

ASSESSMENT OF SOCIO-ENVIRONMENT BENEFITS OF CMM IN MONGOLIA

Require for CMM consumption

To reduce Coal consumption in Ulaanbaatar city and its Nalaikh district

- Reduce expense of households and commercial facilities
- Reduce air pollution in Ulaanbaatar city
- Reduction GHG (CH₄ gas) emission in Mines

Overview of fuel consumption in Ulaanbaatar city and it's district Nalaikh

Nalaikh:

- ✓ Private houses or stoves – 9000
annual coal consumption -37800 tn
- ✓ Heat only Boilers - 24GCal/h
annual coal consumption -33800 tn

Total-71600 tn

Ulaanbaatar city:

- 130000 households –
Annual coal consumption -540000 tn
- 100,000 vehicles-
Annual coal consumption $2200 * 100000 = 220000$ tn
- Heat only Boilers-
Annual coal consumption $2200 * 100000 = 32350$ tn

Total- 792350 tn

Coal price and it's volume in the expenses

- Price of Nalaikh's coal- 35...45 U\$/tn
 - Price of Baganuur's coal- 32...40 U\$/tn
 - Heating cost
 - In heat-only boilers... 24 u\$/GCal
 - Coal price is 60% of heating cost.
 - A household spends annually:
 - ~ 4.5t (coal)* 45000₮ = 250000...300000₮ (260 US)
 - Heat expenses rate is 30% in total expenses Schools, Health Facilities (Municipal Organizations).
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Air Pollution Ulaanbaatar city and it's Nalaikh district

Air pollution is increasing because of coal burning in inefficient stoves

Smog concentration esimating experiment

	Chemical name		Stove-2	Average
1	CO	mg/m3	1998.656	1918.98
2	SO ₂	mg/m3	2.3	19.37
3	NO _x	mg/m3	2.8815	12.44
4	Ash in gas	mg/m3	1531.8	1222.88
5	GHG, CO ₂	mg/m3	59028.75	53030.2



CMM Parameters

- Methane rate:
 - Kuzbass coal mine 25-30m.cub/tonne
 - Nalaikh coal mine 5 m.cub/tonne
 - Net Heating Value- 10000 kcal/kg
 - Density 0,72 kg/m³
 - Possibility of high pressure compression
 - Price is three times low than coal's
 - 4 times less Hazardous Gas Emission than Coal
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Methane Annual Demand

In Nalaikh district

- o Householders - $1400\text{m}^3 * 9000 = 130,000\text{m}^3$
- o Heat-only boilers 11,000,000 m³

TOTAL- 11,1 million m³(8136.0 tn)

coal-2,2 mln tn

In Ulaanbaatar city

- o Householders - 182,000,000 m³
- o Auto transport - 3,500,000,000 m³
- o Heat Plants- 45,000,000

TOTAL-185 million m³

Environmental benefits

Reduction of GHG emission

- Per household: CO₂ - 2.2 tn/year
NH₄ - 1.1 tn/year
- Per GCal heat: CO₂ - 0,33 tn/year
NH₄ - 0.1 tn/year

in Nalaikh district

1. Households: CO₂ - 19800 tn/year; NH₄ - 9900 tn/year
2. HOB's: CO₂-66000*0,33=21780 tn;NH₄-66000*0,1=6600tn

in Ulaanbaatar

1. Households: CO₂-130000*2,2=286000 tn; NH₄ -143000 tn
 2. HOB's: CO₂-275000*0,33=90000 tn;NH₄-275000*0,1=27500tn
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Economical benefits of CMM Consumption

- a) heat-only boilers will reduce their heating cost by 16000₮ or 14\$/Gcal
- b) Householder will economy 100000₮ or 86 u\$ in fuel expenses
- c) Vehicle fuel expenses-500000₮ or 460\$/year

in Nalaikh district

- 1. heat-only boilers- $66000 * 14 = 924000$ \$
 - 2. Household's - $9000 * 86 = 774000$ \$
- total-1,9 million**

In Ulaanbaatar

- 1. heat-only boilers- $275000 * 14 = 3,8$ mln \$
 - 2. Household's - $130000 * 86 = 11,2$ mln \$
 - 3. Vehicles- $80000 * 460 = 36,8$ mln \$
- total- 51,2 mln \$**
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THANK YOU
