

Dig Deeper

# MONGOLIAN ECONOMY

Energy today and tomorrow

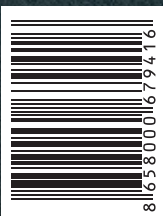
Find footing, go far

Power's back on

MAY 2016 №10 (112)

[mongolianeconomy.mn](http://mongolianeconomy.mn)

# It's Always Sunny in Mongolia





THE BUSINESS AND ECONOMICS MAGAZINE PUBLISHED EVERY  
FORTNIGHT IN BOTH ENGLISH AND MONGOLIAN

# Mongolian Economy

[www.mongolianeconomy.mn](http://www.mongolianeconomy.mn)

Phone: 94092904, 88006228, 70115476, 70115477

E-mail: [info@mongolianeconomy.mn](mailto:info@mongolianeconomy.mn)



**Wolf Petroleum**  
Mongolian Oil Exploration Company

[www.wolfpetroleum.net](http://www.wolfpetroleum.net)

ASX: **WOF, WOFO, WOFOA**

# Hunting for Mongolia's Multi Billion Barrel Oil Fields ▶▶▶





**FOUNDER, EDITOR-IN-CHIEF:**

D. Bekhbayar / 9999-4248

**FOUNDER, DEPUTY EDITOR:**

I. Otgonjargal / 8800-6228

**MARKETING MANAGER:**

D. Barianjav / 9409-2904

**ENGLISH EDITOR:**

O. Tuvshin

**TRANSLATOR:**

B. Enkhmunkh

**JOURNALISTS:**

B. Enkhtsetseg

B. Uuriintuya

G.Orkhon

TS. Elbegsaikhan

**DESIGNER:**

Sh. Oyundari

**Address:**

Chingeltei district, 1st khoroo  
Peace Avenue, Express Tower 1101  
Ulaanbaatar, Mongolia

Central Post Office, P.O. Box 2762,  
15160 Ulaanbaatar, Mongolia  
URL: [www.mongolianeconomy.mn](http://www.mongolianeconomy.mn)  
E-mail: [info@mongolianeconomy.mn](mailto:info@mongolianeconomy.mn)  
Tel/Fax: 976 - 7011 5476

**Selling points:**

- Internom bookstore
- Minj plaza
- Altantulkhuur bookstore
- Nomin supermarkets
- Max supermarkets
- BTSI supermarket
- Az orchlon bookstore
- Bileg store
- Grand plaza
- Metro mall
- Sky supermarket
- Ulaanbaatar store
- Max mall

[facebook.com/  
Mongolian.Economy](https://facebook.com/Mongolian.Economy)

[twitter.com/  
EconomyMongolia](https://twitter.com/EconomyMongolia)

[youtube.com/user/  
MongolianEconomy](https://youtube.com/user/MongolianEconomy)

**Economy**

**8 Energy today and tomorrow**

Ten percent of the total territory can be used for wind energy, and the Land of the Eternal Blue Sky experiences more hours of sunlight per year than any other country.

**9 D.Zorigt: Mongolia to be energy exporter**

Interview with the Minister of Energy and Member of Parliament

**12 Find footing, go far**

Sun, wind and water. This is the triple play package which Mongolia has to offer to the global renewable energy movement.

**14 Infographics on key energy data**

For developing Asian economies to continue their economic transformation and continue closing the gap with developed economies, they must increasingly stress the quality of education.



**15 D.Delgertsogt: After cashmere and mining, energy**

Interview with the State Secretary of the Ministry of Energy

**16 Accelerating trends**

The driest and hottest region on earth, the Sahara comprises eight percent of the world's land. Solar farms covering 0.3 percent of the Sahara could power all of Europe.

**17 Power's back on**

Mongolia produces about 80 percent of its energy consumption needs domestically, with the remainder met through imports. However, there is still unmet need.

**18 S.Otgonbayar: Massive energy debts cleared**

Interview with the Head of the Energy Regulatory Commission.

**20 Your conservation, my consumption**

A key lesson from the last few years is that Mongolia did not take advantage of the favourable opportunities in the commodity super cycle on the international market.

**22 Energy Regulation Outcomes**

Infographics on recent changes in the energy sector



**Find footing, go far**

One of the many undertakings aimed at improving energy accessibility in Mongolia is the adoption of the State Policy on the Energy Sector in 2015. *page 12*



**D.Delgertsogt: After cashmere and mining, energy**

"we are nearing the day when [...] energy becomes an export brand of Mongolia." *page 15*



**Power's back on**

Pricing of electricity for industrial uses is cheaper than places such as Qatar, Kazakhstan, Russia and South Korea, but higher than the developed Asian countries of Singapore, Malaysia and Thailand. *page 17*



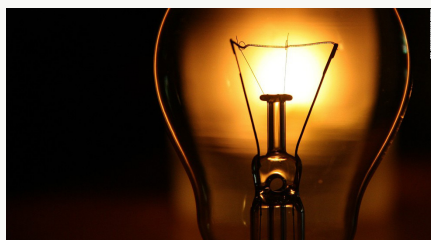
**S.Otgonbayar: Massive energy debts cleared**

"The sector performed without a deficit in 2015." *page 18*

---

## Editorial Note

The energy sector is the pillar of our country. However, there had not been much talk about the sector until recently. Given that Mongolia imports mostly from Russia, people living in settled areas wonder when electricity rationing will take place, while many residents of rural areas have no option other than to light candles and lanterns. Provinces with diesel-powered stations used to struggle to overcome winters, as instances freezing-cold kindergartens, schools and offices are often heard about. This sector knows what it is like to be shackled by debt. However, the situation has been improving gradually over



the last 25 years.

Today, Mongolia's energy sector has been changed drastically and has learned to stand on its own two feet. According to the annual report of the Economic Policy and Competitiveness Research Center, Mongolia still ranks at the bottom of 14 regional countries. Nevertheless, major developments have taken place in this sector, particularly over the past four years.

Talking about a country's development without talking about energy and infrastructure is unimaginable. Hence, the energy sector is becoming one of the determining factors of the nation's development.

Let's mention some figures that indicate the

achievements made in this sector. Mongolia's consumption of imported energy as a share of total energy consumption has dropped to 20 percent. Furthermore, the government has set a goal of becoming a net exporter of energy by 2030. Experts and many related studies hold that Mongolia has the potential to ensure domestic demand by harnessing renewable energy and exporting surpluses across the border. Another advantage is that Mongolia shares a long border with China, the largest consumer of energy. Thus, foreign interest in investing in the energy sector is increasing. Readers can get more information about these and other topics from the articles in this issue.

Last year, the energy sector operated profitably for the first time in history as a result of legal regulations made in recent years. Therefore, this sector, which received subsidies from the state budget for many years, is now standing on its own two feet, allowing at least one burden to be lifted from the state budget. Of course, this does not mean the sector has become fully developed – it is only just dragging itself out of the mud. The foundation for further development over the next two decades has been firmly set.

This issue of the magazine includes details and information on topics such as energy policy, investment, human resources, quality, capacity, technology, potential of renewables and global trends.

We are delighted to provide you with an opportunity to get a better understanding of the energy sector. ■

---

## Mongolia

### State-owned energy enterprise

The government has approved the establishment of the “Khuvs gul Thermal Plant” state-owned enterprise through investment from state budget.

Khuvs gul’s thermal plant and networks were put into operation in September 2014, providing 1223 buildings in the provincial capital, including over a thousand households. Currently, “pre-operative management” is responsible for the soon-to-be restructured the plant.

### Taxes

A list of research and production equipment related to renewable energy to be exempted from customs duty and VAT was approved by the government. As of today, Mongolia has an installed energy capacity of just under one gigawatt, and sources of renewable energy account for about four of percent electricity generated. This loosening of tariffs is part of the broader aim of supporting renewable energy in Mongolia.

### Licensing

The Energy Regulatory Commission issued licences to construct five wind and six solar energy projects. The capacity provided by new renewable sources is expected to increase in the coming years, with investment of up to USD one billion.

### Report

A report on the “Renewable Energy Readiness Assessment of Mongolia” developed by the International Renewable Energy Agency and the Ministry of Energy was released in March.

In addition to the report, several seminars and roundtable meetings regarding renewable energy’s level of development, development policy, human resource capacity and technical base were held. The two sides cooperated to identify the challenges facing economic growth in the scope of using renewable energy resources, introducing renewable energy technology and increasing its consumption. They also conducted research on eliminating the challenges to developing the measures to resolve energy issues. In other words, the report has become a guiding

policy, defining Mongolia’s opportunity for accelerated economic growth by using untapped renewable energy resources.

### Renewable energy



Last year, parliament approved the State Policy on Energy, amendments to the Law on Energy, amendments to the Law on Renewable Energy and the Law on Conservation of Energy. Furthermore, the assembly has set an ambitious goal of increasing the share of renewable energy in total energy production to 20 percent by 2023 and to 30 percent by 2030. The adoption of these policies creates a favourable legal environment for the developing of public-private partnerships to substantially increase the use of renewable energy.

The private sector and other domestic and foreign companies are working to implement large-scale projects to build a hydropower plant, wind parks and solar energy farms at the southern and south-eastern parts of the country, which has great potential for renewables.



### Development

Significant developmental, expansionary and modernisation works have been done in the

energy sector over the last four years. The “Energy 2012-2016” report developed by the Ministry of Energy stated that nearly all central and local thermal power plants made investments and expansions during the period. Each plant updated their equipment a certain amount by using their own funds, domestic and foreign loans, aid and investment. One of them is Thermal Power Plant IV, which implemented its “Energy Efficiency-II” project between 2013 and 2015.

