

JAPAN INTERNATIONAL COOPERATION AGENCY

MINISTRY OF INFRASTRUCTURE DEVELOPMENT  
MONGOLIA

**MASTER PLAN STUDY  
FOR  
RURAL POWER SUPPLY  
BY  
RENEWABLE ENERGY  
IN  
MONGOLIA**

**FINAL REPORT  
MAIN REPORT**

**SEPTEMBER 2000**

**NIPPON KOEI CO., LTD.  
TOKYO, JAPAN**

MPN

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## The framework of the Final Report

Volume I	SUMMARY
Volume II	MAIN REPORT
Volume III	DATA BOOK

This Report is MAIN REPORT.

## PREFACE

In response to a request from the Government of Mongolia, the Government of Japan decided to conduct a master plan study for rural power supply by renewable energy in Mongolia and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent a study team headed by Mr. Yoshitomo WATANABE, Nippon Koei Co., Ltd. to Mongolia six times from October 1998 to August 2000.

The team held discussions with the officials concerned of the Government of Mongolia, and conducted field surveys at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the project and the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of Mongolia for their close cooperation extended to the team.

September 2000



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Kunihiro SAITO

President

Japan International Cooperation Agency

September 2000

Mr. Kunihiko SAITO  
President  
Japan International Cooperation Agency  
Tokyo, Japan

Dear Mr. Saito

Letter of Transmittal

We take pleasure in submitting herewith the final report of the Master Plan Study for Rural Power Supply by Renewable Energy in Mongolia.

This study was conducted by Nippon Koei Co., Ltd. under the contract with JICA for a 26 months period from September 22, 1998 to October 16, 2000. The report contains the master plan of the power supply through the year 2015 to the off-grid 167 Sum centers scattered across the country.

We, all the study members, hope that the power supply in the Sum centers will be improved with realization of this master plan.

Finally, we wish to take this opportunity to express our sincere gratitude to the official concerned of JICA, the Ministry of Foreign Affairs and the Ministry of International Trade and Industry for their precious advice. Besides we would like to extend our sincere thanks for the wholehearted support in Mongolia given by the Ministry of Infrastructure Development, the Energy Authority, the Renewable Energy Corporation, the Embassy of Japan in Mongolia and the JICA Mongolia office.

