

# **NEW OPPORTUNITY OF CLEAN-EFFICIENT ENERGY**

**D.ALTANCHIMEG -SPECIALIST, MINISTRY OF ENERGY,  
CONSULTING ENGINEER, Ph.D**

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## INEFFICIENT SITUATION IN THE ENERGY SECTOR

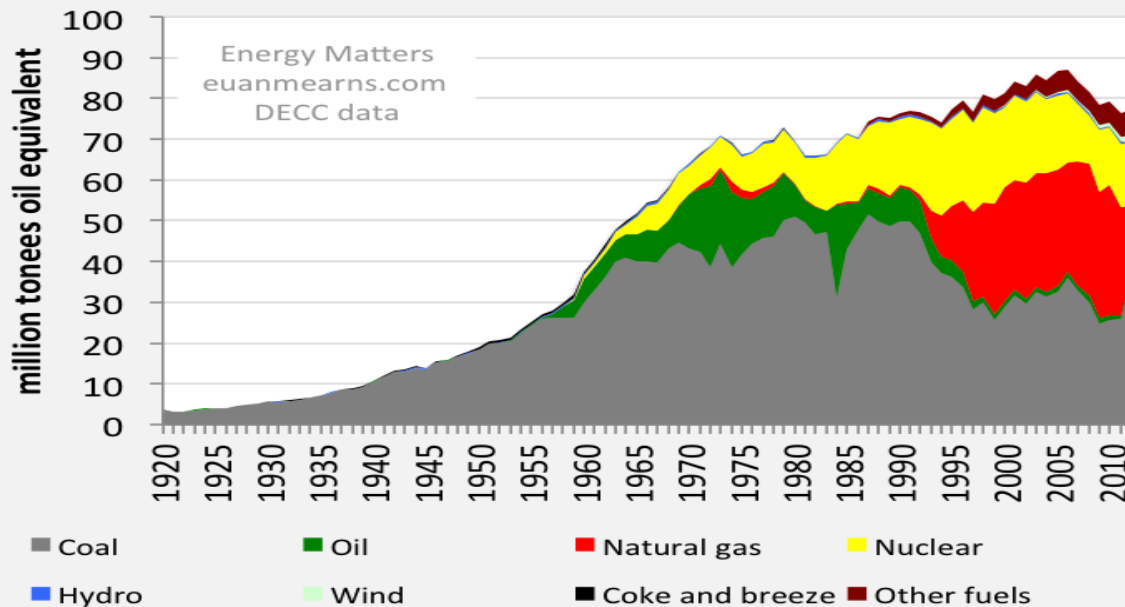


- Dependence on one fuel, but coal mines are unprofitable
- Outdated and old technologies and less efficiency of energy sources
- Energy regulation is not flexibility
- Energy transmission losses are about 30 percent
- Small and remote users deliver the high cost electricity and heat to sell cheap than real price
- High investment and financing for building of infrastructure and energy sources, which it's not enough investment
- Deficit of energy companies have 65.4 billion in 2013