The government of Germany spent a total of EUR 7.2 million on long-term soft loans for this project within the framework of financial cooperation. It was estimated that cost of the project’s investment can be fully recovered within 4.5-7.8 years.

### Quality management

Mon-Energy Consult has introduced international quality standards in its operations by receiving ISO 9001 quality management system certification in the areas of energy, construction project design and development and consultation services. The administration of the company noted receiving the ISO 9001 stamp of approval is no small task and praised the achievements of the company’s employees.

### World news

#### Renewable Energy Buyers’ Alliance



This newly established US organisation will seek to facilitate deals between companies and renewable energy suppliers. Big names such as Amazon, Facebook, Microsoft and General Motors, among 60 other companies, are supporting this collaborative effort by environmental groups. Other than lowering greenhouse emissions, being able to secure predictable costs unaffected by fluctuations in fossil fuel prices is a key objective. “Every time Americans use the Internet or do laundry, ▶

it's more likely that wind energy made it possible," said Tom Kiernan, CEO of the American Wind Energy Association. "Innovation has driven down the price, resulting in phenomenal growth in demand for wind energy from corporate buyers, in large part because it saves them money. Signing a long-term wind contract provides these buyers with a package of benefits – low cost, fixed-price, clean energy – that's easy to say 'yes' to."

The inaugural summit of the alliance will be held at Microsoft's Redmond campus May 18-20, and the Director of Energy Strategy of the company said the ultimate goal is to have all electricity supplied to the grid come from renewable sources.

### Oil glut shrinking



With international sanctions lifted, Iran has been ramping up oil production, even faster than expected. Still, the surplus oil in the global market is shrinking, according to the International Atomic Energy Agency. The IEA also reported that the Islamic Republic increased production by 300,000 barrels month-on-month in April, producing 3.56 million barrels per day. China imports 800,000 barrels per day from Iran, accounting for more than a fifth of Iranian exports. The lessening of the surplus is greatly in part due to disruptions in Canada and Nigeria. A series of attacks on Nigeria's oil infrastructure and raging wildfires in Canada, expected to continue throughout May, are to blame. OPEC's April output rose by 330,000 barrels per day in April to 32.76 million barrels per day, with Saudi Arabia steadily producing 10.2 million barrels per day. Non-OPEC production fell by 125,000 barrels per day to 56.6 million barrels per day. Despite the overall increase in supply, a higher increase in global demand means analysts expect the price of oil to be on the swing.

### Russian economy

The Russian rouble fell by 127 percent in 2015, and GDP fell by 3.7. Economic sanctions and the oil price crash play a large role in the current recession in the country. Exports of oil and natural gas comprise about half of the government's revenue. Though less than energy, exports of metals also contribute to Russian exports. Falling commodity and oil prices have hampered Russian state budget revenues. Russia's budget was developed on the assumption of USD 50 barrels of oil, and prices have been below that figure this entire year. With inflation around 7.4 percent and the dramatic depreciation of its currency, real wages have fallen, adding to the host of problems. The number of Russians living below the poverty line increased by two million since 2014 to reach 20 million. "The current situation on the global oil market shows how the modern structure of the economy is necessary [for] sustainable economic growth with an emphasis not on the market of raw materials," stated Russian Prime Minister Dmitry Medvedev.

### UK coal

In the second week of May, the amount of electricity generated from coal fell to zero on several occasions in the United Kingdom. In 1882, the world's first centralised public coal-powered generator was fired up in London, and it is said that these were the only times since the dawn of coal power that such has happened. Amber Rudd, Her Majesty's Principal Secretary of State for Energy and Climate Change, has vowed to phase out all coal power by 2025, offsetting the need for energy with new gas and nuclear plants. It would make the UK the first country to do so if successful. Nevertheless, it is still the first country to have a set date on the goal of eliminating coal. Although it is a fossil fuel, natural gas emits around half as much carbon as coal. Some consider it a "bridging" fuel until a carbon-free future of energy. "In the short-term, if gas displaces coal it's a climate win," state Christian Hunt of Carbon Brief, an energy policy and climate change research organisation. "But after 2035, in this modelling, gas use needs to fall."

### Greener Portugal



On May 8, Germany made news due to the fact that in some regions, energy prices turned negative, meaning that customers essentially got paid to expend electricity. Ten days later, The Guardian reported that Portugal supplied 100 percent of its energy needs from wind, solar and hydro power for four consecutive days, or 107 hours to be exact. "We are seeing trends like this spread across Europe - last year with Denmark and now in Portugal," said Oliver Joy, a spokesman for the Wind Europe trade association. "The Iberian peninsula is a great resource for renewables and wind energy, not just for the region but for the whole of Europe." In 2015, wind provided 22 percent of electricity, and all renewables combined provided 48 percent in Portugal. As for other EU nations, in 2015, Denmark supplied 42 percent of electricity through wind power, 20 percent in Spain, 13 percent in Germany and 11 percent in the UK.

### Shortages in Africa

Across 36 African countries, just two-fifths of people have access to a reliable supply of energy throughout the day, according to a new study by research network Afrobarometer. Boggled down by insufficient capacity, poor reliability and high costs, the energy infrastructure in Africa is still problematic, with 25 nations in sub-Saharan Africa facing "a crisis," according to The World Bank. Overall, 625 million people are without power in sub-Saharan Africa alone: 68 percent of the population, according to the International Energy Agency. The continent accounts for 13 percent of the world population, but only 4 percent of energy consumption. The 48 countries that make up sub-Saharan Africa generate roughly the same amount of power as Spain. ■



Since four years ago, thermal energy generation capacity increased by 37 percent, reaching 2,921 Gcal

## Infrastructure

# Energy today and tomorrow

BY TS.ELBEGSAIKHAN

Mongolia has inspired the envy of the world for many years with its energy reserves. However, up until today, energy is still imported, and power restrictions still occur.

So, how much energy reserves do we actually have? Hydropower alone has the potential to generate 6.4 thousand MW. Currently, the total installed power capacity of the nation is only one thousand MW. Ten percent of the total territory can be used for wind energy, and the Land of the Eternal Blue Sky experiences more hours of sunlight per year than any other country. Mongolia is in the top 15 of countries by coal reserves and has plenty of resources

that can be exploited for energy, such as crude oil, shale and uranium.

Although Mongolia has plenty of resources, it is not possible for all of it to be absorbed domestically. Current infrastructure satisfies 80 percent of total energy demand, and the domestic production capacity is increasing year by year. Very soon, by 2021, production is expected exceed demand.

Just four years ago, domestic production capacity was 800 MW. Since then, thermal energy generation capacity increased by 37 percent, reaching 2,921 Gcal. Today, 332 soums and villages of Mongolia have been connected to the

centralised grid and have a constant supply of power.

Energy consumption is growing with each passing year. Compared to 2012, the number of electricity consumers has increased by 26 percent and the number of thermal energy consumers by 54 percent. This rapid increase would have caused energy imports to increase, had it not been for the accompanying growth in domestic production. There is no need to worry about increases in consumption for the next four to five years, as the capacities of Thermal Power Plants III and IV was increased by 50 MW and 123 MW, respectively. As a result, the 400 million kWh of electricity ▶

supplied from Russia was reduced to 312 million kWh last year. The electricity import expenditure of the central energy system reached nearly MNT 51 billion in 2014, but fell to MNT 29 billion last year.

The overall goal is to become energy independent. Thermal Power Plant V, the Tavantolgoi Power Plant, the Shivee-Ovoo Power Plant and the Eg River Power Plant projects will play a crucial role in realising this task. The renewable energy industry especially is leading the charge.

**Production pushing out imports**

Mongolia’s integrated energy system is divided into four regions: central, Altai-Uliastai, western, eastern and southern. Of these, the installed energy capacity of the central network is relatively higher than the others. Thermal Power Plant IV alone has 700 MW of capacity and bears the main burden. As for the other regions, energy imports account for a high percentage of consumption, though substantial efforts have been made to reduce the energy imports of these regions. For instance, the electricity provision of the soums of Khanbogd and Bayan-Ovoo of the Umnugobi region, which belongs to the southern regional energy system, are now provided by the central energy system after the commissioning of the 220 kV Mandalgovi-Tavantolgoi-Oyutolgoi power transmission line two years ago. In addition, the 110 kV line of Tavantolgoi-Dalanzadgad provides energy to Umnugobi’s provincial capital and 10 other soums.

As for the eastern regional energy system, the provincial capital and a few centres of soums of Sukhbaatar province are being supplied by the central energy system in order to ensure supplies to major mining outfits. Also in order to reduce the energy imports by remote soums from Russia and China, energy is being supplied domestically by increasing the reliability of Choibalsan Thermal Power Plant. The eastern regional energy system provides energy to the consumers of Dornod and Sukhbaatar provinces. In 2012, the total consumption from the system was 137.5 million kWh and increased by 35 percent in 2014 to reach 184.7 million kWh.

The western region energy system, obliged to supply energy to three western provinces, provides energy from the Durgun Hydropower Station and imports

energy from Russia and China since it has no large-scale, self-sufficient power plant. In any case, a memorandum of understanding to build a 60 MW power plant in Ulaangom city of Uvs province was signed between Baruun Mongol Energy LLC and Mongolian-German joint SaxEnergy Mongolia during the working visit of the Minister of Industry, D.Erdenebat, to Germany at the end of last year. With the establishment of this power plant, the western provinces will no longer need to import energy.

