



МОНГОЛ УЛСЫН ЗАСГИЙН ГАЗАР
ЭРЧИМ ХҮЧНИЙ ЯАМ

HEATING SUPPLY OF ULAANBAATAR CITY, PRESENT

**POLICY PLANNING DEPARTMENT
D.OYUNTUNGALAG**

2022.05.20



DISTRICT HEATING IN MONGOLIA



3785 GCal/h
Total generation capacity



3903,8 GCal/h
Users load
2020-2021



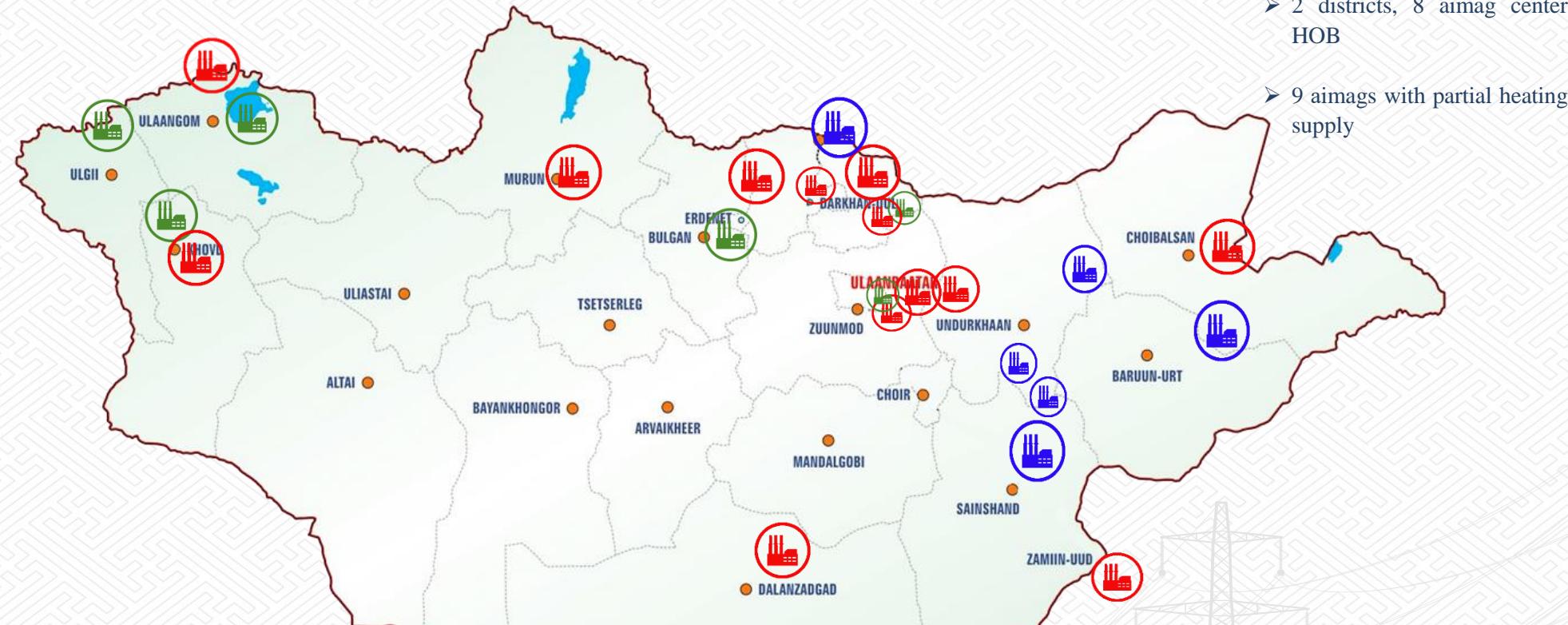
Demand increase
5-8 percent



Capacity use, overload
45%-147%

Nalaikh, Khubsgul, Khovd,
Selenge, Dornogobi, Shariin
gol plants

According to Article 3.1.11 of the Energy Law, “Central heating supply” means the activity of supplying more than 50 percent of the total consumption of urban areas through a network from a combined heat and power source or a single heat source;



Private owned **6** /Bayan-Ulgii, Uvs, Khovd, Oyu-Tolgoi, Zuunkharaa, Bio combinat/