# CONVERSION OF FUEL AND ENERGY BALANCE

Example: UK produced 363 T Wh electricity on 2010

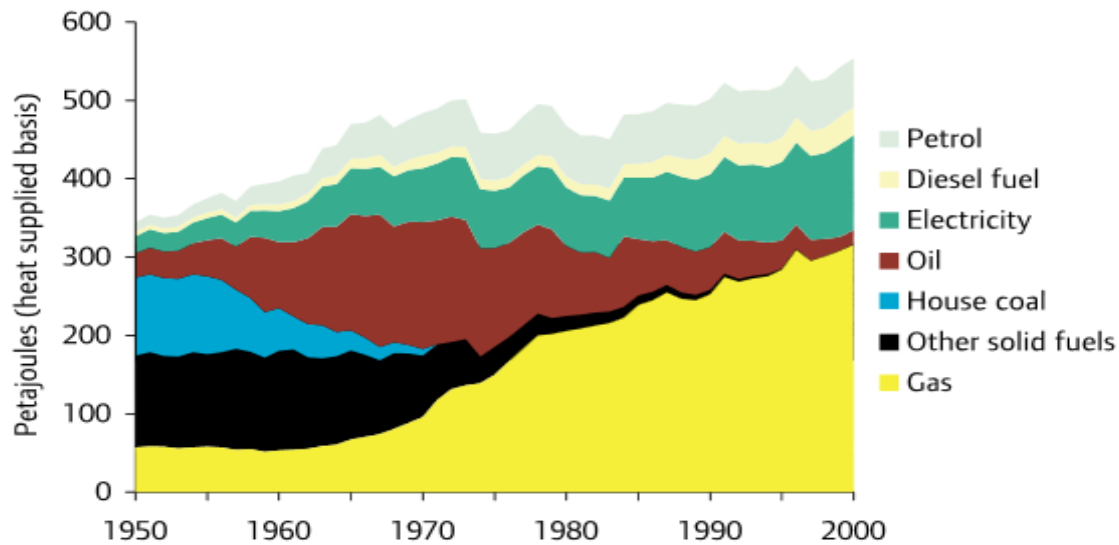
**Fuel input to UK electricity generation**



	1990	2010
Natural gas	0,05	<b>40,4</b>
Coal	67,0	<b>32,3</b>
Nuclear	19,0	<b>17,6</b>
Wind	0	<b>2,9</b>
Hydro	2,6	<b>1,7</b>
Other	0	<b>3,4</b>

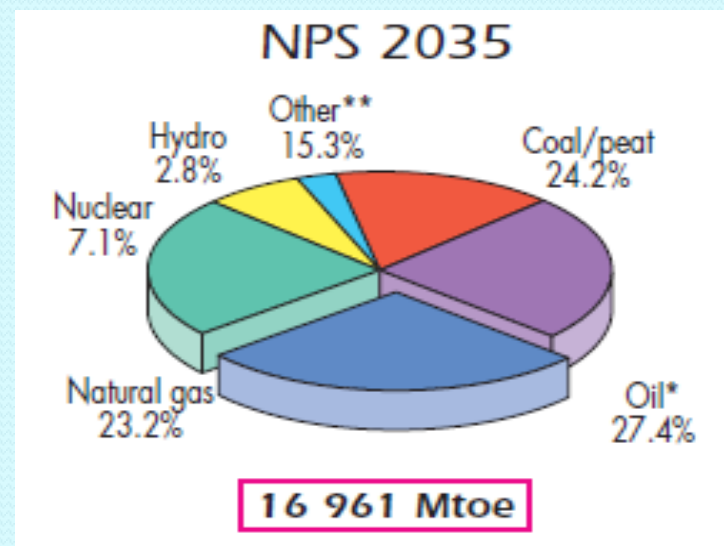
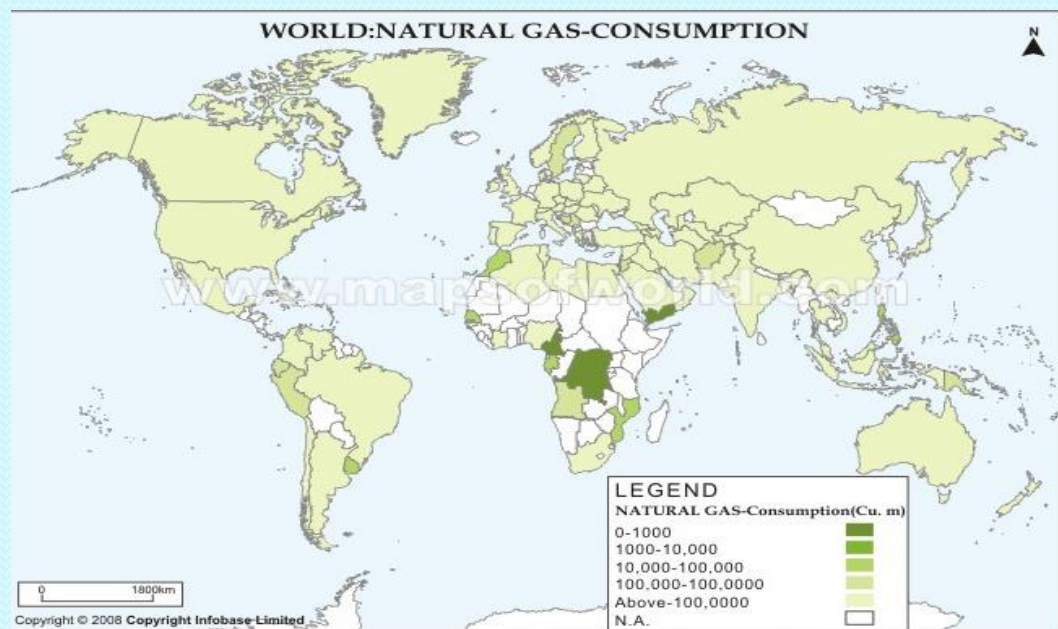
# DEVELOPMENT CLEAN ENERGY