Very truly yours,

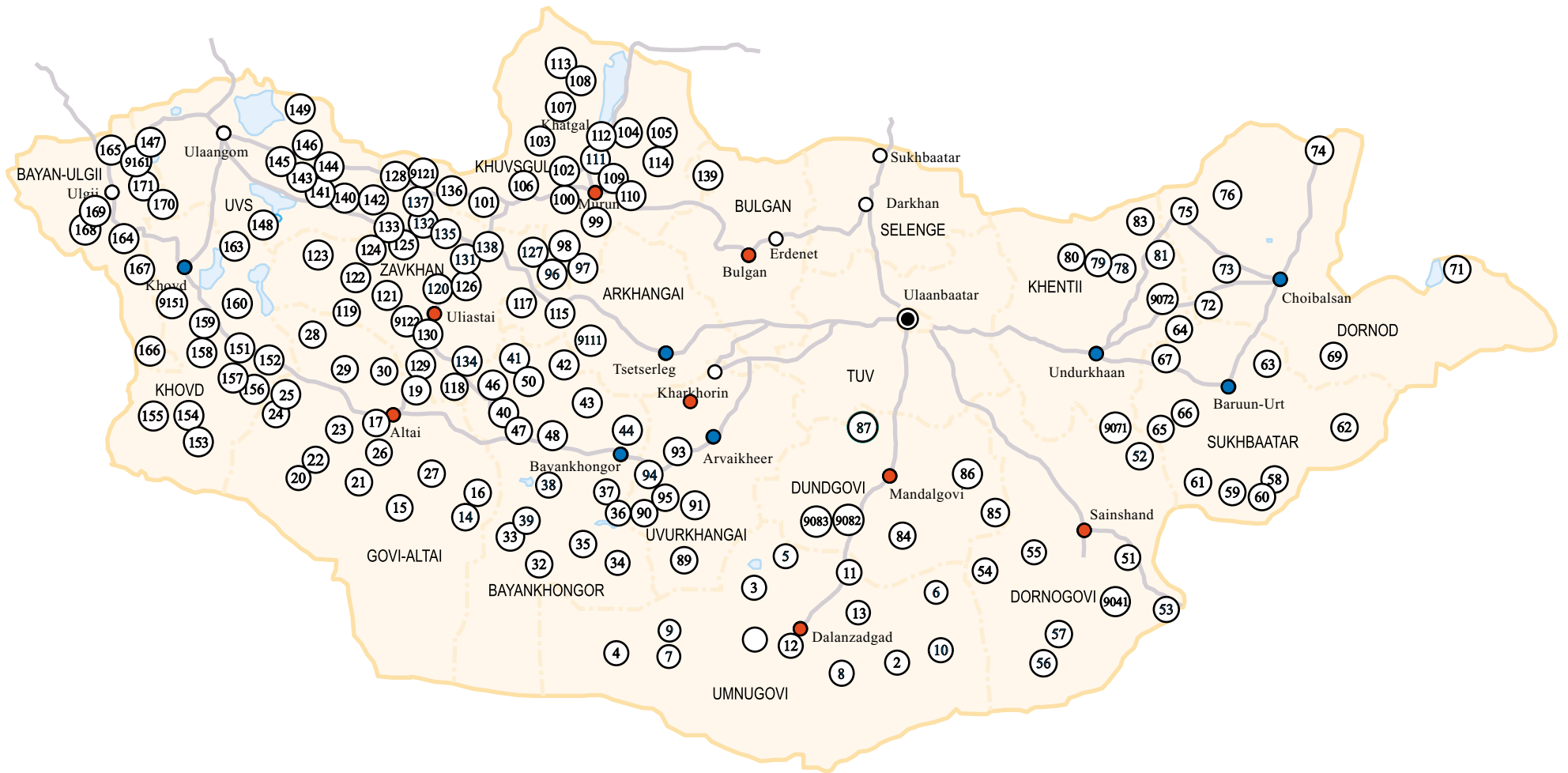


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Yoshitomo WATANABE

Team Leader

The Master Plan Study for Rural Power  
Supply by Renewable Energy in  
Mongolia  
Nippon Koei Co., Ltd.



**Legend**

(No.) : Target Sum center  
 (No. : means ID No.)

Project Location Map

## Target Sum Center

Serial No.	Original No. (ID No.)	Name	Serial No.	Original No. (ID No.)	Name
<b>I</b>	<b>I</b>	<b>UMNUGOVI</b>	45	48	Bumbugur
1	1	Bayandalai		49	Ulziit
2	2	Bayan-Ovoo	46	50	Zag
3	3	Bulgan	<b>IV</b>	<b>IV</b>	<b>DORNOGOVI</b>
4	4	Gurvantes	47	51	Erdene
5	5	Mandal-Ovoo	48	52	Delgerekh
6	6	Manlai	49	53	Zamiin-Uud
7	7	Noyon	50	54	Mandakh
8	8	Nomgon	51	55	Saikhandulaan
9	9	Sevrei	52	56	Khatanbulag
10	10	Khanbogd	53	57	Khuvsgul
11	11	Tsogt-Ovoo	54	9041	Ulaanbadrakh
12	12	Khurmen	<b>V</b>	<b>V</b>	<b>SUKHBAATAR</b>
13	13	Tsogttsetsii	55	58	Ongon
<b>II</b>	<b>II</b>	<b>GOVI-ALTAI</b>	56	59	Dariganga
14	14	Erdene	57	60	Naran
15	15	Tsogt	58	61	Bayandelger
16	16	Chandmani	59	62	Erdenetsagaan
17	17	Altai	60	63	Sukhbaatar
	18	Delger	61	64	Tumentsogt
18	19	Taishir	62	65	Tuvshinshiree
19	20	Bugat	63	66	Uulbayan
20	21	Tseel	64	67	Munkhkhaan
21	22	Tugrug		68	Burentsogt
22	23	Sharga	<b>VI</b>	<b>VI</b>	<b>DORNOD</b>
23	24	Tonkhil	65	69	Matad
24	25	Darvi		70	Sumber
25	26	Khaliun	66	71	Khalkh gol
26	27	Biger	67	72	Khulunbuir
27	28	Khukhmorit	68	73	Tsagaan-Ovoo
28	29	Bayan-Uul	69	74	Chuluunkhoroot
29	30	Jargalan	70	75	Bayan-Uul
	31	Guulin	71	76	Bayandun
<b>III</b>	<b>III</b>	<b>BAYANKHONGOR</b>	<b>VII</b>	<b>VII</b>	<b>KHENTII</b>
30	32	Shinejinst		77	Gurvanbayan
31	33	Bayan-Undur	72	78	Bayan-Adraga
32	34	Bayanlig	73	79	Binder
33	35	Bayangovi	74	80	Batshireet
34	36	Bogd	75	81	Norovlin
35	37	Jinst		82	Burenkhaan
36	38	Baatsagaan	76	83	Dadal
37	39	Bayantsagaan	77	9071	Galshar
38	40	Khureemara	78	9072	Bayan-Ovoo
39	41	Gurvanbulag	<b>VIII</b>	<b>VIII</b>	<b>DUNDGOVI</b>
40	42	Jargalant	79	84	Ulziit
41	43	Galuut	80	85	Undurshil
42	44	Erdenetsogt	81	86	Bayanjargalan
	45	Bayan-Ovoo	82	87	Adaatsag
43	46	Bayanbulag		88	Erdenedalai
44	47	Buutsagaan		9081	Saikhan-Ovoo

