carrot				○ ○				××				
Oniont					△△			×	×			
Garlic				△	△			×	×			
Watermelon						○○		×	×			
Pumpkin						○○			××			
Cucumber						○○	△△		××			
Cucmber-hous	○	△	×				×					
							○	△	×			×
Tomato				○ △	△			×	×			
Tomato-house	○	△		×								×
Sugar beet						○○			×	×		
Rape						○○			×	×		
Flax						○○			×	×		
Sunflower-gr						○○			×	×		
Corn-green						○○			×	×		
Oat-green					○○					××		
Alfalfa						○	○		× ×			
Chatsargana								×	×			
Uhrin Nud								×	×			

Fig. 4. 3. 2. 2 Proposed Crop Rotation

Wheat(Non-Irrigated)

Буудай ургамал бууц.(усалгаагүй 2,500 гек.)

Field	Area Талбай	1st Year Эхний жилд	2nd Year 2 дах жилд	3rd Year 3 дах жилд	4th Year 4 дэх жилдээ	5th Year 5 дах жилдээ	Remarks Тэмдэглэл
A	2,500 ha	Wheat буудай	Fallow амарна	Wheat буудай	Fallow амарна	Wheat буудай	
B	2,500 ha	Fallow амарна	Wheat буудай	Fallow амарна	Wheat буудай	Fallow амарна	

Wheat, Fodder & Manure Crops(Non-Irrigated)

Буудай, тэжээлийн ургамал бууц.(усалгаагүй 100 гек.)

Field	Area Талбай	1st Year Эхний жилд	2nd Year 2 дах жилд	3rd Year 3 дах жилд	4th Year 4 дэх жилдээ	5th Year 5 дах жилдээ	Remarks Тэмдэглэл
A	100ha 100 гек	Wheat буудай	Barley арвай	Fodder тэжээл	Wheat буудай	Fodder тэжээл	6th year is same to 1st year 6 дах жил 1 дэхтэй ижил
B	100ha	Barley арвай	Fodder тэжээл	Wheat буудай	Fodder тэжээл	Wheat буудай	Wheat Green Fodder буудай ногоон тэжээл
C	100ha	Fodder тэжээл	Wheat буудай	Fodder тэжээл	Wheat буудай	Barley арвай	Fodder Barley oat тэжээл арвай овъёс
D	100ha	Wheat буудай	Fodder тэжээл	Wheat буудай	Barley арвай	Fodder тэжээл	тэжээл grass. овсон Legumi
E	100ha	Fodder тэжээл	Wheat буудай	Barley арвай	Fodder тэжээл	Wheat буудай	

Vegetable on Strip Field(Irrigated)

Зурвасан усалгаатай талбай дах хүнсний ногоо (100 гек)

Field	Area Талбай	1st Year Эхний жилд	2nd Year 2 дах жилд	3rd Year 3 дах жилд	4th Year 4 дэх жилдээ	5th Year 5 дах жилдээ	Remarks Тэмдэглэл
A	100ha	Turnip манжин	Allium сонгины төрөлтэй ногоо	Cabbage байцаа	Carrots лууван	Turnip манжин	Allium Onion,сонгино, Welsh,Leek Garlic сармис, г.м
B	100ha	Allium сонгино	Cabbage байцаа	Carrots лууван	Turnip манжин	Allium сонгино	
C	100ha	Cabbage байцаа	Carrots лууван	Turnip манжин	Allium сонгино	Cabbage байцаа	
D	100ha	Carrots лууван	Turnip манжин	Allium сонгино	Cabbage байцаа	Carrots лууван	

Vegetable in Greenhouse(Irrigated)

Хүлэмжийн дэх ногоо (усалгаатай 1,5 гек.)