**Trends**

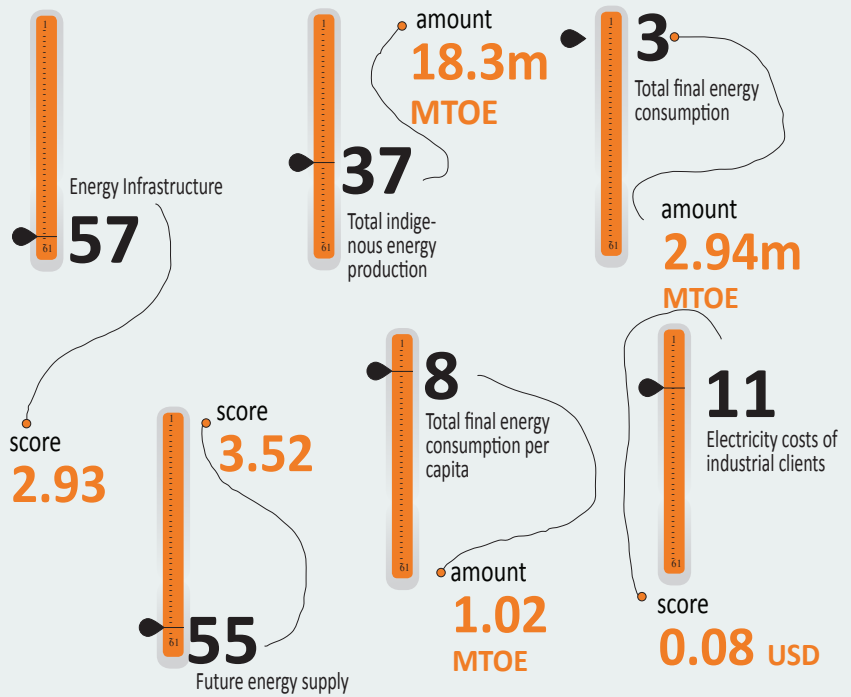
The energy sector has an improved legal environment and has worked to implement concrete short-term goals between 2012 and 2016. The state policy on energy was approved, and the direction of future energy production has been defined.

During an energy sector administrative consultation held on the 22nd of April, State Secretary of the Ministry of Energy, D.Delgertsogt said: “It is right to produce value-added products by using coal and abundant resources of renewable energy, and create a cross-border infrastructure corridor. I am confident that this corridor will play a major role in creating a Northeast Asian integrated energy network.”

Russia and China are known as the eternal neighbours in Mongolia. Mongolia’s is an advantageous geopolitical location connecting Asia and Europe. It is a favourable environment for becoming an exporting country in the near future.

In addition, a favourable environment to introduce competition in the market will be created when Mongolia attains energy surpluses. The market today is a monopsony (single-buyer market). Creating competition means prices become more competitive. ■

Mongolia was included among the 61 nations studied in the Global Competitiveness Report 2015-2016. Below are Mongolia’s scores and ranking in the categories of the report.



\*MTOE = million tonnes of oil equivalent

## Policy

# D.Zorigt: Mongolia to be energy exporter

BY I.OTGONJARGAL

*Our magazine sat down with Member of Parliament and Minister of Energy, D.Zorigt, to talk about legal reforms, the progress of major energy projects, investment and development over the past four years and, most importantly, the issue of becoming a net exporter of energy.*

**- How much has the legal framework of the energy sector changed over the past four years? What significant changes have been made?**

- The Ministry of Energy has conducted active operations to improve the regulatory framework. As a result, amendments were made to the Law on Energy and Law on Renewable Energy in June of last year. The sector now also has a guiding state policy on energy until 2030. In addition, The Law on Energy Conservation was ratified by last year's spring session of the legislature. It is an important law which has laid the foundation for energy conservation and efficiency throughout the country. I believe that the barriers to creating a renewable energy industry have been eliminated. Hopefully, the expected results will be visible in the coming years. The most immediate example is that the energy sector worked without a deficit for the first time in last year.

**- The energy sector has many issues with debt and receivables. How are these issues being resolved?**

- The government has been regulating pricing in the energy sector. In doing so, it has been adhering to a policy to link prices with the income of households and not to excessively increase the expenses of entities. The reasons for this may have been noble, but it led to a difficult financial situation for companies operating in the sector, causing them to operate under a deficit for many years. Due to the deficits, major debts and receivables were in the tens of billions. If such a situation had continued for a prolonged duration,



the sector would have faced the risk of collapse. It was necessary to amend the above mentioned laws, and changes such as the indexing of the pricing system and support for renewable energy and energy capacity were made in July of last year. The sector has operated profitably for the first time in the past ten years. The debt accumulated over the three-year period of 2012, 2013 and 2014 exceeded MNT 100 billion. This debt has been cleared.

As for debts and receivables, energy companies' payables to coal mines, railways and other suppliers have significantly decreased. This positive performance will hopefully continue in the future.

These changes mean taxpayers' money can go to other sectors, instead of subsidising the energy sector.

**- Although the above mentioned changes are being made to the legal framework, the state is still regulating prices. What can't pricing be set by the market?**

- Most importantly, the state is setting balanced prices in the interests of consumers. Today, the rates for domestic consumption of households are cheaper than costs of production. Companies are producing one kWh for MNT 132 and selling it for MNT 120. They are offsetting this deficit through prices for commercial entities. Every household uses electricity at subsidised prices, which will be gradually phased

out through regulations and indexing. We cannot do this when the economy is difficult for families and salaries are not rising.

Another reason why the sector operated profitably was because we were able to save considerably on expenditures. The amount of imported energy was reduced; the expenditures of plants and salary bonuses were restricted. We saved on costs, but also had to raise prices slightly.

**- You said that the amount of imported energy was reduced. When will Mongolia be able to become energy independent? ▶**

► We are importing 20 percent of our electricity from the two neighbours. The import price is relatively high – MNT 180-200 per kWh at the moment. The domestic cost is MNT 132.

We are implementing several projects to wean dependence on imported energy. Projects such as TPP-V, the Baganuur power plant, Tavan Tolgoi and the Eg River hydropower plant can be named. Significant progress has been made on these projects in the last two years, and some plants be turned on this very year.

**- The financing of the Eg River hydropower plant was resolved. Is the construction work going to begin this year?**

- The Eg River hydropower plant plays an important role of adjustment in the energy sector. This plant must displace the energy imported from Russia by producing during peak hours. We decided to build this plant by grants from China. Negotiations are ongoing, however.

**- Our northern neighbour has shown a little discontent at the establishment of the Eg River hydropower plant. Would you please provide some clarification to our readers about this issue?**

There is a necessity to impart the correct understanding about the environmental impact of the Eg River hydropower plant on Lake Baikal on the Russian side. The northern neighbour is expressing certain amount of protest. A meeting will be held May 22-24 to reach a mutual understanding. Environmental experts of the two sides will participate in the meeting to negotiate.

**- As the minister seeing overseeing the Eg River hydropower plant's start of development, which has been stalled for years, can you confidently say that this work will continue after the elections?**

- The Eg River hydropower plant is one of the most important projects included in the state policy on the energy sector. Mongolia must build this plant regardless of which political party controls government.

**- How is the construction of Thermal Power Plant V progressing?**

- Important agreements such as concessions, energy procurement and other deals have been completed. Now only two issues remain: licensing the company that is going to build the plant and coming up with the initial pricing for electricity. Secondly, there is some dispute on the

land issue. The state took land owned by an entity, for which the city administration must provide compensation.

**- Although the economy is in a tough situation, the energy sector has developed significantly in recent years. How is investment in this sector?**

- Last year, investments amounting to nearly MNT one billion were made in the energy sector, more than triple what was made from 2008 to 2012. Enormous works have been done. Expansions and upgrades were made to every operating plant. Electricity transmission and distribution lines were put up. Ring energy networks are being installed encircling Ulaanbaatar. On top of it, the Amgalan TPP was built. Proposals to construct new sources of energy in Mongolia have been put forth frequently over the past two years. We are attracting much interest from foreign investors in this regard, as Mongolia has vast resources of coal, wind and solar energy, and we border the world's largest consumer of energy.

Also, the sector's legal and business environment is relatively improving. Proposals to build plants, in particular, export oriented plant to export energy in the regional level are coming a lot. There are many proposals to build many sources of solar, wind and water energy. Many licence-holders have developed feasibility studies and begun preparations. Our great ambition is to have Mongolia transition from an importer to an exporter. Development policies and objectives for the next two decades are aimed at accomplishing this. The energy sector has enormous potential to diversify and change the structure of the economy. I hope that the coming governments work actively in this field.

**- The costs of renewable energy being so much higher than other forms cause problems. How is this issue regulated by the new legal environment?**

- The Law on Renewable Energy and amendments to the law set high rates supportive of the production of solar, wind and hydro plants. In other words, an entity using electricity will pay MNT 4-8 per hour depending on the region. Through this, we will close the price difference of currently operating wind parks. Construction of two wind parks and a few solar farms are beginning preparatory works this year in relation to the new legal regulation.

**- Mongolia's energy sector used to**

**receive financial support from donor organisations during difficult times. What has happened to these kinds of supports?**

- We are very grateful to donor countries and international organisations that supported our sector for over 20 years. We were able to provide reliable energy with the help of many governmental projects of countries such as Japan, Germany and other EU nations, China and South Korea. Many of the above mentioned projects are still on-going.

As the energy sector started to operate profitably, we became able to pay these loans on time. Even when the sector operated under deficits, we still repaid loans on time. We do not have loan debt, and loan repayment capacity is increasing.