- In 1970, London became not use coal for heat and house energy



	2010
Natural gas	56%
Electricity	24%
Petrol, diesel and oil	20%

# NATURAL GAS TO POWER THE BOOMING ENERGY ACTIVITY



In 2035, will use 3934 million ton natural gas, it's increase 44 percent than 2010.

# DEPERENCES BETWEEN GAS FUEL

Has sulfur, corrode pipe, not bottled

Liquefaction from  $-0,5\text{ C}$   
In winter cannot use by pipe

Liquefaction from  $-162\text{ C}$   
Can use by pipe and container



CO, H<sub>2</sub>, SO<sub>2</sub>, NO



C<sub>3</sub>H<sub>8</sub>, C<sub>4</sub>H<sub>10</sub>



CH<sub>4</sub>



Coal gasification



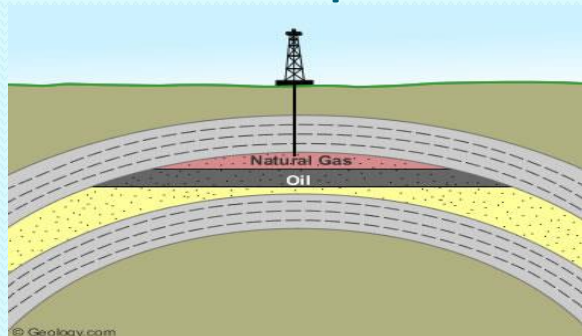
Oil refining



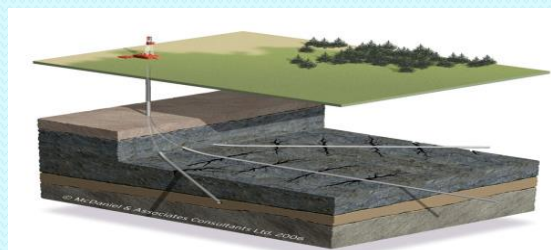
gas production from coal,  
oil and shale field  
Coal chemical plant

# Тархац, олдоц сайтай

Олборлох



Газрын тосны ордоос үүсэлтэй байгалийн хийн бие даасан орд

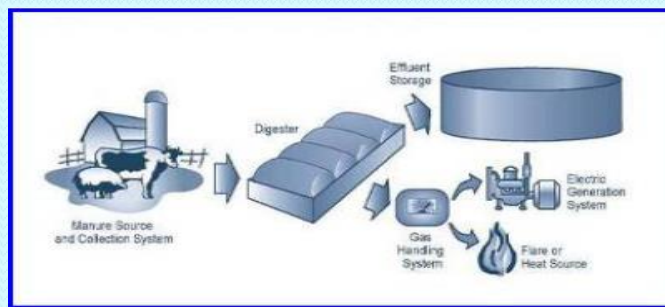


Нүүрс, занар зэрэг органик хатуу ашигт малтмалын ордоос /нүүрсний давхаргын метан, занарын хий/