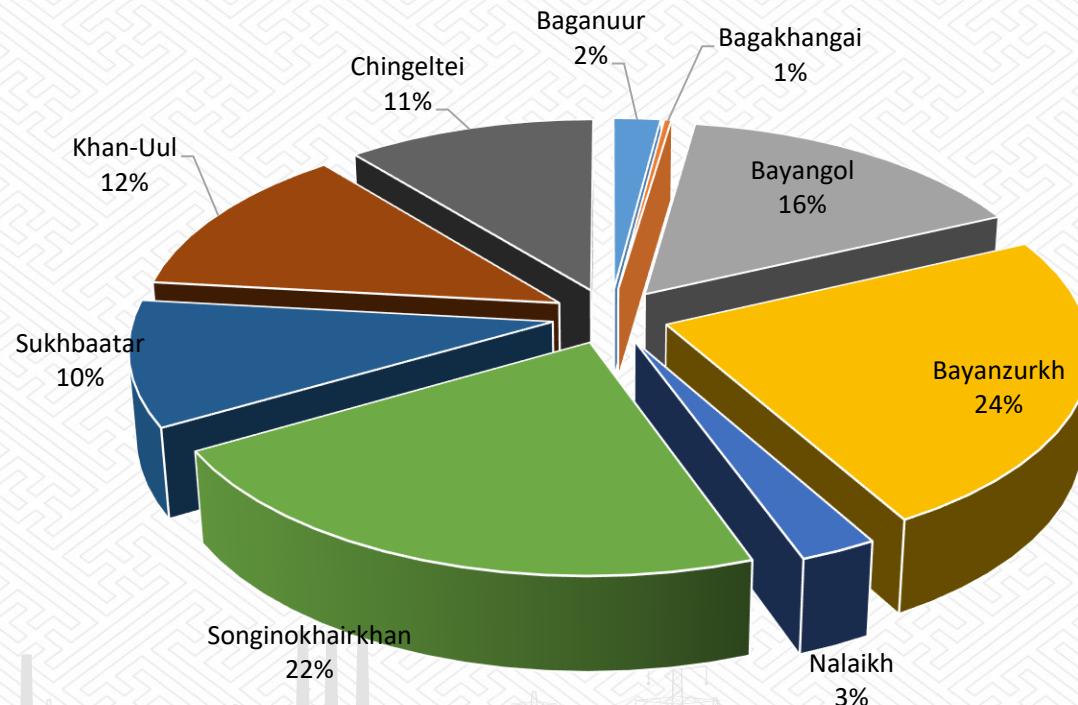
Locally owned (local administration) **6** /Dornogobi, Selenge, Sukhbaatar, Bor-Undur, Berk, Ikh khet/

State property **13** /Darkhan, Erdenet, Dornod, Umnugobi, Nalaikh, Baganuur, Shariin gol, Khubsgul, Khovd, Uvs, Khushigiin khundii, Khutul, Zamiin-uud/

- Capital city, 4 aimag center power plants CHP
- 2 districts, 8 aimag center HOB
- 9 aimags with partial heating supply



As of 2021, 44.7 percent of the population (1,500,000 people) live in Ulaanbaatar, the capital of Mongolia, which accounts for 0.3 percent of the country's territory. 42.8 percent of the total population of the capital city lives in apartments connected to the central heating system, and 57.2 percent live in ger districts.



Number of households

Байшин хороололд амьдардаг өрх



175 445

Гэр хороололд амьдардаг өрх



212 008

Нийт 387 453 өрхийн 54.7% нь байшин хороололд, 45.3% нь гэр хороололд амьдарч байна.

54.7% of total households live in buildings and 45.3% in ger

Нийтийн орон сууцанд



173 526 (44.8%)

Бие даасан тохилог сууцанд



3 898 (1.0%)

Суүцны тусдаа байшинд



109 570 (28.3%)

Монгол гэрт



100 312 (25.9%)

Number of households without any housing

Орон гэргүй өрх, хүний тоо

147 өрхийн 303 хүн





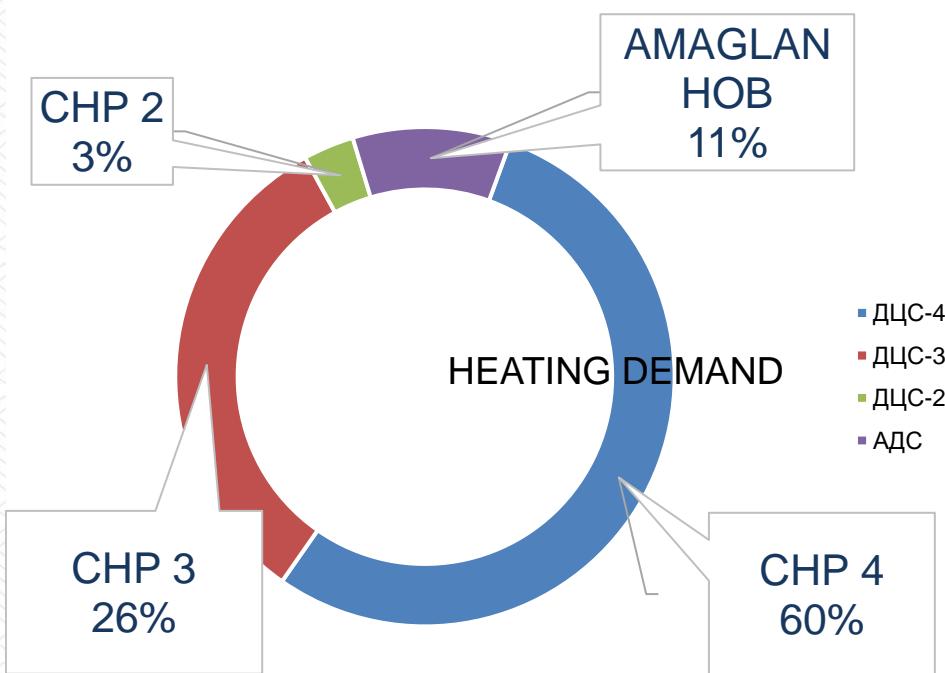
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ULAANBAATAR CITY HEAT SUPPLY



SHARE OF GENERATORS IN TOTAL DISTRICT
HEATING SUPPLY,



TOTAL GENERATION CAPACITY :
2534 GCal/hour



CONSUMERS DEMAND:
2020-2021 **2992 GCal/hour** (-39C)