**- Can the sector work profitably until 2030?**

- The state policy on the energy sector will be implemented in two phases. The first phase will be from 2015 to 2023, and the second from 2024 to 2030. We have set the goal of becoming an exporting country in the second phase. In order to achieve this goal, we have to start studying new potential sources of energy and negotiate with countries interested in buying power from Mongolia. We entered into negotiations with the government of China and its energy agencies last year. As a result, a feasibility study to build the export-oriented 9200 MW Shivee Ovoo power plant alongside 4000 MW of renewable energy sources is being developed, which should be completed by October or November of next year. Mutually beneficial cooperation and business dialogue will continue. This will be our first major project. Secondly, feasibility studies on three power plants based on coal regions with a capacity of 2000-3000 MW have been approved. These are export-oriented and only at the approval stage. This is just the start. A lot of time is required in building such large-scale plants.

**- Has the financing of these projects been resolved?**

- The government will not spend any funds. It will just give permission, levy taxes and make labour regulations. These projects will be built through private sector investments. A single export-oriented plant will contribute much to the local budget.

Mongolia is also negotiating to join the Northeast Asian energy grid. ■

## Renewable energy

# Find footing, go far



BY B.UURIINTUYA

Currently, Mongolia ensures 20 percent of energy demand through imports. This number will continue to increase unless the much-talked-about energy projects are implemented, as consumption is growing along with the population. “We managed to complete the expansion quickly, and installed capacity of the plants was increased,” stated Director General of the Department of Strategic Policy and Planning at the Ministry of Energy, P.Tovuudorj. “For example, TPP-III’s 50 MW and TPP-IV’s 123 MW can fuel growth until 2019. If consumption continues to grow in the future, there is no option other than importing more energy.”

The Director of the Institute of Finance and Economics of Mongolia, D.Batjargal, said: “There can be no development if there are no roads and electricity. How is manufacturing going to develop without reliable sources of power?”

One particular study stated that the world faces the risk of energy shortages around 2050. As for Mongolia, such a risk already exists given growth of power consumption and dependence on imported energy. However, the situation has not deteriorated that far yet. One of the many undertakings aimed at improving energy accessibility in Mongolia is the adoption of the State Policy on the Energy Sector in 2015. This policy developed in accordance with international trends and documents states that energy issues are the primary focus, as energy means the base infrastructure of economic development. Although it is a bit too early to evaluate the results of the policy right now, it has set goals on improving energy efficiency. One of them is the development of renewable energy.

Within this scope, 80 percent of the USD one billion loan from China is to be allocated to the energy sector in order to move forward with the Eg River hydropower plant project, which has been stalled for years. The “Salkhit” wind farm can be clearly seen from the valley where the new international airport is being built. These are indications that Mongolia is gradually joining the era of renewable energy.

## Healthy economy and opportunities

According to a study by the World Health Organization, four-fifths of urban dwellers are breathing polluted air, and air pollution has increased by eight percent between 2008 and 2013, with coal being the heaviest polluter.

Sun, wind and water. This is the triple bundle which Mongolia has to offer to the global renewable energy movement. The renewable energy readiness assessment report developed by the Ministry of Energy of Mongolia in cooperation with the International Renewable Energy Agency shows that Mongolia has the capacity to provide a second wind to the global renewable energy sector. The assessment determined Mongolia’s renewable energy resources to be 15 thousand tWh (terawatt-hours), which is enough to meet Northeast Asia’s energy consumption up until 2030, according to P.Tovuudorj, who stated: “Our biggest advantage is that we have enough energy resources. Besides coal, we have a significant amount of uranium resources, ranking highly in the world. In addition, we have renewable energy resources and a relatively vast territory.” It has been

quite a while since the initiative to establish an Asian integrated energy grid, which will supply energy to Northeast Asia by using these advantages, was first proposed. Although it was thought to be just a dream, the Ministry of Energy announced that the first steps to realising this dream have been taken. During a 2016 conference on energy cooperation held in Beijing, representatives of globally leading power transmission companies State Grid Corporation of China, South Korea’s KEPCO, Japan’s Softbank and Russia’s energy grid PJSC ROSSETI signed a joint memorandum of understanding on a framework for cooperation on research and planning to promote an interconnected electric power grid spanning Northeast Asia. Mongolia has an important role in this project. The basic concept of global power grid integration in Northeast Asia will be based on the Gobi region’s renewable energy project Gobitec. Thus, officials informed that the Japanese side has established Clean Energy Asia LLC to conduct research. A quarter of the world’s energy consumption is concentrated in Northeast Asia. In addition, major economies of Asia have friendly relations with Mongolia. Furthermore, countries interested in joining the Asian Super Grid, particularly Japan and South Korea, get 100 percent of energy raw materials through imports. Now, Mongolia plans to carry out works to develop a basic concept of studies in cooperation with the ADB. “There is an opportunity to enter the market,” stated P.Tovuudorj. “Firstly, it will be economically efficient to do so. Secondly, the energy sector will be able to ensure its reliable operation. However, Mongolia must pass through the two neighbours in order to enter the Northeast Asian energy market.”

## Salkhit and beyond

Few people in Mongolia do not know some general information about the “Salkhit” wind farm, a pioneer in the renewable energy sector of the country.

Operations at the wind farm are going smoothly. The government is buying the energy produced by the farm for about 10 cents per kilowatt-hour. The Ministry of Energy let us know that the government, which created a debt issue for the private entity that built and operated the wind farm, is now paying as they should. One key issue is whether Mongolia can absorb the investments being made into this popular sector. The main hindrance is financial capacity and technical expertise. You would think that the tariff law would help develop the renewable energy sector, ▶

▶ but the some experts of the sector say that it is limiting opportunities to develop sustainably in the long run, because the payment for Salkhit's 50 MW is still being paid, although quite reluctantly.

China is leading the world in investments made in the renewable energy sector. Authorities are focusing on the level of pollution endangering the urban populace. Economic sanctions on Russia forced Mongolia's northern neighbour to shift their attention to Asia. In addition, the fall of oil prices has dealt a heavy blow to the Russian economy. The two neighbours' positive attitude towards renewable energy should benefit Mongolia geopolitically and geographically. For example, China is building a major energy transmission lines in its southern and south-eastern parts of the country. From Mongolia's southern border, it is 1200 km to the port of Tianjin, while it would be 4000 km to the south of China from provinces such as Xinjiang. Such a market awaits Mongolia.

**Potential risks**

The energy sector is directly connected to national security. Energy is a product that cannot be efficiently stored, as production, transmission, distribution and use of energy all happen simultaneously. If the price of energy is cheap, it contributes to the development of other key sectors. Some believe that state budget financing is more appropriate for this sector, while the trend in Mongolia has been to utilise concessions or financing through public-private investments. Officials explain that the private sector will bear the risks and that it will not cause pressure on the budget. However, international examples show that it could bring huge risks in the long run. There are countries that have gone bankrupt at the macro-economic level, rather than developing, due to excessive guarantees in concessions. One example is the Philippines. Today, this country's population is rapidly growing with over 100 million, ranking 12th in the world by population. According to a Goldman Sachs' forecast, this country is included in the "Next Eleven" category and is on track to becoming one of the top 20 economies in the world by 2050. However, the main reason why this country becomes one of the examples of a failing energy sector is tariffs. The price of electricity per kWh ranges from 25 cents in highly developed Japan, while it is around 13 cents in the US on average. In the Philippines, the price is 30 cents. The government cooperated too heavily with the private sector and issued guarantees way

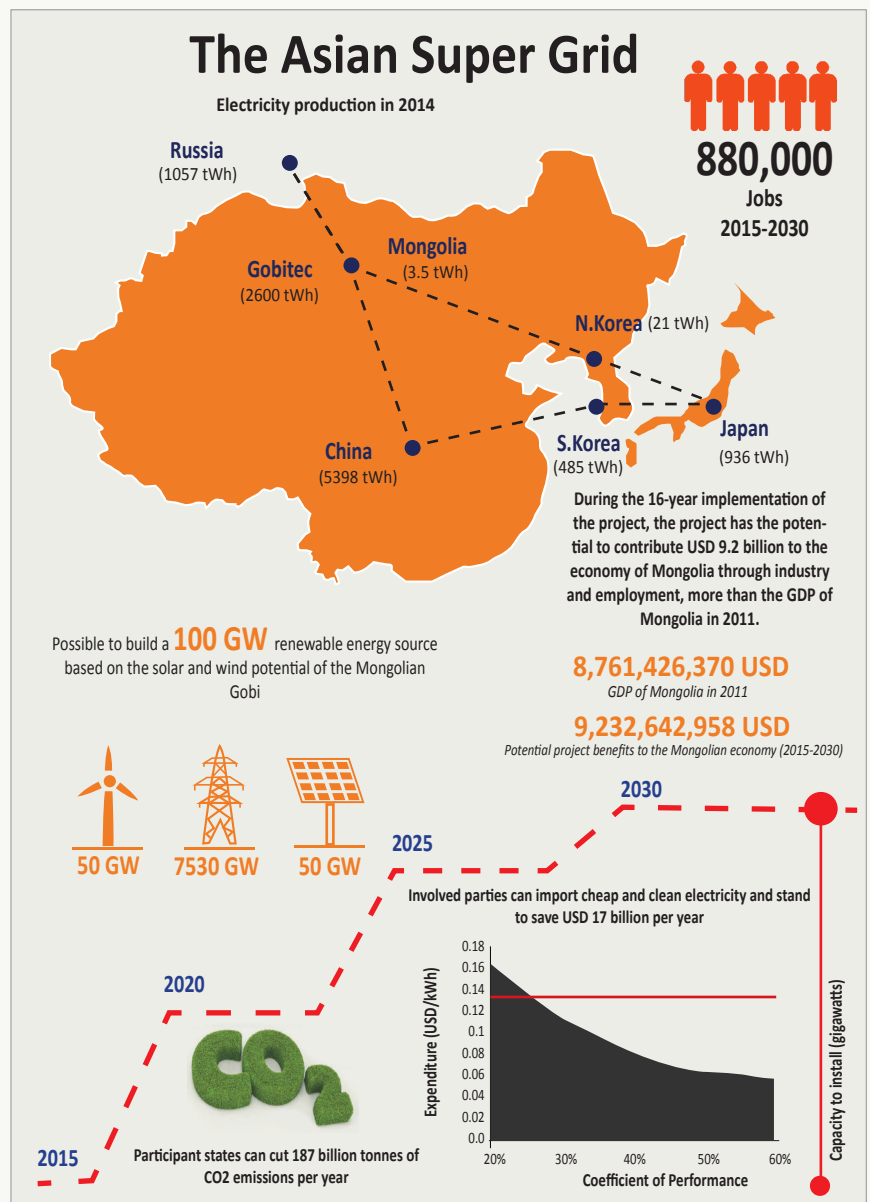
over its capacity in order to attract investors. In turn, the repayments have become a severe burden for the country. In the end, countries in such a situation end up having to privatise and restructure the debt.