Field	Area Талбай	1st Year Эхний жилд	2nd Year 2 дах жилд	3rd Year 3 дах жилд	4th Year 4 дэх жилдээ	5th Year 5 дах жилдээ	Remarks Тэмдэглэл
A	1.5ha	Cucumber оргост хэмх	Tomato улаан лооль	Cucumber оргост хэмх	Tomato улаан лооль	Cucumber оргост хэмх	
B	1.5ha	Tomato улаан лооль	Cucumber оргост хэмх	Tomato улаан лооль	Cucumber оргост хэмх	Tomato улаан лооль	

Chatturgana ЧАДАРГАНА

Field	Area	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Remarks
A	10ha	◎										
B	10ha		◎									
C	10ha			◎								
D	10ha				◎							
E	10ha					◎						
F	10ha						◎					
G	10ha							◎				
H	10ha								◎			

Conbination Type

ХОСЛУУЛЖ ТАРЬСАН

Field	Area	1st Year	2nd Year	3rd Year	4th YEAR	Remarks
A	100ha	Potato томс	Wheat буудай	Fodder тэжээл	Potato томс	Fodder тэжээл, арвай, овьёс Barley, Oat Leguminous grass
B	100ha	Wheat буудай	Fodder тэжээл	Potato томс	Wheat буудай	
C	100ha	Fodder тэжээл	Potato томс	Wheat буудай	Fodder тэжээл	

Potato, Fodder & Manure Crops(Non-Irrigated)

Томс, тэжээл, бууц (усалгаагүй)

Field	Area	1st Year	2nd Year	3rd year	4th Year	5th Year	Remarks
A	100ha	Potato томс	Fodder тэжээл	Potato томс	Fallow амарна	Potato томс	Fodder crop Barley тэжээд, арвай, Oat Leguminous grass
B	100ha	Fodder тэжээл	Potato томс	Fallow амарна	Potato томс	Fodder тэжээл	
C	100ha	Potato томс	Fallow амарна	Potato томс	Fodder тэжээл	Potato томс	
D	100ha	Fallow амарна	Potato томс	Fodder тэжээл	Potato томс	Fallow амарна	

Sugar beet(Irrigated)

Чихрийн манжин (усалгаатай)

Field	Area	1st Year	2nd Year	3rd Year	4th Year	5th Year	Remarks
A	100ha	Sugar beet чихрийн манжин	Wheat буудай	рапс Rape:50ha / Potato:50 томс	Vegetbles ногоо	Sugar beet чихрийн манжин	Vegetables ногоо Cabbage Onion Turnip Carrot Garlic
B	100ha	Wheat буудай	Rape:50ha рапс / Potato:50 томс	Vegetables ногоо	Sugar beet чихрийн манжин	Wheat буудай	
C	100ha	Rape:50ha / Potato:50ha томс	Vegetables ногоо	Sugar beet чихрийн манжин	Wheat буудай	Rape:50ha рапс / Potato:50 томс	
D	100ha	Vegetables ногоо	Sugar beet чихрийн манжин	Wheat буудай	Rape:50ha рапс / Potato:50 томс	Vegetables ногоо	

Conbination 3rd Type(Irrigated)

Хосолсон 3-р хэлбэр (усалгаагүй)

Field	Area	1st Year	2nd Year	3rd Year	4th Year	5th Year	Remarks
A	100ha	Root crop үндсэрхэг Allium сонгино	Cabbage байцаа	Root crop үндсэрхэг Allium сонгино	Cabbage байцаа	Root crop үндсэрхэг Allium сонгино	Root crop Turnip Carrot үндсэрхэг манжин ургамал луувай
B	100ha	Cabbage байцаа	Root crop үндсэрхэг Allium сонгино	Cabbage байцаа	Root crop үндсэрхэг Allium сонгино	Cabbage байцаа	Allium Onion сонгино Welsh onion Garlic сармис
E	@@ha	Fodder тэжээл	Fodder тэжээл	Fodder тэжээл	Fodder тэжээл	Fodder тэжээл	
F	@@ha	Fodder тэжээл	Fodder тэжээл	Fodder тэжээл	Fodder тэжээл	Fodder тэжээл	