Generation capacity
2534 Gcal/hour

2534 Гкал/ц

Эх үүсвэрийн
хүчин чадал



Demand 2992
Gcal/hour

2992 Гкал/ц

Холбогдсон
хэрэглээ
2020-2021 он



New users on wait
list 691 Gcal/hour

691 Гкал/ц

Техникийн нөхцөлтэй
хүлээгдэж буй хэрэглээ



-1149 Гкал/ц

Чадлын дутагдал

CHP2

Installed capacity: 60 Gcal/hour
Transmittable capacity 92.9 Gcal/hour
Expected capacity 8 Gcal
Capacity shortage 41 Gcal/hour

ДЦС-2

Хүчин чадал: 60 Гкал/ц
Холбогдсон ачаалал: 92.9 Гкал/ц
Хүлээгдэж буй ачаалал: 8 Гкал/ц
Чадлын дутагдал: **-41 Гкал/ц**

CHP4

Installed capacity: 1525 Gcal/hour
Transmittable capacity 1536.2 Gcal/hour
Expected capacity 406.2 Gcal
Capacity shortage 417.2 Gcal/hour

Amaglan HOB

Installed capacity: 300 Gcal/hour
Transmittable capacity 421.2 Gcal/hour
Expected capacity 108.7 Gcal
Capacity shortage 230 Gcal/hour

ДЦС-3

Хүчин чадал: 300 Гкал/ц
Холбогдсон ачаалал: 421.2 Гкал/ц
Хүлээгдэж буй ачаалал: 108.7 Гкал/ц
Чадлын дутагдал: **-230 Гкал/ц**