P.Tovuudorj said: "Argentina used such methods to attract investment and build plants at the time. They terminated the contract when the costs started to become too high. But international banks and financial institution have their own mechanism. They will bind and pressure the certain country by reducing its credit rating and how much it provides in loans and aid. Then the country will buy it back at higher prices. This in turn will create difficulties in the economy. It is the same for the renewable energy."

Last year, tariffs were loosened to support renewable energy. "The price of renew-

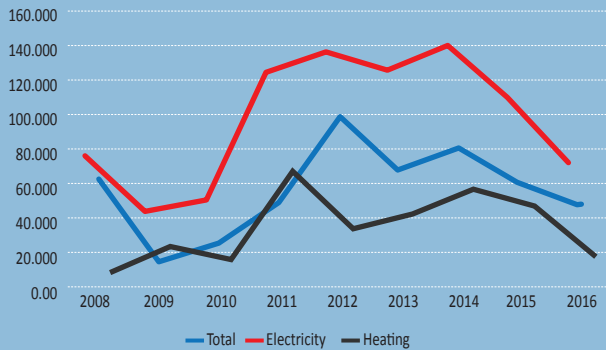
able energy remains high in our country, even though it has fallen five-fold since the Law on Renewable Energy was approved. Wind energy costs 1.5 cents per kW/h; solar energy is 15-18 cents. There are no other countries that set prices through law in cents," noted P.Tovuudorj.

Mongolia's resources and renewable energy capacity is relatively high compared to other developing countries. To become an exporting country by utilising potential resources is one possible future. For now, though, it is more important to focus on minimising imports and introducing an appropriate long-term policy for the renewable energy sector, rather than just copying other countries and repeating the bitter mistakes of other countries that stumbled in trying to develop the renewable energy sector. ■

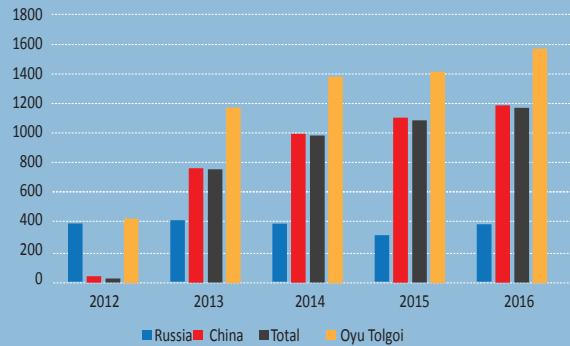


# Data

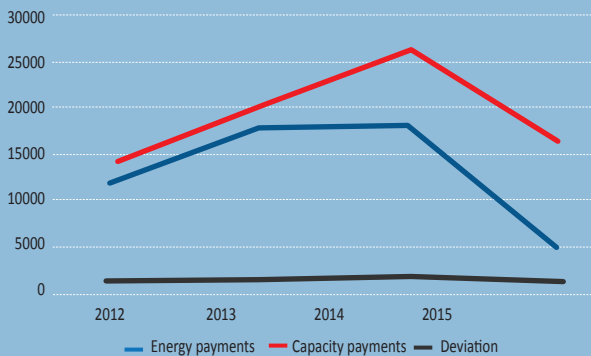
Investment in 2008-2016



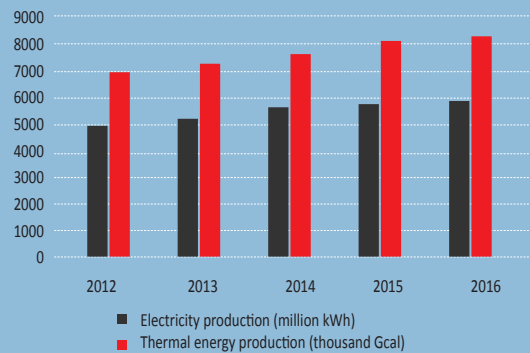
Imported electricity (million kWh)



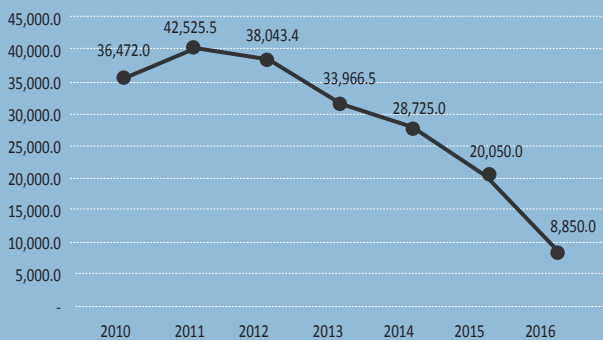
Payments for electricity imports from Russia (MNT million)



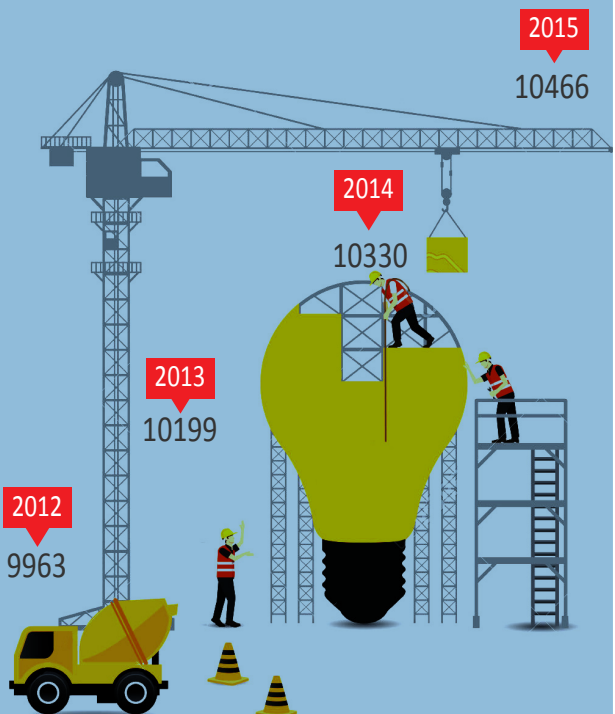
Domestic production by Mongolian integrated energy systems



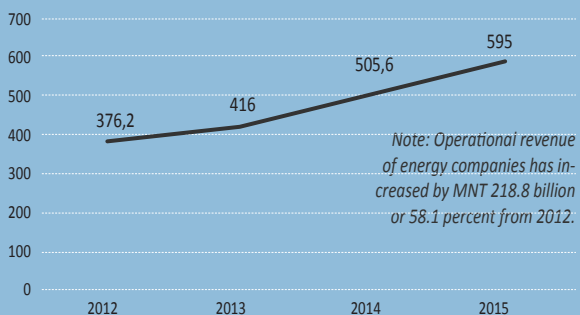
Subsidies (MNT million)



Number of employees in the energy sector



Operational revenue of energy companies (MNT billion)



## Interview

# D.Delgertsogt: After cashmere and mining, energy

BY D. BEKHBAYAR

*Our magazine sat down with the State Secretary of the Ministry of Energy, D.Delgertsogt.*



possible failures and able to diagnose and fix it. The plant's operations have been highly dependent on technical experts and engineers.

On one hand, I am proud of the employees, but on the other hand, there is elevated risk and potential for failures. Hence, there is a need to introduce equipment of international standards that will work reliably with minimal disruptions. That would also lessen the need for manpower. We should move in that direction, but such upgrades would require significant investment. Although there have been big developments in recent years, there is a dire need to change the system. It will take time, and we cannot cut off the power while waiting.

I believe that certain measures are progressing well. TPP-V, the Tavantolgoi Power Plant and the Baganuur and Eg River hydropower plants are being discussed.

There will be major changes in the energy sector when these plants start working. It will be 3-5 years until just one or two of these plants enter into operation, but until then, we should focus on the reliability of the current sources of energy.

There are 26 companies licensed to produce, transmit and distribute energy. Professional managers and professional staff operate these companies.