Figure 4.4.5.1 Location Plan of Intensive Livestock Farm

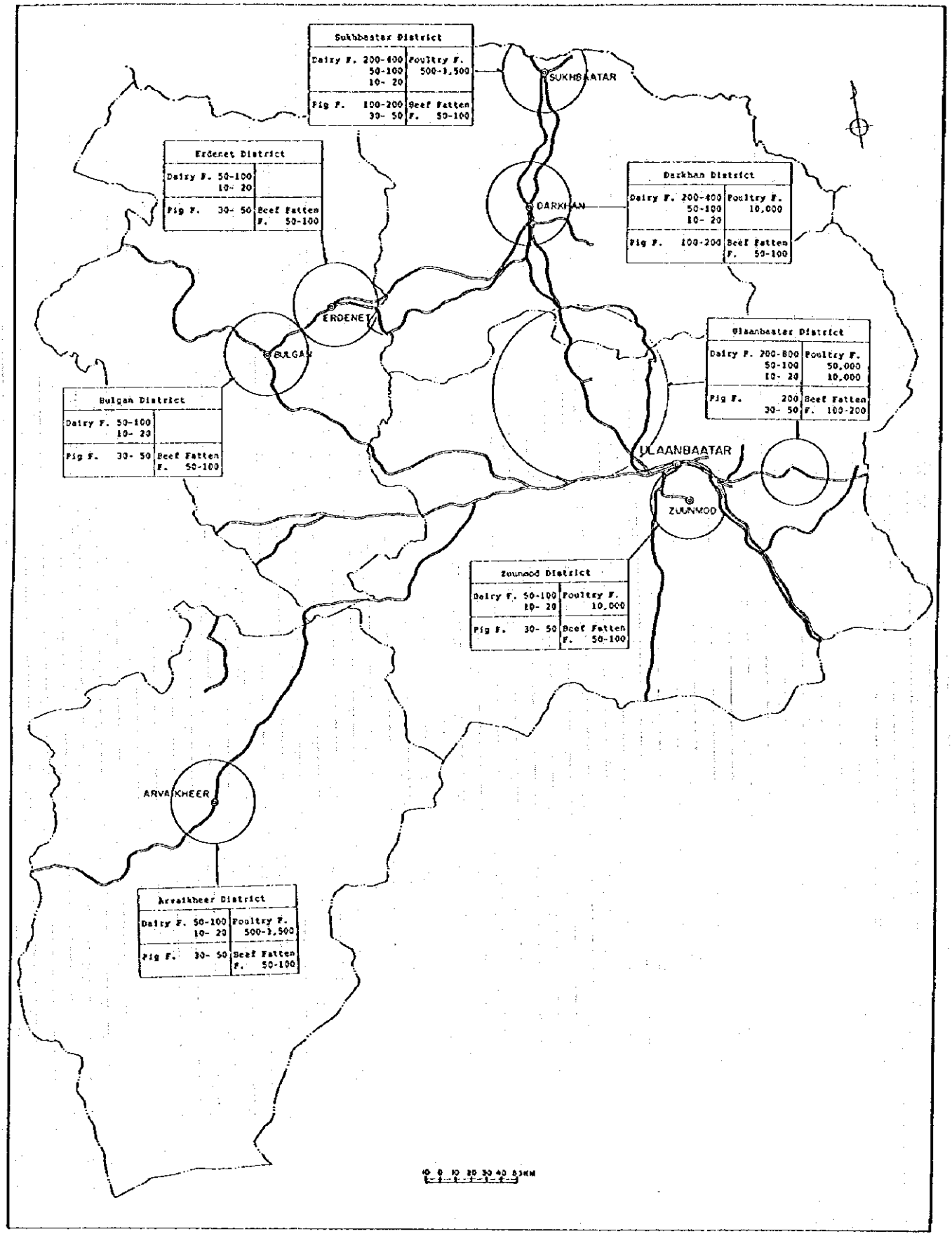