## Notes

1) Shaded sum is canceled sum.

2) "9\* \* \*" means newly added sum.

## Target Sum Center

Serial No.	Original No. (ID No.)	Name	Serial No.	Original No. (ID No.)	Name
83	9082	Khuld	126	131	Telmen
84	9083	Delgerkhangai	127	132	Tudevtei
<b>IX</b>	<b>IX</b>	<b>UVURKHANGAI</b>	128	133	Songino
85	89	Bogd	129	134	Otgon
86	90	Baruunbayan-Ulaan	130	135	Numrug
87	91	Guchin-Us	131	136	Asgat
	92	Bayan-Undur	132	137	Bayankhairkhan
88	93	Khairhandulaan	133	138	Tosontsengel
89	94	Nariinteel	134	9121	Bayantes
90	95	Bayanteeg	135	9122	Aldarkhaan
<b>X</b>	<b>X</b>	<b>KHUVSGUL</b>	<b>XIII</b>	<b>XIII</b>	<b>BULGAN</b>
91	96	Jargalant	136	139	Teshig
92	97	Galt	<b>XIV</b>	<b>XIV</b>	<b>UVS</b>
93	98	Shine-Ilder	137	140	Undurkhangai
94	99	Tumurbulag	138	141	Tsagaankhairkhan
95	100	Burentogtokh	139	142	Zuunkhangai
96	101	Tsetserleg	140	143	Khyargas
97	102	Arbulag	141	144	Baruuntruun
98	103	Bayanzurkh	142	145	Malchin
99	104	Chandmani-Undur	143	146	Zuungovi
100	105	Tsagaan-Uur	144	147	Bukhmurun
101	106	Tsagaan-Uul	145	148	Zavkhan
102	107	Ulaan-Uul	146	149	Tes
103	108	Renchinlkhunbe	<b>XV</b>	<b>XV</b>	<b>KHOVD</b>
104	109	Tunel		150	Myangad
105	110	Tosontsengel	147	151	Zereg
106	111	Alag-Erdene	148	152	Darvi
107	112	Khatgal	149	153	Altai
108	113	Tsagaannuur	150	154	Uyench
109	114	Erdenebulgan	151	155	Bulgan
	9101	Khankh	152	156	Tsetseg
<b>XI</b>	<b>XI</b>	<b>ARKHANGAI</b>	153	157	Must
110	115	Khangai	154	158	Munkhkhairkhan
	116	Tariat	155	159	Mankhan
111	117	Tsakhir	156	160	Chandmani
112	9111	Chuluut		161	Khovd
<b>XII</b>	<b>XII</b>	<b>ZAVKHAN</b>		162	Buyant
113	118	Shiluustei	157	163	Durgun
114	119	Durvuljin	158	9151	Duut
115	120	Yaruu		9152	Erdeneburen
116	121	Erdenekhairkhan	<b>XVI</b>	<b>XVI</b>	<b>BAYAN-ULGII</b>
117	122	Zavkhanmandal	159	164	Tolbo
118	123	Urgamal	160	165	Tsagaannuur
119	124	Santmargats	161	166	Bulgan
120	125	Tsetsen-Uul	162	167	Deluun
121	126	Ider	163	168	Altai
122	127	Ikh-Uul	164	169	Buyant
123	128	Tes	165	170	Bayannuur
124	129	Tsagaanchuluut	166	171	Altantsugts
125	130	Tsagaankhairkhan	167	9161	Nogoonuur

## Notes

1) Shaded sum is canceled sum.

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