**- How are the operations of those plants? Furthermore, what policies are being implemented in order to make state-owned firms operate like regular businesses?**

- In recent years, installed generating capacity has increased by 20 percent. Transmission, distribution and heating

lines were also expanded. All of these are interrelated. It means that the reliability of power and heating supplies has drastically improved. Something unique about its economic and financial system is it is a single-buyer system. In other words, the whole energy sector is like one big company. TPP-IV and TPP-III would seem like separate companies, but these two companies are heavily interdependent. It will produce energy and heat and will transmit and distribute it. There would be no transmission or distribution if there were no production and vice versa. However, TPP-IV cannot be compared to TP-II, even though it has the same model of procurement.

Dornod and Erdenet need a plant. Thus, it is an integrated system which compensates the good and bad.

Today state-owned enterprises are being operated as joint stock companies. It is a step towards making them operate like a company, by forecasting results and improving governance and capacity. It was decided that 30 percent of energy companies would be privatised. People have this understanding that doing so means companies can be restructured and operate more successfully. However, this is not necessarily the case for all energy companies, because every country's energy sector is tightly regulated. The state policy measures to privatise a certain percentage of the companies are meant to create competition, increase efficiency and improve the utilisation of assets.

**- How is human capital in the sector?**

- Today, 12-13 thousand people are working in our sector. The majority of them are professional staff. There are engineers who were trained in the former Soviet Union. Today, there are hundreds of students studying at the Mongolian University of Science and Technology's School of Energy, with which the Ministry of Energy closely cooperates. Many future engineering and technical professionals ▶

**- You say the management of the energy sector's plants and companies must consist of professionals. Can the current executives of plants be considered professionals?**

- Energy production, transmission and distribution are professional jobs. What is produced in power plants reach consumers through large distribution lines and a professional process. In this sense, real professionals do indeed this work. On the other hand, the sector's physical capital has depreciated and become obsolete. Thermal Power Plant IV (TPP-IV) is over 30 years old. Knowing how to work with its outdated equipment has almost become a specialised occupation in itself. The professionals know about

► are also pursuing studies in developed countries. When big projects and programmes start to be implemented in the future, human resources policies to prepare and train the staff will accompany them.

**- How do you see the future of the energy sector's development? What issues need to be addressed, and what trends do you foresee?**

- We need to look at the global trend. Domestic consumption is not that high, but we have vast resources of primary energy raw materials such as coal, gas, solar, hydro and wind energy. Nowadays, most nations have an aim to reduce coal consumption.

The main issue to focus is the reliable supply of domestic energy. I see the future of the sector brightly. Not only are we in the middle of two giant energy consumers, but we also have the possibility to supply unmet demand in Northeast Asia. This is why regional integration is important.

There are major initiatives in which Mongolia is involved, such as Gobitec and the Asian Super Grid. Last March, China launched an initiative to establish a global energy network. Energy policies and technology are rapidly changing.

Primary raw materials of energy and distribution of resources vary for each country. We have an opportunity to develop the country in a short time by producing finished products and exporting them. There is no need for a customs and tax policy on the export of energy. Regarding projects like OT and TT, people are worried that the coal, gold and copper will be finished without much use. This is not a concern when it comes to energy. Electricity passes through the border via high-tech lines, and money comes into the budget; it is simple as that. I would like to say that we are nearing the day when, like cashmere and mining, energy becomes an export brand of Mongolia. ■

objectives is paying great attention to environmental issues and the challenge of constructing an eco-friendly future.

The current global economic situation is inspiring the demand directly related to energy supply. In this sense, the energy sector is indeed the economic pillar of a country. As such, world leaders are paying a great deal of attention to this issue. For example, the COP 21 conference was held in Paris last year, and about 180 countries banded together to issue a declaration on the reduction of greenhouse gas emissions. Developed countries that made pledges in the document agreed to spend USD 100 billion towards a carbon-free future. This presents a real opportunity to further develop renewable energy and advance the projects and programmes to reduce greenhouse emissions. In addition, the largest greenhouse gas emitters, China and the US, indicated that they will have a significant impact on the above during the COP 21 conference.

## World

# Accelerating trends

BY B.UURIINTUYA

According to the World Bank studies, the world population will grow by approximately a billion in four years. If this happens, and it most likely will, energy consumption per capita will increase 2.8 times. Furthermore, according to 2015 estimates of the UNDP, the world population will grow at an average rate of 0.9 percent per year, and the figure which was 7.1 billion in 2013 will grow to 9 billion by 2040. The World Energy Outlook 2005 noted that this growth will be concentrated in Africa, India, Southeast Asia and the Middle East. Nevertheless, the increase in energy consumption has become obvi-



ous, as more people means more need for food. Thus, the issue of how to satisfy the growing needs is at the centre of attention. According to the UNDP forecast, population growth will be fastest in Africa, while India over take China's population in the middle of 2020. Still, 500-600 million people in Africa and 300 million people in India pass the nights by candle light today. Currently, there 1.2 billion of our fellow man are living in darkness. Supplying energy to these people and increasing accessibility is a big part of the UN's Sustainable Development Goals and "Sustainable Energy for All" initiative. This initiative with three main

## Chinese ambitions

China's economy is still growing. At the same time, the World Energy Outlook 2015 stated that China's population will continue to grow until 2030. In addition, China ranks highly in the list of highest greenhouse gas emitters, which is directly related to the country's manufacturing sector. During the UN Sustainable Development Goals conference, President Xi Jinping proposed an initiative to establish an integrated global energy network. P.Tovuudorj, Director General of the Department of Strategic Policy and Planning at the Ministry of Energy of Mongolia, said that four large conferences and meetings, in which Mongolian delegates participated, were organised within this context. A global integrated energy and cooperation organisation was established in Beijing in order to fulfil these huge Chinese ambitions and is working to implement collaborative projects by 2020. Further on, China has the goal of establishing a network at the continental level by 2030 and global level by 2050. To do so, they will ensure three basic principles: clean technology, smart grids and connecting countries through ultra-high voltage DC line. According to the results of the study developed by the World Economic Forum two years ago, China led the world in the investments made in the renewable energy sector. China spent a to-►

► tal of USD 84 billion on the renewable energy sector in 2014, which earned China a score 0.53 points (1 being the highest) in the WEF's Global Energy Architecture Performance Index Report 2016 and increased its ratings in categories such as economic growth and development, environmental sustainability and energy access and security. In this report, Russia scored 0.64 points, which was a decrease from its previous performance.

### Forward march to renewables

Oil, coal and gas are limited, non-renewable fossil fuels; solar and wind energy are inexhaustible resources of energy. Developed countries have already started shifting to renewable energy, and in Germany, where half of total energy consumption comes from renewable sources on a normal day, it was reported that the cost of energy decreased to EUR -130 earlier this month, meaning some customers were essentially paid to use energy. However, this is not as good a thing as it sounds, as it demonstrates the inflexibility of the energy system. Traditional sources of energy were shut down during this time, but turning coal and nuclear power plants off and on require time and money, so draining the energy produced for free was a much cheaper option. Still, the growth of renewable energy will benefit Germany in the long term as Germany has set the ambitious goal carbon-free by 2050.

### European super grid

The official website of the Desertec project, which will establish solar farms in the Sahara desert, stated that in 6 hours, deserts receive more energy from the sun than the amount humanity consumes within a year. The driest and hottest region on earth, the Sahara comprises eight percent of the world's land. Solar farms covering 0.3 percent of the Sahara could power all of Europe. Hence, Europe wants to establish a European super grid to turn this opportunity into reality. Key player Germany considers Desertec as a pillar in the fight against climate change and assurance of future energy security. According to estimates, approximately EUR 400 billion will be required to transmit the solar energy from the desert through high-voltage lines in the Mediterranean. Although it has been reported that the first trials will

be conducted starting in 2020, infrastructure issues are yet to be resolved. In order to implement the initial phase, which will meet 30 percent of Europe's energy needs, 19,300 kilometres of high-voltage power transmission lines need to be set up. Since the current networks are only plugged into coal-fired energy sources, those too need to be upgraded, said the German

Aerospace Center. The amount of budget to be spent on the reconstruction is almost equal to the total budget of the project. However, some researchers consider that although it is good that many ambitious projects are being initiated, these projects are not moving forwards and remains just as talks due to neglecting the economic and political issues. ■

### Accessibility

## Power's back on



Nationwide electricity accessibility is at 90 percent

BY TS.BADRAL

There was a power outage recently this spring during work hours, from 10am to 5pm. It was one of those days of every year when power was being rationed, and so workers in this 14-storey building wall-hugged their way down the pitch black staircase.

The annual power restrictions save on costs on one hand, but on the other hand, there is no research into the economic cost of lost productivity. Why is it that power be restricted? How long will this go on?

In January, Prime Minister Ch.Saikhanbileg announced on the floor of parliament that "accessible energy" is one of the goals for the year. Accessibility concerns whether consumers' demand for energy is being met, covering a wide range of issues such as energy infrastructure and connectivity, potential connections and prices affordable to consumers.

For example, the average time it takes to connect something to the grid in

Ulaanbaatar is 79 days. This needs to be reduced to 40 days. Currently, this work needs to pass through eight stages, which also has to reduce to three stages, said the CEO of the Ulaanbaatar Electricity Distribution Network, S.Tumurkhuu. Nevertheless, the current situation is also a significant improvement from two years ago, when the average time-to-connect was 126 days.