Figure 4.5.2.1 Wheat(Grain) Distribution/Processing Plan

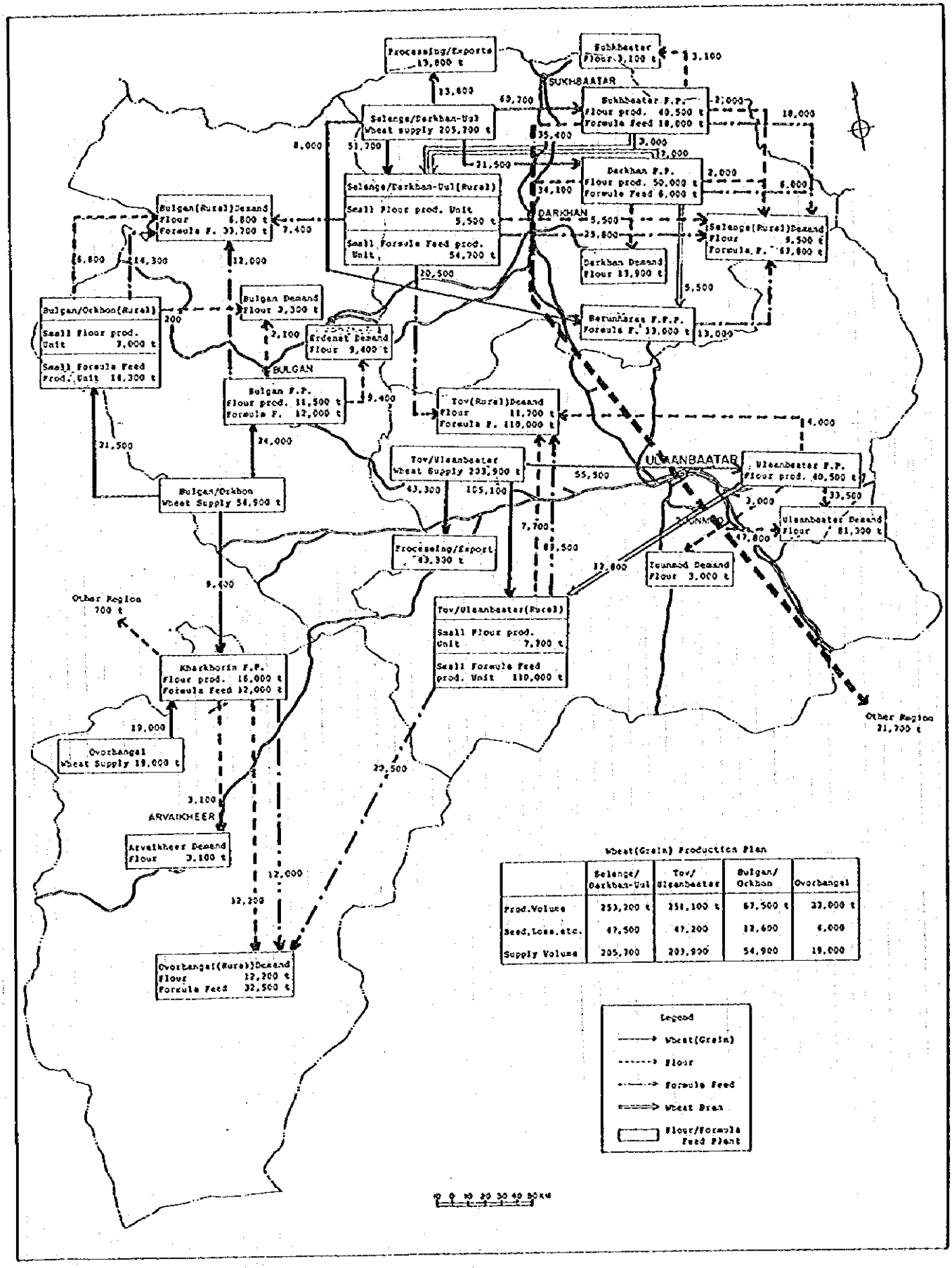
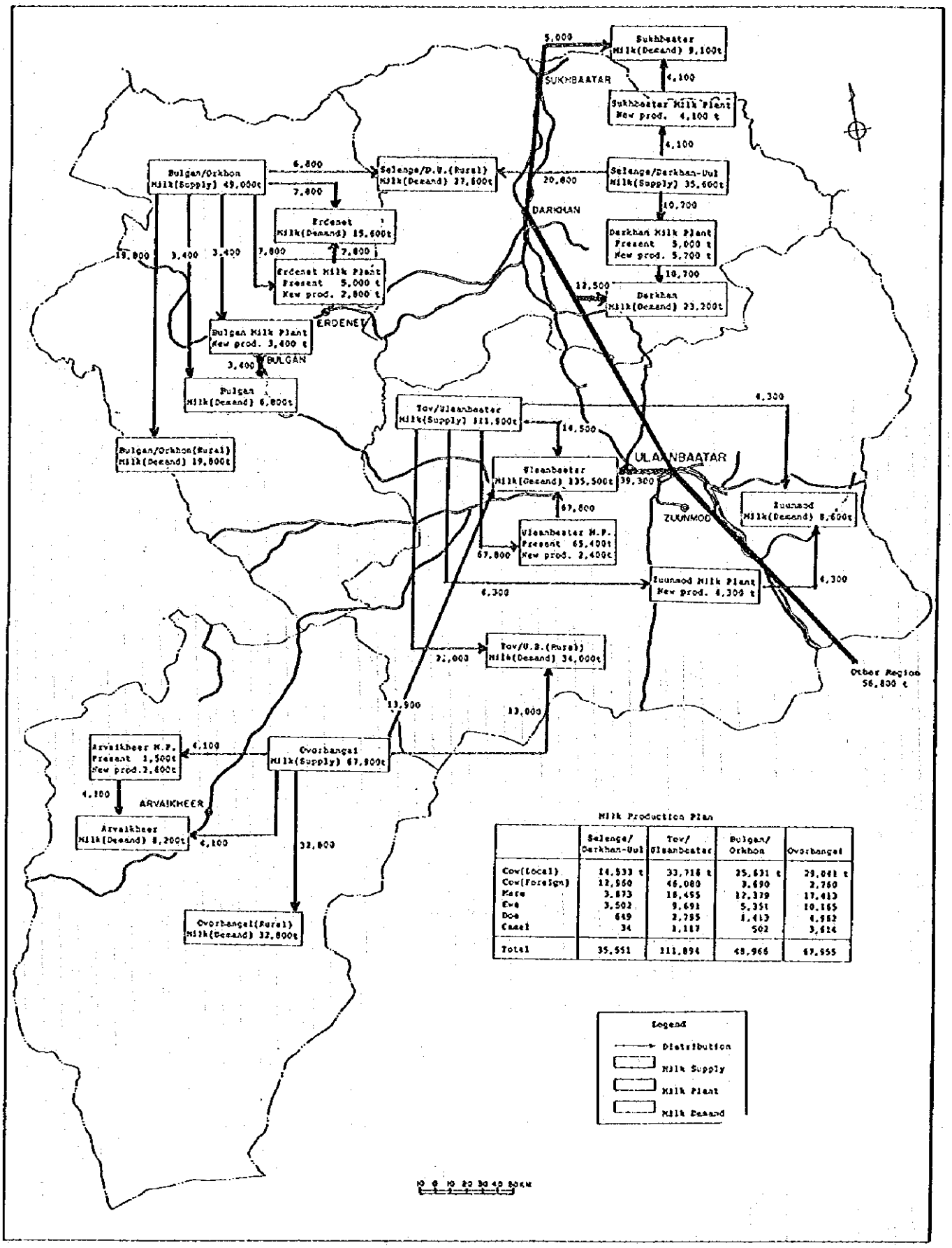