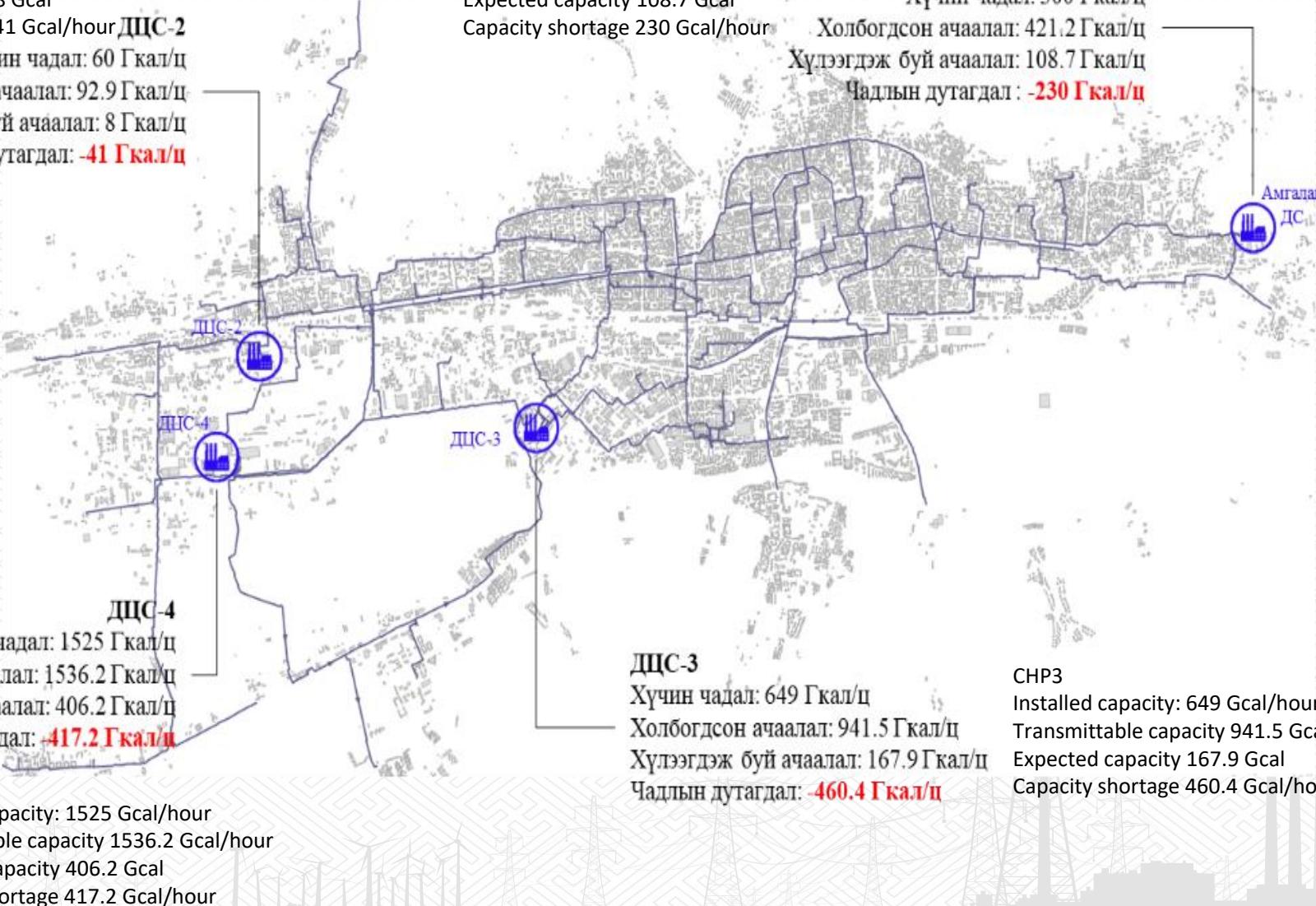
Амгалан ДС

Хүчин чадал: 300 Гкал/ц

Холбогдсон ачаалал: 421.2 Гкал/ц

Хүлээгдэж буй ачаалал: 108.7 Гкал/ц

Амгалан
ДС

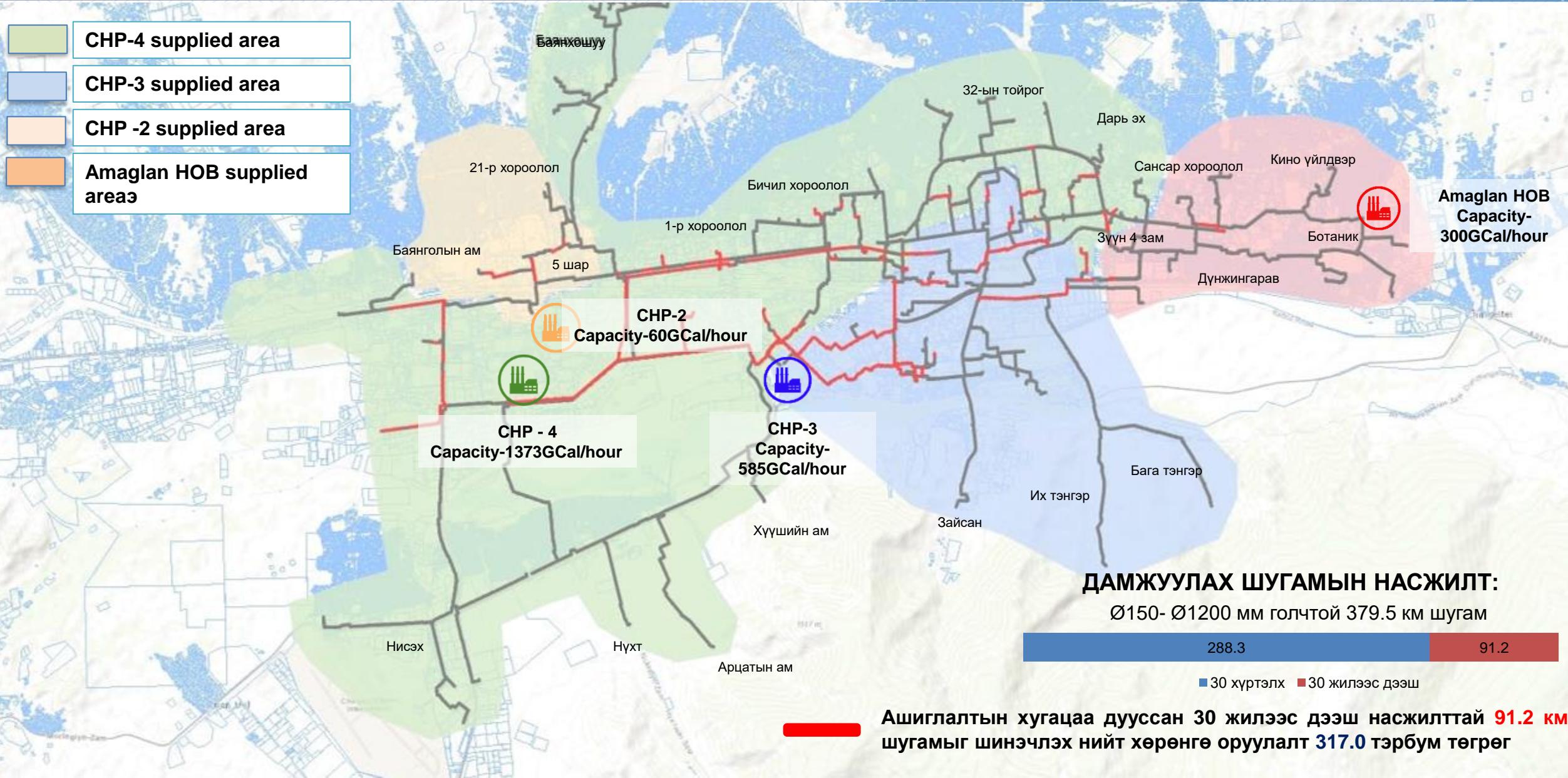


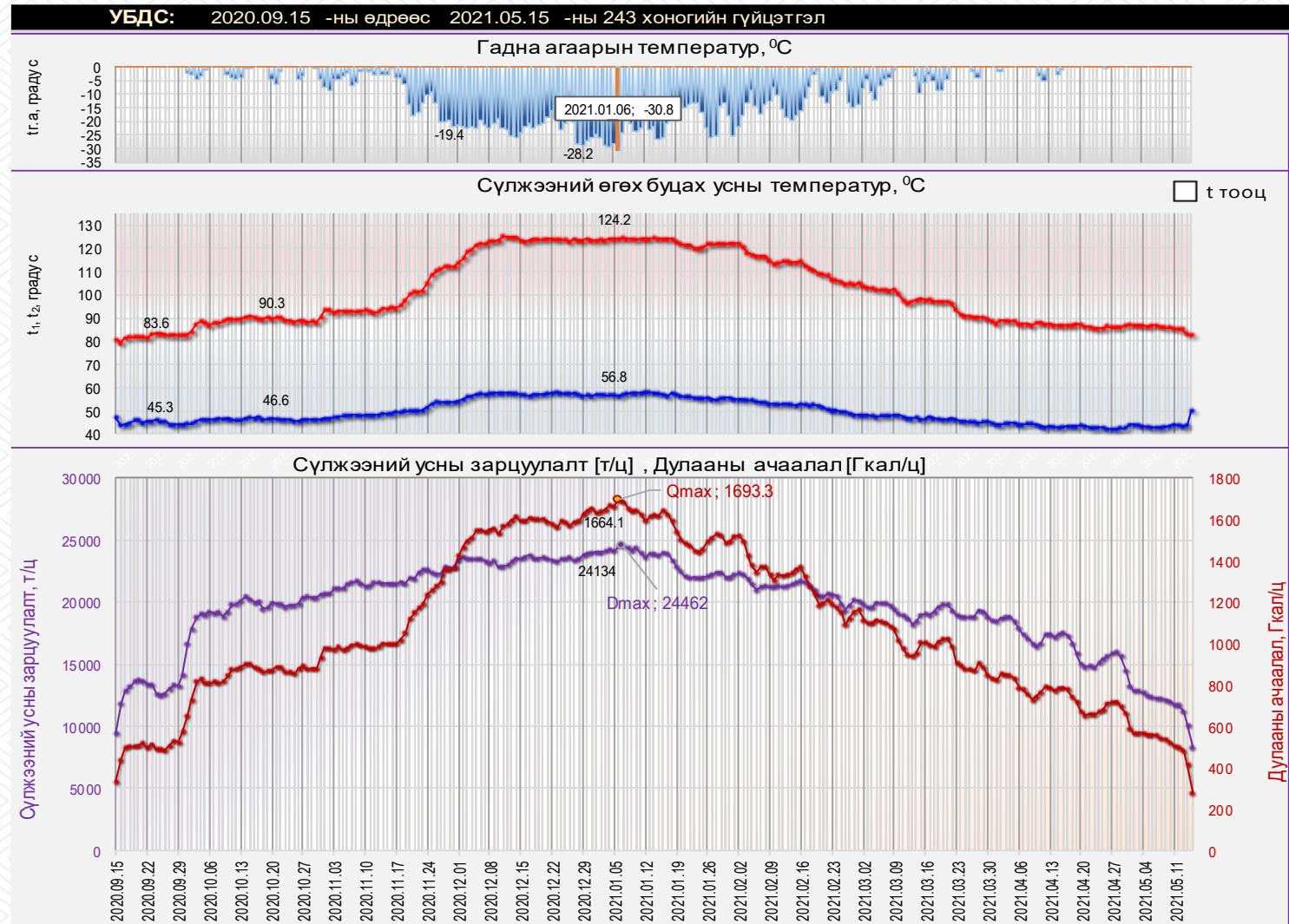


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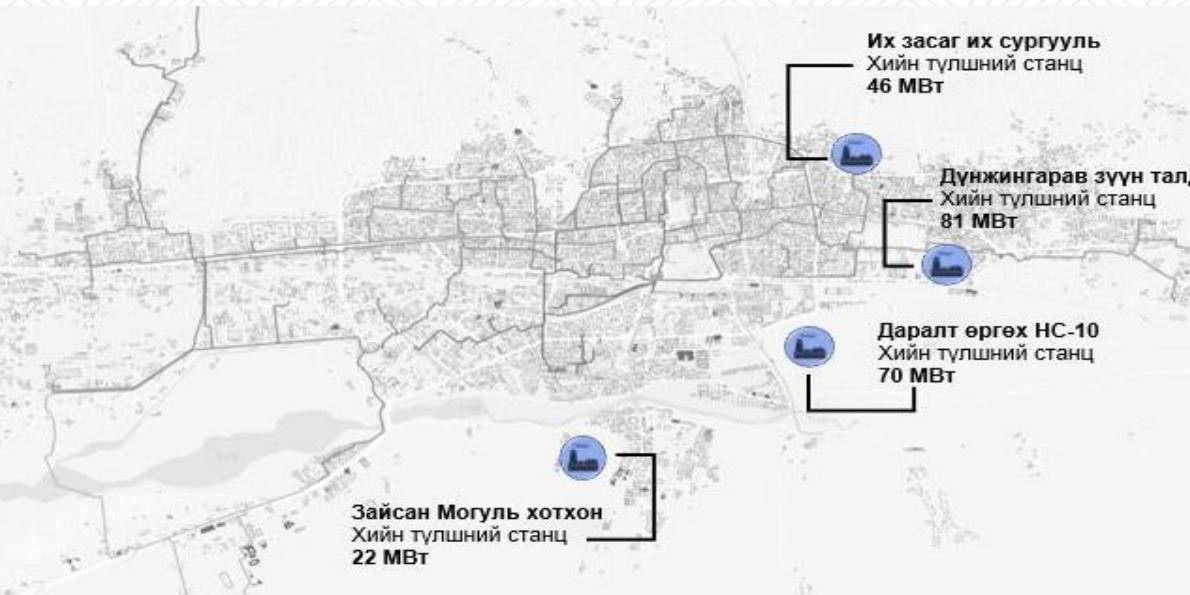
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ULAANBAATAR CITY HEAT SUPPLY





Operation: During the peak load of the 2020-2021 heating season, all boilers, turbines and heating equipment were put into operation without any reserve capacity. Therefore, it is necessary to increase the level of reliable operation of resources, expand and upgrade and install new capacity.