Гарган авах



Хүрэн нүүрс боловсруулах химийн үйлдвэр /нийлэг байгалийн хий/



Хог хаягдал, бохирос гарган авдаг /био хий /

## CLEAN FUEL AND ENERGY

### COMPARISON 1000 MW POWER STATIONS

	Sub-bituminous	Lignite	Oil	Natural gas	Nuclear
Efficient power plant	42%	40%	44%	57%	34%
Fuel use , τ/a	2 000 000	7 600 000	1 289 768	920 000	20
CO <sub>2</sub> , τ/a	5 200 000	6 600 000	4 496 314	2 200 000	0
SO <sub>2</sub> , τ/a	3 800	4 300	3 134	0	0
NO , τ/a	3 800	4 300	3 134	0	0
PM , τ/a	600	640	470	0	0
Radiats , κBк/a	80	90	0	0	52 800
Ash , τ/a	150 000	950 000	2 000		



#### Natural gas power plant :

- No ash, not emission SO<sub>2</sub>, NO, PM, not use water
- Small size, not big land use







# CHEAP ENERGY

Heat /by fuel/	Calorie	Price fuel	Price of 1 Gcal energy , tugrig	Comparison	Friendliest
Нүүрс	3200 ккал/кг	80000 төг/тн	29410	1,17 хэвийн	Утаатай, үнстэй
Боловсруулсан нүүрс/коксон түлш	4000 ккал/кг	150000 төг/тн	39215	1,57 татаастай	Утаатай, үнстэй
Цахилгаан халаалт	-	86 төг 1 кВт.цаг	100031	4,0 өндөр	-
Шингэрүүлсэн газрын тосны хий	10700 ккал/кг	2300 төг/кг	231146	9,2 өндөр	Өвөл царцамтгай, Даралтанд шингэрдэг
Дизель	8568 ккал/л	1750 төг/л	219961	8,8 өндөр	-
Байгалийн хий <sup>1</sup>	8600 ккал/м <sup>3</sup>	200 төг/м <sup>3</sup>	24988	1,0 хэвийн	-

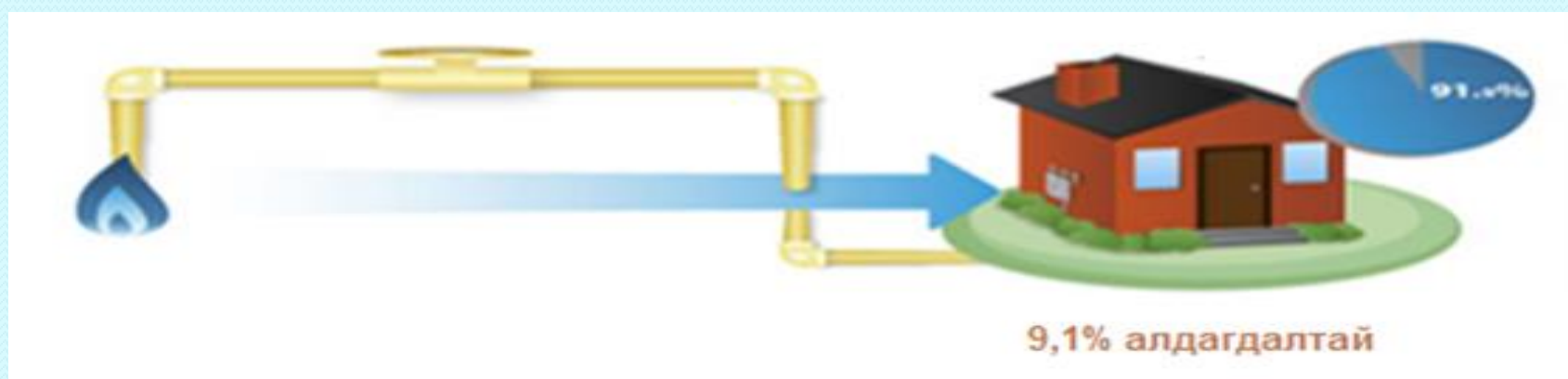
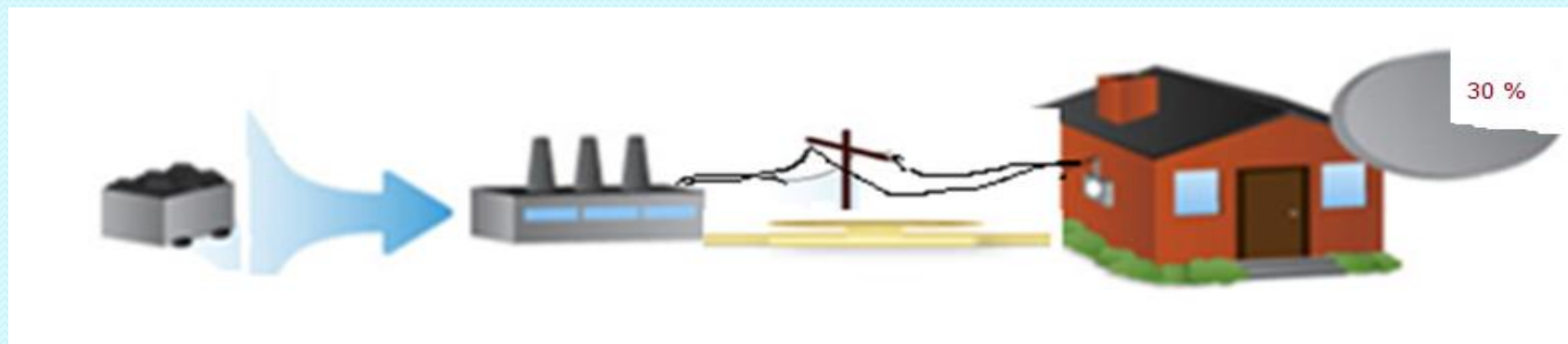
# TECHNICAL AND TECHNOLOGY PROGRESS