Mongolia produces about 80 percent of its energy consumption needs domestically, with the remainder met through imports. However, there is still unmet need. Many families in remote ger districts of Ulaanbaatar still eat dinner by candle light. The issue is even more difficult in rural areas. According to the International Energy Agency's World Energy Outlook Special Report 2015, a tenth of Mongolia has no access to electricity: two percent for urban areas and 27 percent for rural areas. What the prime minister meant in his ►

► address was that we need to get power to these areas, and to do so, there are plans for the construction of energy megaprojects.

Compared to other countries, Mongolia's energy accessibility is better than African countries, just above the average for the region. However, Mongolia cannot keep up with Latin American and Middle Eastern countries in terms of energy accessibility. There have been some successes made in this field, though. Since 2012, nationwide access to electricity rose by two percent to reach 90 percent as a result of a six-percent increase in rural areas. Ninety percent of 170,000 herder families use solar panels. Usage of lights, televisions and

refrigerators are on the rise in the countryside.

The entire world gives special focus to the energy sector, considering it the basis of socio-economic development, and uses basic indicators of competitiveness. In the World Bank's annual "Doing Business" report, Mongolia ranked 134th this year by power supply, up two notches from the year before. In 2012, Mongolia was ranked 171th.

In Mongolia, pricing of electricity for industrial uses is cheaper than places such as Qatar, Kazakhstan, Russia and South Korea, but higher than the developed Asian countries of Singapore, Malaysia and Thailand.

In another important study, the Global Competitiveness Report, Mongolia's

infrastructure scored at 2.9 points (out of 7.0) and ranked 112th. However, Mongolia ranked 99th in the indicator for quality of power, with a score of 3.7 points. It is a slight increase from 3.56 points in 2012.

Thus, our country's performance is not that low compared to underdeveloped and developing countries of the world. It is the result of the policies directed towards the construction of networks to support the energy sector by generations of governments and parliaments. As new sources of energy are connected, domestic access and supply will broaden accordingly. In the future, it may even supply energy across the border. ■

## Interview

# S.Otgonbayar: Massive energy debts cleared

BY B.ENKHTSETSEG

*We sat down with the Head of the Energy Regulatory Commission, S.Otgonbayar, to talk about the present and the future of the energy sector upon the occasion of the 15th anniversary of the commission.*

**- First of all, would you please describe the current state of the energy sector? What are the main issues facing this sector?**

- Given its wide scope, the energy sector is definitely a major, strategic sector of the economy. To briefly describe it, the energy sector is the main driving force behind development. However, the energy sector has been perpetually operating under a deficit ever since the transition to a market economy. Of course, obsolete technology, old power stations and transmission and distribution losses were the main factors. No technological upgrades were made, as the energy sector always worked under a deficit. The sector has been



surviving by maintaining and repairing, so the issue of establishing new sources of energy was always abandoned. In addition, the energy sector was not able to do bold and effective financial and management reforms. It would not be a

lie to say that the main factors hindering the energy sector were outdated plants and equipment, and prices set far below the actual costs of production. That is why the energy sector has also been at the receiving end of public criticism. ►

Consumers think that our sector runs on deficits because it is state-owned, so people see us as lavish, fed by the state budget and foreign investment. There is certainly some truth to that. However, our consumption and internal policy created the conditions that got the energy sector into this difficult situation. Nobody denies the necessity of energy, but people's positions vary on issues regarding reform, implementation of appropriate pricing models, getting the sector out of deficit, upgrading the

**Energy demand is growing by six to eight percent annually. The Energy Regulatory Commission always supports issues regarding the establishment of new energy sources and expansions. As of today, if you include the permissions to build coal power plants, a total of 5200 MW of energy sources are to be established on paper, but only a few of these are moving forward successfully, namely the Buuruljuut and Baganuur projects.**

outdated equipment and building new resources. This notion that energy should be free and the negative impression of the sector hindered its development.

**- How dependent is Mongolia on imports?**

- The nation has been dependent on imports for many years. During peak hours (5-10 pm), 20 percent of the total energy consumption is being supplied from Russia at higher prices by using foreign currency. In addition, we are purchasing energy from China. The OT project is satisfying its power needs through electricity purchased from our southern neighbour. In order to change this, developmental works

to build and expand energy sources are being carried out. Take for example the 123-MW expansion at TPP-IV, which alone produces for 70 percent of the central region's and 65 percent of Ulaanbaatar's consumption. Energy production increased by 500 million kWh, and heat production increased by 400 thousand Gcal/h by implementing this project. Furthermore, the capacity of the outdated TPP-III was expanded by 50 MW. The Amgalan thermal plant has been fully commissioned. As the result, the reliability of Ulaanbaatar city's heat supply increased, and an opportunity to satisfy the growing demand for electricity has been created.

We have one bad habit. In the time we take to argue about something, that thing already becomes old. One example of this is the work on TPP-V, which has not been started to this day. Thus, the decision to expand plants by using the current resources without waiting for a large investment and establishment of new source was the right move. The government has supported the proposal to increase the capacity of energy sources through investment policy in 2012-2016, and as a result, the installed capacity increased by 323 MW, and imports from Russia and China have decreased by 12 million kW/h, or MNT 18 billion, in this four year period.

**- The sector has operated profitably for the first time by zeroing the debt accumulated over many years. What measures were taken by the Energy Regulatory Commission in order to accomplish this?**

- The Energy Regulatory Commission is not an organisation that raises prices. We constantly monitor the companies involved in energy production, transmission and distribution and work with them in the spirit of cooperation. Also, our organisation is adhering to a policy to index energy prices. Overall, the financial situation of the energy sector was strained. It had accumulated debt for years, working with deficit of MNT 60-70 billion a year. Annual deficits reached as high as MNT 77 billion, which happened in 2013. We have spent a lot of time and conducted studies to determine whether the large deficit is the fault of the sector's officials, or because

it is state-owned. The energy sector has declared 2015 as a year of saving. Thus, the Ministry of Energy and the Energy Regulatory Commission established a joint working group to boost the profits of the sector and cut costs. We have also conducted monitoring on the operations of energy companies and were able to reduce deficits by implementing appropriate regulations and management. As the result of the pricing regulation implemented by the commission and the effort to increase the efficiency of licensed companies and save costs, the sector performed without a deficit in 2015.

**- Issues related to energy pricing are often brought up. There is some criticism that the price of energy is increasing too rapidly.**

- Energy prices fall short of the actual costs of production. The energy sector has been always supplying products at discounted prices, and in turn, this became a barrier to development. Thus, Government Resolution No.72 was adopted, and it was decided the energy sector would be governed by business principles. The Energy Regulatory Commission has the responsibility of determining appropriate prices in accordance with this resolution. Also, we have to implement a policy supporting renewable energy and determine appropriate rates, as the Law on Renewable Energy was approved. Parliament approved a resolution on "measures to increase economic activity" to ensure the stable and reliable operation of the energy sector, strengthen economic capacity and create an appropriate investment environment. Therefore, we are implementing a pricing policy in accordance with the law and consistent with true costs, consumers' capacity and situation of the energy sector.

**- Can the private sector provide the growing demand for energy?**

- In fact, the responsibility of satisfying the demand for energy is on the government's shoulders. Energy demand is growing by six to eight percent annually. The Energy Regulatory Commission always supports issues regarding the establishment of new energy sources and expansions. As of today, if you include the permissions to build coal power ▶

▶ plants, a total of 5200 MW of energy sources are to be established on paper, but only a few of these are moving forward successfully, namely the Buuruljuut and Baganuur projects. Good news started to come from the power plant to be established based on the Khotgor Shanag mine in Uvs province. There is a real need to establish new sources of energy. We will never be able to displace imported energy at current capacity. On the other hand, issues concerning pricing will also be resolved with the establishment of new plants. Competition itself will regulate the prices. However, we ask one thing of the entities with permission to build a power plant: to introduce the latest technology least detrimental to the environment. Otherwise, we tell them not to bother should they be planning to bring in obsolete equipment that is being thrown away in other countries.

- **The entire world is cutting back on the use of coal, yet Mongolians are producing energy essentially through**

**coal only. What are your thoughts on this?**

- The government as well as the Energy Regulatory Commission is emphasising introducing and supporting renewable energy. We are providing subsidies and striving to create new sources of energy that is less harmful to the environment. Today, Mongolia gets only four to six percent of its energy from renewables. To be frank, a massive investment is needed in order to establish new sources of renewable energy. Therefore, we must use the coal at first to produce the required energy by ourselves and use the energy produced appropriately. Oyu Tolgoi needs to start producing energy domestically instead of purchasing from abroad. Many more megaprojects similar to OT are waiting. It is not possible to provide energy to the megaprojects from just renewable energy. Thus, we are administering a policy to build additional sources of energy using coal while simultaneously developing

renewable energy.

- **How many companies have received licences from the Energy Regulatory Commission at the moment?**

- The ERC provides 12 types of licences in accordance with the Law on Energy. As of today, about a hundred companies have received 209 licences, and the commission is monitoring their operations.

- **The Law on Energy Conservation was recently approved. At what stage is the implementation of this law currently?**

- Parliament approved the Law on Energy Conservation in November of last year, and the ERC has been working with other government bodies on its implementation. By conserving energy, we are protecting the environment, gaining financial benefits and making it possible to introduce new technology. Mongolians will feel the benefits of energy conservation very soon. ■

## Conservation

# Your conservation, my consumption

BY B.ENKHTSETSEG

**W**e would have enough energy to meet the growing demand if everyone gave some consideration to energy conservation. Many calls and appeals have been made. Rather than just raising awareness of energy conservation, it is now time to join the global effort to save energy through strong policy. Although this is yet to fully take off in Mongolia, the foundations have been laid.