Brief information on projects

Owner	Ministry of Energy
Implementation period	2024-2028
Capacity	219 MW (188 GCal/hour) gas plant
Location	Ulaanbaatar, Bayanzukh, Khan-Uul district
Total cost	95,9 billion MNT
Financing source	
Policy document	New revival policy

Social, economical impact:

Project location, significance:

- Location №1 - 26th khoroo, Bayanzurkh district, HC-10 pressure lifting station to raise from 18 meters to 37 meter height on the 12i main transmission pipe-line from CHP-3 dedicated to cover user in Inkhenger area with demand of 45.5GCal/hour.
- Location №2 – Bayanzurkh district 26th horoo east side of Dunjingarav market, - pressure lifting station to raise from 14m to 55 meter height to cover users part of Bayanmongol subdistrict with 68.1 GCal/hour load, will facilitate 15-20 percent of consumers in the area..
- Location №3 – Bayanzurkh district, 4th horoo, area around Ikh Zasag University – switching 21.9 Gcal/hour load from CHP-3 to Amaglan HOB.
- Location №4 – Khan-Uul district 11th horoo, Mongolian Agricultural University, Mogul town area – pipe-line will allow to connect Zaisan area 6.8GCal/hour demand to CHP-3.

Project implementation stage

Feasibility study and technical design has been performed and approved by the Science technology committee of the Ministry of Energy.

Feasibility study



Detailed technical design



Environmental impact study



Land use permission



Other permissions



Financial closure



Construction contract

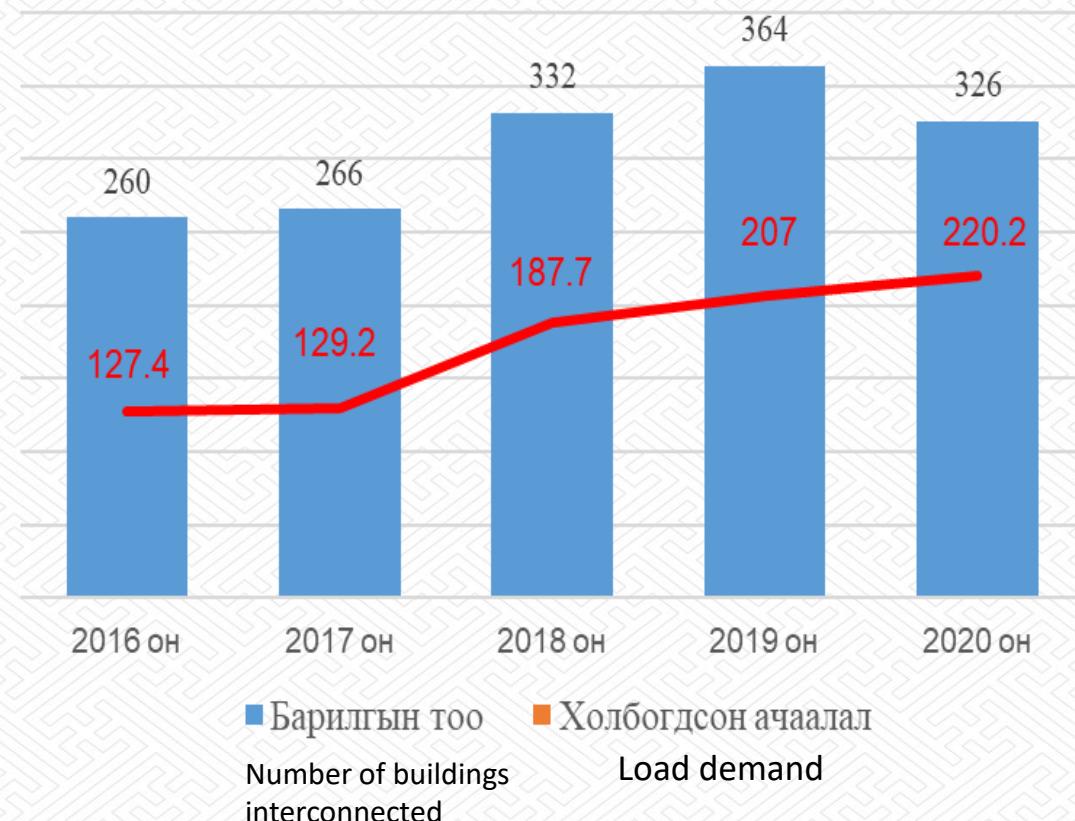




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LOAD DEMAND INCREASE



In Ulaanbaatar, more than 280 buildings with an average annual consumption of 190 Gcal / h are connected to the central heating supply, increasing by an average of 7-8% per year. Currently, 691 Gcal / h is expected to be consumed by 685 companies that have received technical conditions to connect to the city's heating supply system.

According to the draft General Development Plan of Ulaanbaatar until 2040, the total heat load of consumers supplied with heat from the central heating system will be 4704 Gcal/h, the heat load of the partial heat supply will be 476 Gcal/h, and the use of gas stoves and incinerators will be 656 Gcal/h and this heat load will be provided using gaseous fuels, heat pumps, solar sources and heat storage tanks.

