



POWER EQUIPMENT PRODUCTION

PROJECT

Proposed project – **production of combined heat and power plants.**

Feasibility of establishing a production of CHP plants is determined by the following factors:

- The growing popularity of CHP plants worldwide.
- Russia's weak position in small-scale power generation while the production of large hydropower and nuclear equipment is highly developed.
- High growth rate of imports both to Belarus (CAGR **+34%** since 2009) and to Russia (CAGR **+8%** since 2009). At the same time there are governmental programs for import substitution of power equipment.
- **Localization of production close to final consumers** (growth in demand for CHP plants in Belarus and Russia).
- The main markets are **the domestic market of Belarus as well as the market of Customs Union.**
- Investment costs for the creation of the CHP plants production are estimated at **5-10 mn USD**, payback period – **3-4 years.**

SALES MARKETS

Domestic market:

- Large share of power equipment on the Belarusian market is imported. Imports of different power equipment (engines, electric generator, boilers, etc.) in 2012 amounted to **359,1 mn USD, CAGR for 2009-2012 exceeds 34%.**
- There is a state program for the Belarusian energy system development till 2016, which provides for the development of import-substituting production including production of cogeneration plants working on local fuels.

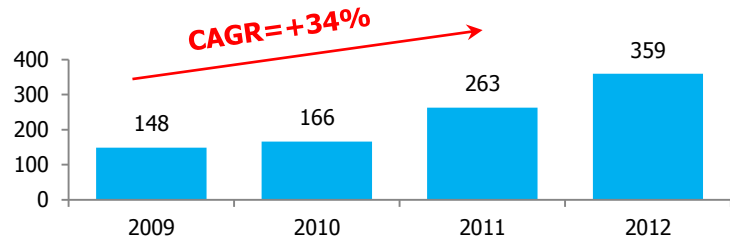
Customs Union market:

- Duty-free access to the market of the Customs Union.
- Significant volume of imports to the Russian Federation: **3,4 bn USD** in 2012. Annual import growth is around 8%.

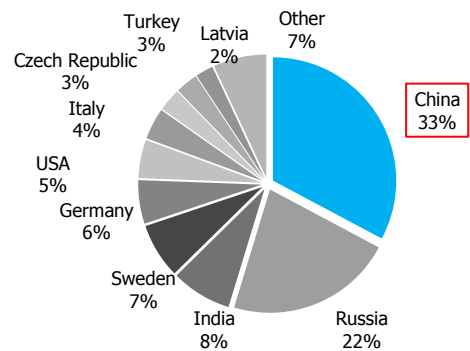
4 large engineering companies dominate the global market of power equipment, especially the markets of developed countries. These producers are: Alstom, General Electric, SIEMENS and Mitsubishi Heavy Industries. The share of these companies on global market is **around 57%.**

Thus, the competition among producers for the market of developed countries is very high. In this regard, the most promising markets are **the domestic market of Belarus and the Customs Union market.**

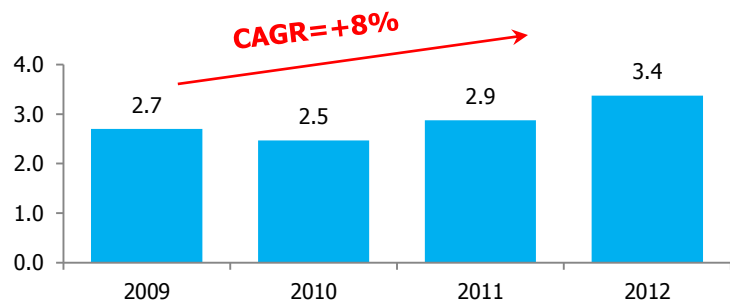
Power equipment imports to Belarus, mn USD



Structure of power equipment imports to Belarus split by countries



Power equipment imports to Russia, bn USD



MARKET OPPORTUNITIES

Consumption growth:

- There is a constant growth of electricity consumption in Belarus, except for the crisis 2009. Electric power consumption increased from 36,2 bn kWh in 2007 to 38,4 bn kWh in 2012.
- The consumption of electricity is growing while the production is reducing. This makes it necessary to increase imports of this energy. Construction of CHP plants will increase the production and reduce the need for imports.
- Constant growth of electricity production in Russia – from 996 bn kWh in 2006 to 1055 bn kWh in 2011.

Depreciation of production facilities:

- Production facilities of energy systems in Belarus and Russia require modernization. Depreciation of facilities in Belarus is gradually reducing (to **51%** in 2012), but is still quite high.
- Wear of power generating facilities in Russia **exceeds 60%**.

Cross-subsidization of electric power:

- There is a cross-subsidization of electricity in Belarus and Russia. **Tariff for legal entities was 2,7 times higher than for population** in Belarus in 2013. The government is planning to eliminate a cross-subsidization, but this process will be gradual.
- A low price for Russian gas encourage the power production by own resources. Average prices for Russian gas fluctuated within 160-170 USD/thou m3 in recent years. In 2014 the price for gas is 167 USD/thou m3 (for reference, a price for Ukraine in 2013 amounted to about 400 USD/thou m3).

Every year new production facilities are commissioned which are future electricity consumers and potential CHP plant buyers. By 2013 production facilities have increased by almost **2,4 times** compared to 2005.