More than half of all nations have laws on efficient energy usage, and about 80 percent have made some type of guiding policy document. In the case of Mongolia, the government ratified the law on energy conservation on November 26 of last year. The main objective of the

law is to improve energy efficiency by mandating obligations on entities and organisations with high energy usage. In other words, it is based on the principle that one man's conservation is another man's consumption. Conservation of energy covers a variety of issues including climate change, underground resources, energy resources and demand. Although conservation will not lead to a perfect solution, the entire world believes that this is the best alternative for the future from where we stand currently.

In Mongolia, entities and organisations account for 73 percent of consumption, and households account for the remainder. Hence, entities and organisations are the ones on which benefits and policy will be

implemented. In this sense, the law has required entities and organisations with high energy consumption to be obliged consumers and also to conserve energy in their operations and issue an annual report. As for the other consumers, it would behove them to conserve energy if they want to reduce expenditures and save money. However, it is more than just a recommendation; works to raise awareness of energy conservation and accelerate participation will be organised.

Currently, the government has not yet ratified the threshold of obliged consumers. However, according to the proposed threshold by the Energy Regulatory Commission, 148 major public and private entities and organisations, including Oyu Tolgoi, EMC, Tavan Tolgoi, Talkh Chikher, Makh Impex, APU, hospitals, schools and kindergartens, are to be included in the list of obligors, as these 148 entities account for more than 60 percent of total consumption, and 30-40 percent of their annual operating expenses are spent on energy costs. Entities with high rates of energy consumption should not have any objections as their profits would increase, if they can cut back on operational expenditures. So it seems ▶

► like there would be no objections as it is a win-win scenario for both sides. The obliged consumers will choose their own measures matching their budget in order to save energy.

“According to our forecast, it is possible to conserve 570.6 million kWh costing MNT 73.3 billion, if we can save at least 15 percent of the energy consumed. This is almost double the amount of power produced in 2015 by the Darkhan TPP, which has a capacity of 48 Mw,” said the Head of the Energy Conservation Division of the Energy Regulatory Commission, Ts. Atarjargal.

Basic equipment, such as various types of engines, variable and constant consumption motors, pumps, boilers, refrigeration equipment, air conditioners and lighting equipment, account for the majority of the energy consumption of mines, factories and entities operating in the service sector. Two-thirds of energy conservation comes from the introduction of new technologies; about 20 percent from full utilisation of energy capacity; and about 15 percent from proper organisational structure. Organisational structure issues require the least investment. Thus, major consumer organisations have the possibility to save at least 15 percent on energy consumption by reforming structurally.

However, conservation of energy will truly be effective if other consumers such

as individuals and households participate in the effort along with industrial consumers. Heating accounts for 70 percent of the energy used for domestic applications. More specifically, 27 percent of household electricity is used for refrigerators, 21 percent for electric furnaces, 18 percent for lighting, 15 percent for washing machines, 11 percent for televisions and nine percent for other electronic devices.

On the other hand, licence-holders producing, transmitting and distributing energy are the biggest energy consumers. The energy sector uses over a quarter of the total energy produced; you have to spend energy to get energy. Almost two-thirds of the produced energy gets lost during the stages of extracting, transporting and converting the primary sources of energy (coal, oil and gas) to electricity and thermal energy. Today, four energy systems and eight thermal power plants are using hydro, wind and solar power to produce and distribute electricity and thermal energy. In recent years, the rapid socio-economic development of Mongolia has created sharp growth in energy consumption, meaning the current capacity cannot satisfy demand. The outdated sources of energy, aging equipment and insufficiency of reserves during peak hours prove that the energy sector needs reforms. In order to conserve, the energy sector itself must

lead the way.

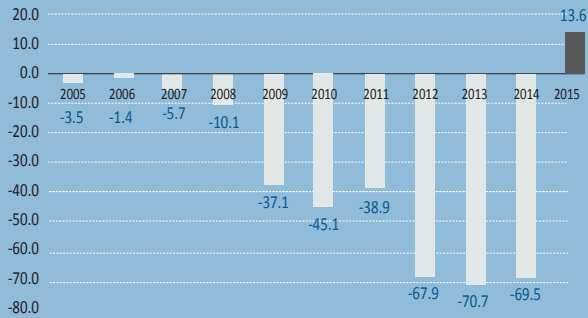
In order to implement these estimates in real life, special attention needs to be paid to obliged consumers and to the skills and capabilities of energy auditors and managers who will be involved in the implementation of the law. In addition, officials say that it is important to instil a positive attitude in the obliged entities and organisations, as the implementation of law has a nature of strict enforcement. Organisations must understand that it is a way to implement social responsibility and that it would be more economically efficient.

Some people may say “why do we need to conserve while we have vast reserves of coal and high potential to harness energy from wind and solar?” Though it is true about the amount of resources, fossil fuels will one day be depleted. Although countries can separate themselves through borders, climate change has no care for abstract boundaries. Therefore, countries are making joint efforts to minimise the negative consequences of mankind’s own doing. One indication of such efforts is the international trend of implementing policies to conserve energy. Every country will join this effort to conserve energy, as long as they do not want to be isolated from the world. Mongolia, although rich in energy resources, cannot afford not to join the movement. ■

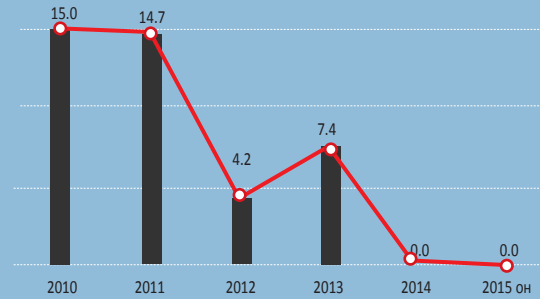


# Energy Regulation Outcomes

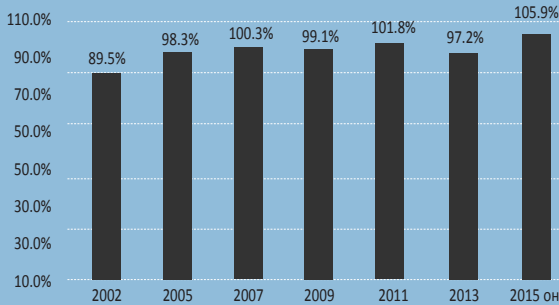
Energy sector operational profit and deficit (MNT billion)



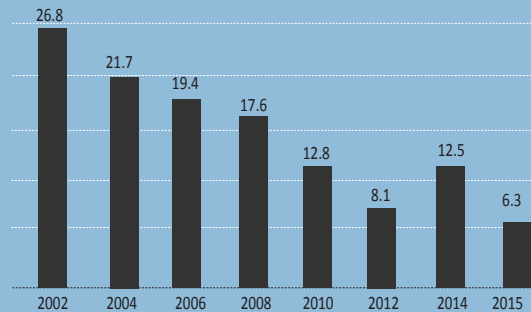
Subsidies received from the state budget by companies in the central region (MNT billion)



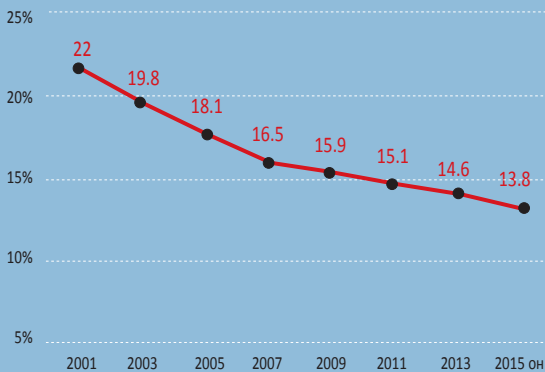
Percentage of payments paid to power stations



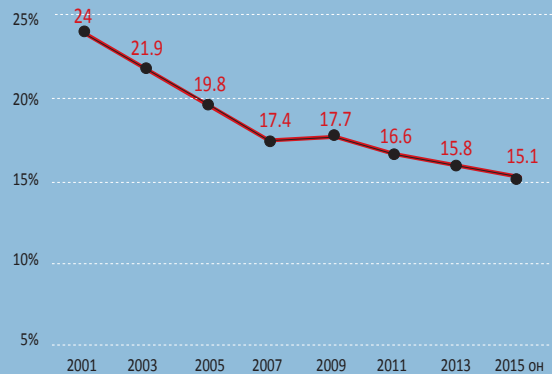
Debts to be paid to coal mines by thermal power plants (MNT billion)



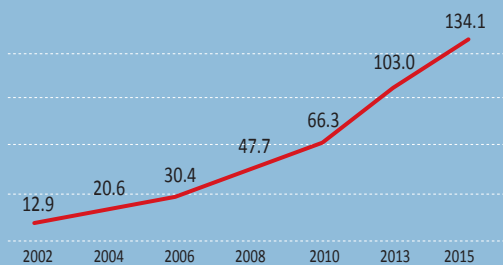
Percentage of energy generated consumed internally by the central region's power plants



Central region's transmission and distribution losses (by percent)



Average duration of interruption per consumer in a year (hours)



Taxes and fees paid to state and local budgets by major energy companies (MNT billion)



# Mongolian Economy - Dig Deeper



*"Magazine of the Year 2013" by the Mongolian Journalists Union*

*"Media Company of the Year 2012" by the Business Council of Mongolia*

*"Media Entrepreneur of the Year 2011" by Mongolian Chamber of Commerce and Industry*

[www.mongolianeconomy.mn](http://www.mongolianeconomy.mn)