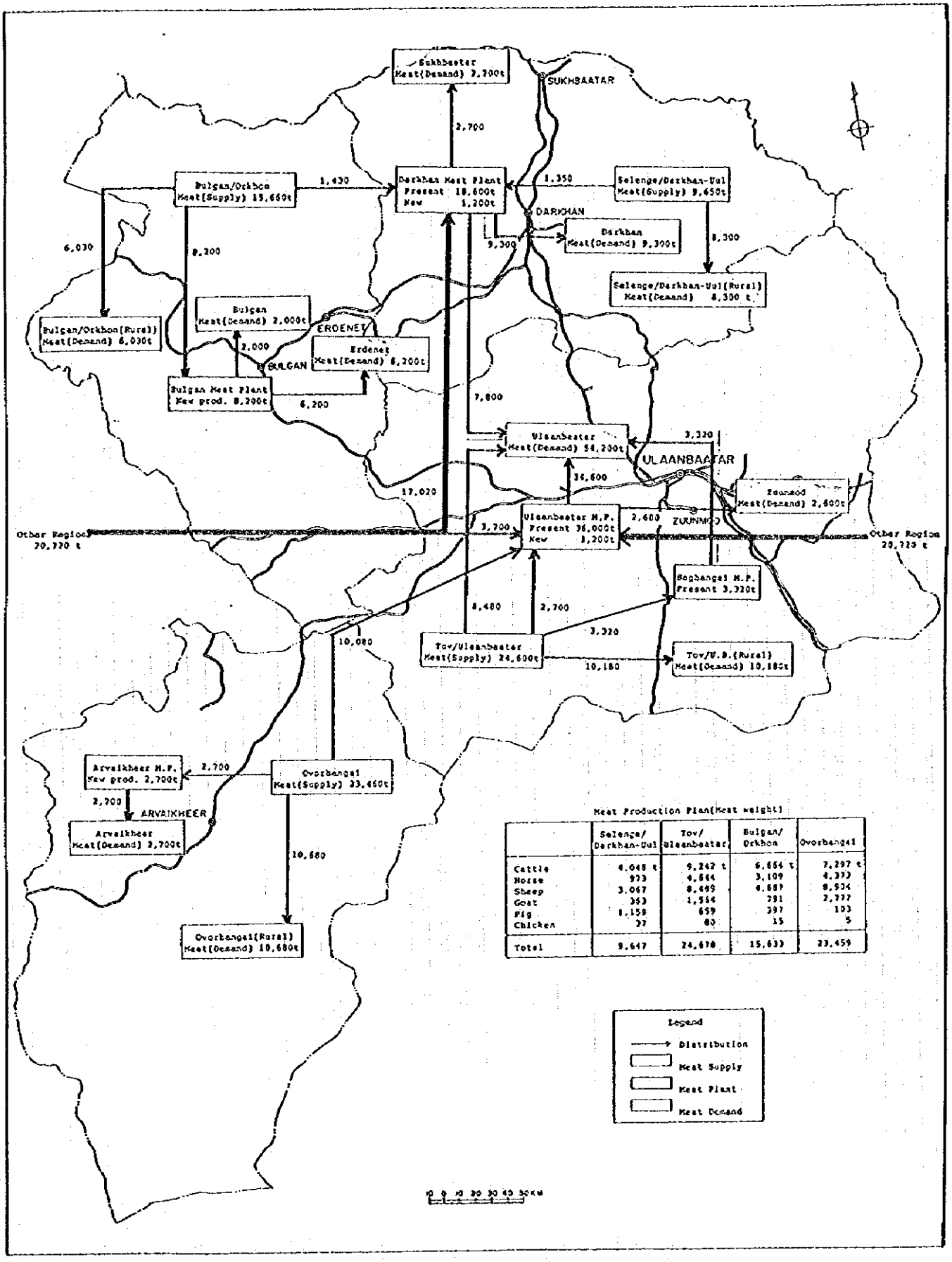
Figure 4.5.3.1 Milk Distribution/Processing Plan