No	Major projects and activities to be implemented	Financing	Budget, /billion MNT/
PROJECTS ON IMPLEMENTATION- 4			911.5
1	Capacity upgrade of CHP-4 by 46 MW	Development bank loan	118.3
2	Capacity upgrade of Erdenet CHP by 35MW	PRC soft load 95%, Mongolia state budget 5%	145.4
3	Capacity upgrade of Choibalsan CHP by 50MW	Development bank, State budget	226.6
4	HOB for 10 aimag centers	PRK soft loan	421.2
Financing resolved projects - 2			164.1
5	Ulaanbaatar city heating supply upgrade project	World bank project	116.8
6	Ulaanbaatar city heating system project	EBRD project	47.3
Financing required projects -2			1674.0
7	Amaglan HOB upgrade project 16 MW	Development bank /State budget/	206.6
8	CHP-3 capacity upgrade project 325 MW	RF soft loan	1,467.4
Total cost			2749.6



Brief project information

Responsible organization	Ministry of Energy
Implementation period	2021-2025
Capacity	Electrical 325 MW, heat 370 GCal/hour
Location	Ulaanbaatar, Khan-Uul
Financing	1,467.4 billion MNT
Financing source	RF soft loan
State investment policy	Section 2.3 articles 37,38
Government action plan	3.5.1.3. Ensure Ulaanbaatar's growing electricity and heat consumption and reliable operation of its energy system

Social, economic significance:

- ❖ The installed capacity of the Central Region Unified Power Grid will be increased by 325 MW and the heat supply capacity of UB will be increased by 370 Gcal / h.
- ❖ There will be additional sources of heat for 370 apartments in 120 households in Ulaanbaatar and electricity for 148,000 households.
- ❖ There will be a technical opportunity to provide heat to the expected customers in the city center and around Zaisan.
- ❖ Ensure the growth of electricity in the central region in 2023-2027 (60-80 MW per year).
- ❖ Adopt advanced technology to reduce emissions.

Project implementation stage

Feasibility study is under preparation. Feasibility study expected to be completed by June 2022.

Feasibility study



Detailed design



Environmental impact study



Land use permission



Other permissions



Construction permission



Financing



Contracting





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AMAGLAN HOB UPGRADE PROJECT 116MW



Brief project information

Responsible organization	Ministry of Energy
Implementation period	2022-2024
Capacity	116 MW /100GCal/hour/
Location	Ulaanbaatar, Bayanzurkh district
Financing	66,5 billion MNT
Financing source	Mongolia development bank 85%, State budget 15%
State investment policy	2.1.3 Амгалан дулааны станцыг өргөтгөн Улаанбаатар хотын зүүн бүсийн дулааны хэрэглээний өсөлтийг хангах

Social, economic significance:

- ❖ With a load of $Q_x = 109 \text{ Gcal / h}$ for 145 customers who have been provided with technical specifications, it will be possible to connect about 11,000 households (340 9-storey buildings with 1 entrance).
- ❖ Provides increased consumption. Reliable operation will be improved. The installed capacity will increase.
- ❖ Air pollution reduction.

Project implementation stage

Festivity study is under preparation

Festivity study

Detailed design

Environmental impact study

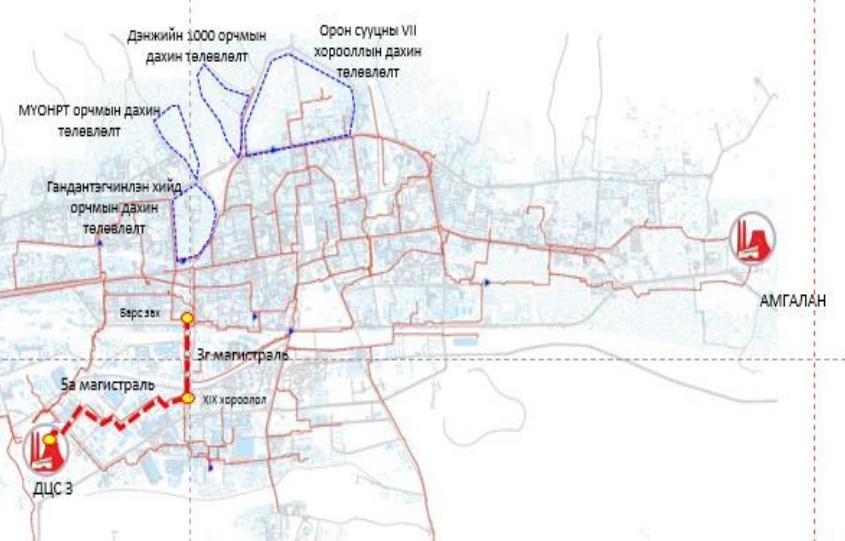
Land use permission

Other permissions

Construction permission

Financing

Contracting



Brief project information

Responsible organization	Ministry of Energy
Implementation period	2021-2025
Capacity	1000 mm diameter 2.8 km pair, 700 mm diameter 1.3 km pair heat transmission network
Location	Ulaanbaatar, Khan-Uul, Bayangol districts
Financing	116.8 billion MNT
Financing source	World bank
State investment policy	Section 2.1 article 72
Government action plan	3.5.3. The construction and expansion of new heat sources in central cities, soums and settlements will be implemented in stages, and the quality and availability of heat supply and comfortable living conditions of the people will be improved.

“ULAANBAATAR CITY HEATING SUPPLY IMPROVEMENT” PROJECT (WORLD BANK)