Energy sources	Investment by capacity (Euro/kW)
Coal PP	1100-1400
Nuclear PP	1100-1600
<b>Natural gas PP</b>	<b>500-700</b>
Wind PP	900-1100
Hydro PP	1400-2100



- Full automated, little labour ,
- Expressway ignition, good regulation
- Standby and emergency mode
- **2** time lower investment than traditional PP and infra

# FLEXIBLE ENERGY SUPPLY



# FLEXIBLE ENERGY SUPPLY

World natural gas trade, 2012. In bcm



- Can solve independent energy needs
- Can solve local energy supply

# NATURAL GAS CAN INCREASE EFFICIENCE OF THE MONGOLIAN ENERGY SECTOR

FROM WHERE  
NATURAL GAS



- Natural gas production / Canada, USA, Australia, Korea, researchers made study at coal and shale field, and estimated 5- trillion cm prognosis resources /
- Process brown coal /30 billion m<sup>3</sup> natural gas will export to China, WB started the pre-feasibility study of SNG plant /
- Import natural gas /2 trillion m<sup>3</sup> natural gas resources found at Irkutsk, Russian can export natural gas from it/



IT IS TIME FOR IMPLEMENT OF  
NATURAL GAS DEVELOPMENT IN  
THE MONGOLIAN ENERGY SECTOR

# Байгалийн хийг эрчим хүчинд ашиглах орчинг бүрдүүлэх талаар хийж буй ажлууд



- Эрчим хүчний тухай хуульд байгалийн хийн эрчим хүчний талаар нэмэлт оруулах /байгалийн хийн хангамжийн нэгдсэн систем/
- Байгалийн хийг ашиглах, барилга байгууламжийн зураг төсөл боловсруулах, барих, тоног төхөөрөмжийн аюулгүй ажиллагааг хангахтай холбоотой норм дүрэм, стандартыг боловсруулах
- Боловсон хүчин бэлтгэх
- Эрчим хүчний салбарт шинэ зохион байгуулалт, менежмент, аж ахуйн үйл ажиллагааны тогтолцоог бүрдүүлэх
- Байгалийн хийн эрчим хүчийг хөгжүүлэх мастер төлөвлөгөөг боловсруулах, эрчим хүчний бодлогод тусгах

# THANK YOU FOR YOUR ATTENTION