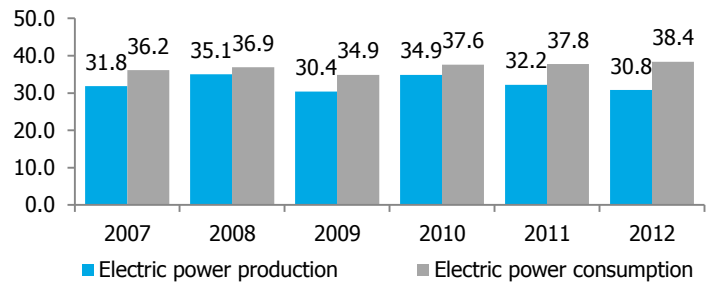
The approximate calculation of the effect from the construction of CHP plant compared to buying given the cross-subsidization:

- Electric power consumption – 1 MWh
- Working hours per year – 8000 hours
- Tariff when buying electric power – 0,15 USD/kWh
- Approximate electricity cost at own CHP plant – around 0,06 USD/kWh

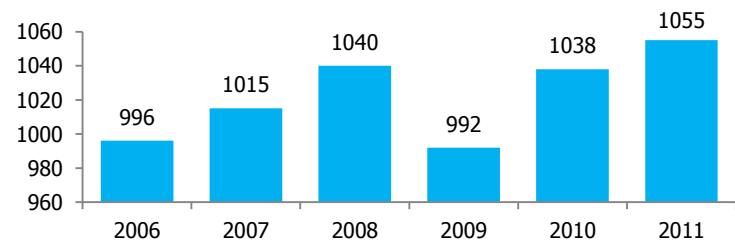
Saving = (0,15 - 0,06) x 1000 x 8000 = 720 000 USD/year*

*cost of heat which gives an additional effect is not included.

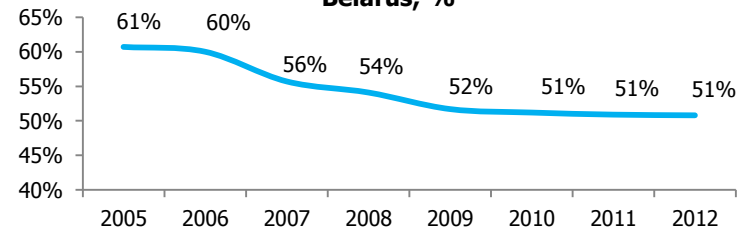
Production and consumption of electric power in Belarus, bn kWh



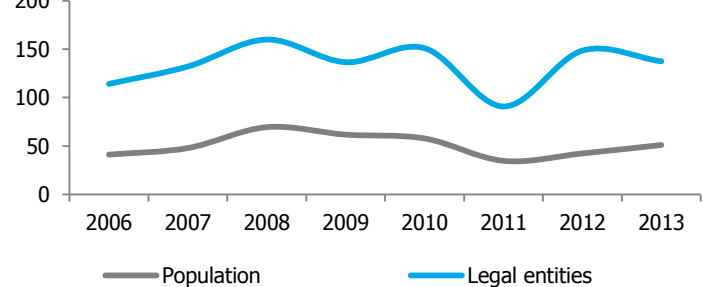
Electric power production in Russia, bn kWh



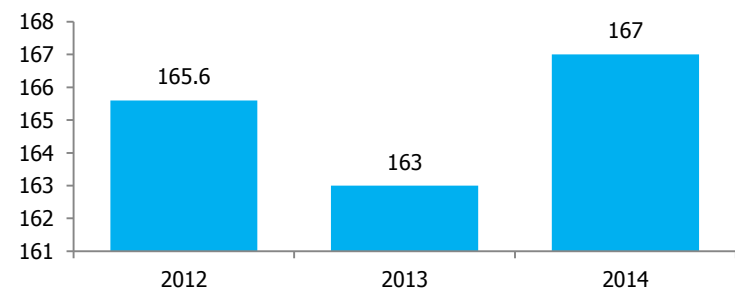
Depreciation of energy system production facilities in Belarus, %



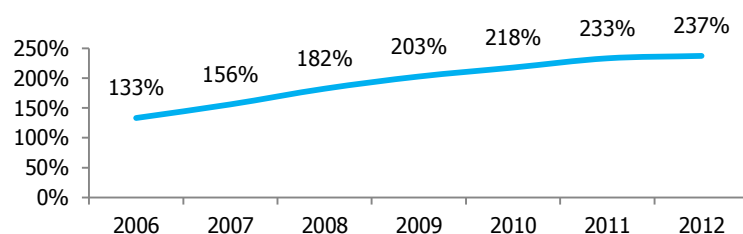
Electricity tariffs in Belarus, USD for 1000 kWh



Price of Russian gas for Belarus, USD for thou m3



Commissioning of fixed assets (in %, 2005=100)



INVESTMENT OPPORTUNITIES

- Investment costs for the creation of facilities for CHP plants production are estimated at **5-10 mn USD**.
- Profitability of CHP plants production amounts to on average **25-30%**.
- Payback period of the project may vary within **3-4 years**.

POTENTIAL INVESTORS