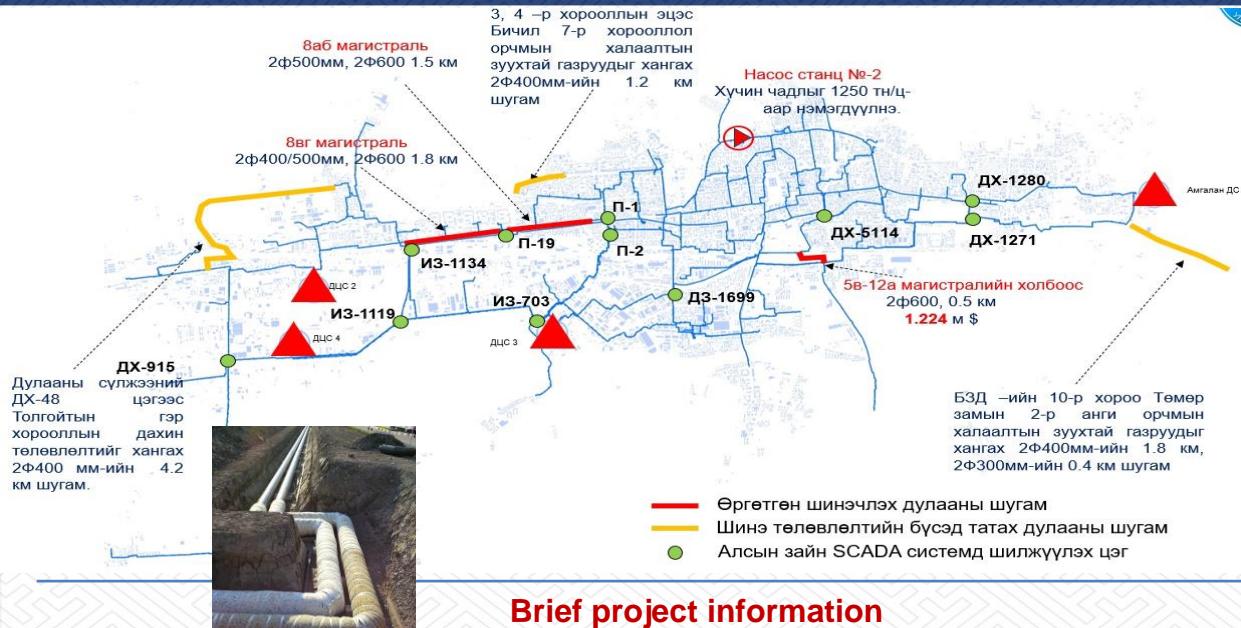
Social, economic significance:

- In the first phase of the project, the capacity of the main heating main line from TPP-3 to the central part of the city will be increased. The 2.8 km double Ø800mm line of the 5a main line from TPP-3 to the Narnii Guur junction will be expanded to Ø1000mm, and the 1.3 km line of the 3g main line from the Narnii Guur junction to the Transport Bureau will be expanded to Ø700mm with a diameter of Ø600mm.
- 9th, 10th, 11th, 12th khoroo of Sukhbaatar district, VII apartment district (hundred households), 11th khoroo of Bayangol district Gandantegchinlen monastery, 7th, 8th, 9th, 10th, 11th khoroo of Chingeltei district Denjiin 1000, 11th khoroo of Bayangol district According to the partial master plan of the MNB, 55 public apartments for 120 families, 20 schools for 1,500 children and 28 kindergartens for 250 children will be able to be supplied with thermal energy.

Project implementation stage 10%

The contractor for the first phase of the project was selected and contracted. Equipment production is underway. Started on May 5, 2022. The contractor for the second phase is being selected.

Festivity study	✓
Detailed design	✓
Environmental impact study	✓
Land use permission	✓
Other permissions	✓
Construction permission	✓
Financing	✓
Contracting	✓



Brief project information

Responsible organization	Ministry of Energy
Implementation period	2021-2024
Capacity	With 14.8 km long pair of heating lines with a diameter of 400 mm, pump station and smart technology
Location	Ulaanbaatar city Songinokhairkhan, Bayangol and Bayanzurkh districts
Financing	47.3 billion MNT
Financing source	28.5 billion MNT soft loan and 18.8 billion MNT grant from the European Bank for Reconstruction and Development
State investment policy	Section 2.1 article 73
Government action plan	3.5.3. The construction and expansion of new heat sources in central cities, soums and settlements will be implemented in stages, and the quality and availability of heat supply and comfortable living conditions of the people will be improved.

Social, economic significance :

- Төсөл хэрэгжсэнээр 3,4-р хорооллын эцэс, бичил 7-р хорооллол орчим, Толгойтын эцсийн буудлаас 21-р хороолол хүртэл, БЗД-ийн 10-р хороо Төмөр замын 2-р анги орчимд 120 айлын 350 нийтийн орон сууцыг төвлөрсөн дулаанд шинээр холбох, шинээр баригдсан шугамын трассын дагуух бага, дунд чадлын 276 халаалтын зуухыг буулгах техникийн боломж бүрдэнэ.
- Төслөөр, 25 дугаар эмийн сангаас Драгон хүртэлх 3.8 хос.км Ø400 мм-н дулааны шугам, 1 иж бүрдэл насос станцын чадлыг өргөтгэж, Толгойт, 3, 4 дүгээр хорооллын эцэс, Төмөр замын 2 дугаар анги орчмын шинэ төлөвлөлтийн бусэд 11.0 хос.км Ø400 мм-н дулааны шугам шинээр татна.
- Хяналт, удирдлагын SCADA систем, ухаалаг тоолуур сууринуулснаар дулааны сүлжээний хяналт мэдээлэл сайжирна.

Project implementation stage 40%

The completion of the first phase is 100%. The selection of the contractor for the second phase of the works is underway.

- | | |
|----------------------------|---|
| Festivity study | ✓ |
| Detailed design | ✓ |
| Environmental impact study | ✓ |
| Land use permission | ✓ |
| Other permissions | ✓ |
| Construction permission | ✓ |
| Financing | ✓ |
| Contracting | ✓ |



**THANK YOU FOR YOUR
ATTENTION!**