Milk Production Plan

	Selenge/ Darkhan-Uul	Tov/ Ulaanbaatar	Bulgan/ Orkhon	Ovorhangai
Cow(Local)	14,533 t	33,718 t	25,631 t	29,041 t
Cow(Foreign)	12,950	46,080	3,690	2,760
Mare	3,873	18,455	12,329	17,413
Ewe	3,502	9,691	5,351	10,165
Doe	649	2,785	1,413	4,982
Camel	34	1,167	502	3,614
Total	35,551	311,896	48,966	67,555

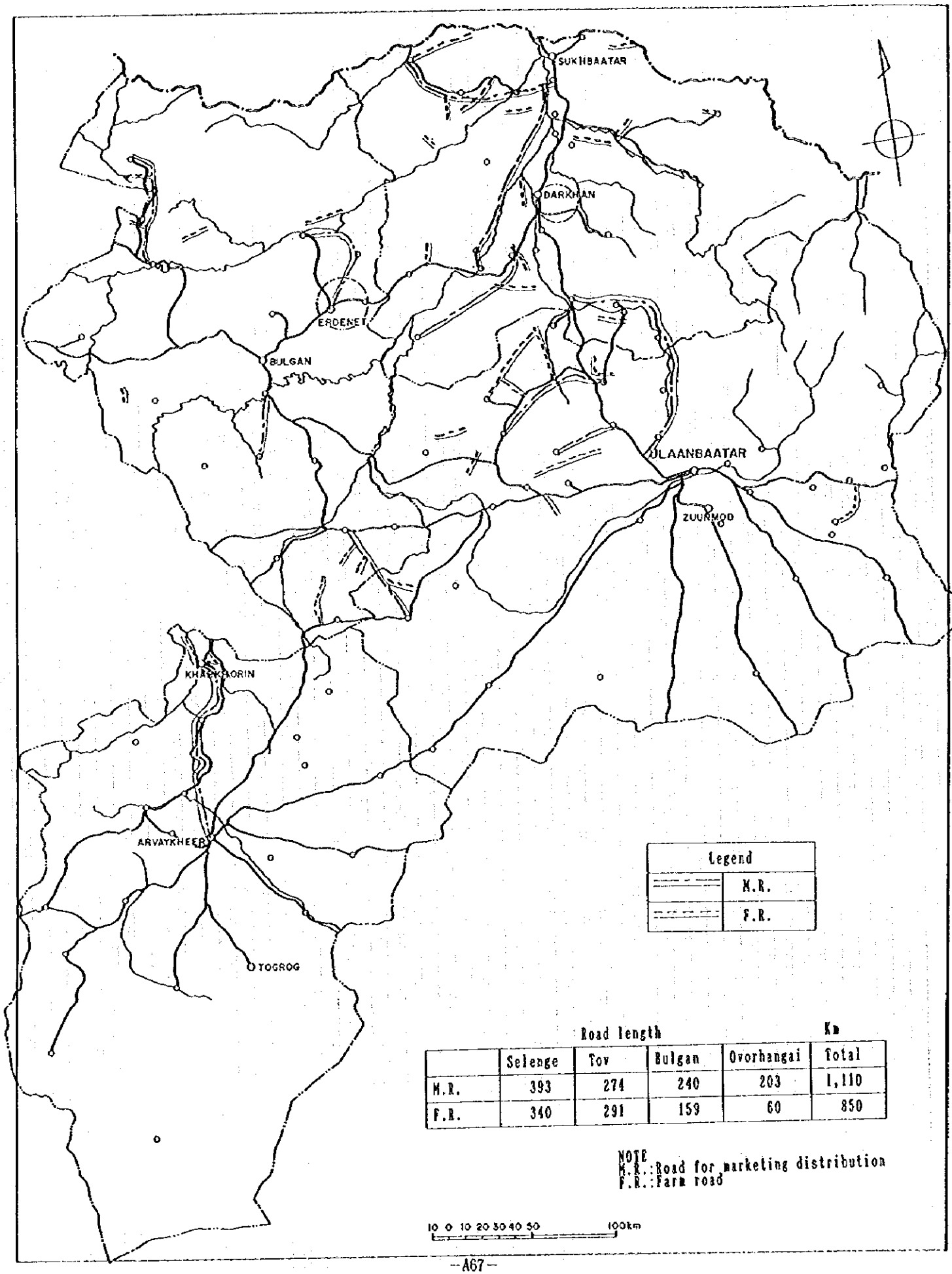
Figure 4.5.3.2 Meat Distribution/Processing Plan



Meat Production Plan(Meat weight)

	Selenge/ Darkhan-Uul	Tov/ Ulaanbaatar	Bulgan/ Orkhon	Ovorbangai
Cattle	4,048 t	9,242 t	6,654 t	7,297 t
Horse	973	4,844	3,109	4,373
Sheep	3,067	8,469	4,687	8,934
Goat	353	1,564	291	2,777
Pig	1,158	659	397	193
Chicken	37	80	15	5
Total	9,647	24,870	15,833	23,459

Figure 4.7.1.1 Routes Plan



Road length Km

	Selenge	Tov	Bulgan	Ovorhangai	Total
M.R.	393	274	240	203	1,110
F.R.	340	291	159	60	850

NOTE
M.R.:Road for marketing distribution
F.R.:Farm road

Fig.4.7.1.3 Standard cross-section for the designed agricultural hamlet road