PROCUREMENT STRATEGIC REVIEW - Energy: Electricity

2021, March 30th-31st, Louvain-La-Neuve

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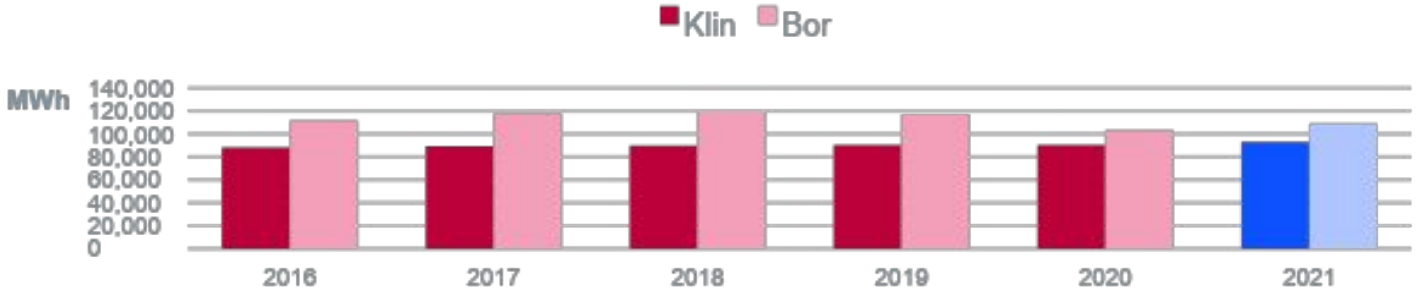
1. Agenda

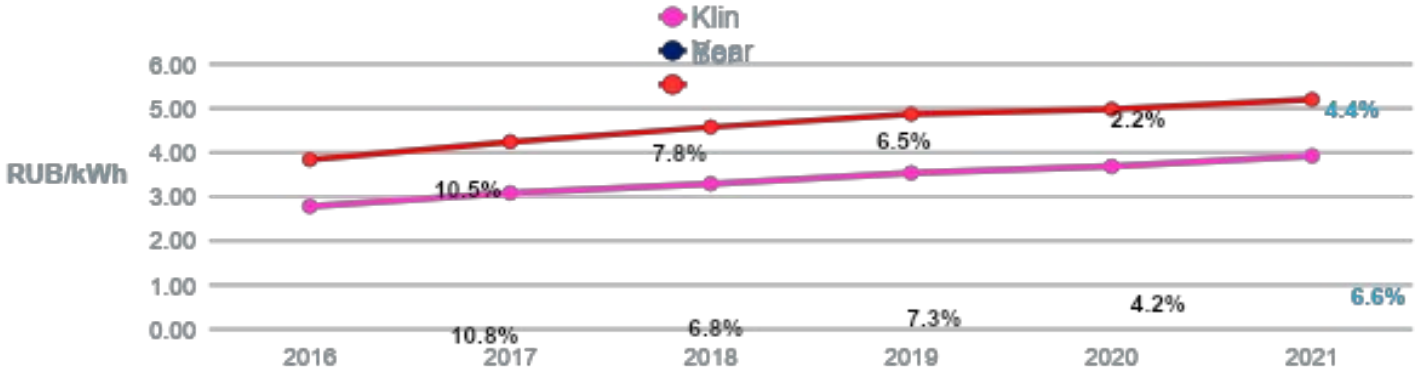
- Category situation
- Competitors position
- SWOT analysis
- Strategic objectives
- Conclusions
- Cogeneration project – Klin
- Cogeneration project – Bor
- Connection to Federal Grid Company (FGC)

2. Category situation – prices and consumption

- AGC Glass Russia – Consumption by production sites 2016 – 2021, MWh

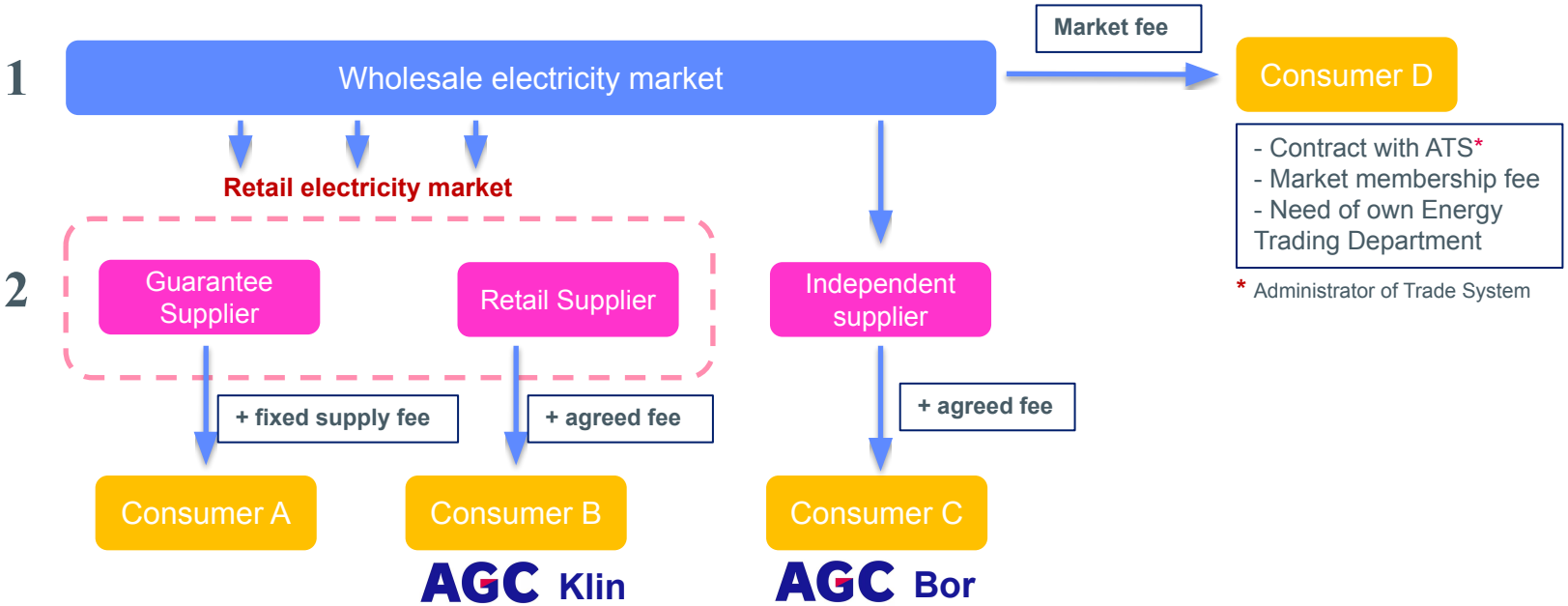


- AGC Glass Russia – Purchase price evolution by production sites 2016 – 2021, RUB/kWh



2. Category situation – Market model

- In Russia Electricity market is constituted by two levels:



- From any level all amount of electricity is supplied at unregulated prices.

2. Category situation – Suppliers & tariff structure

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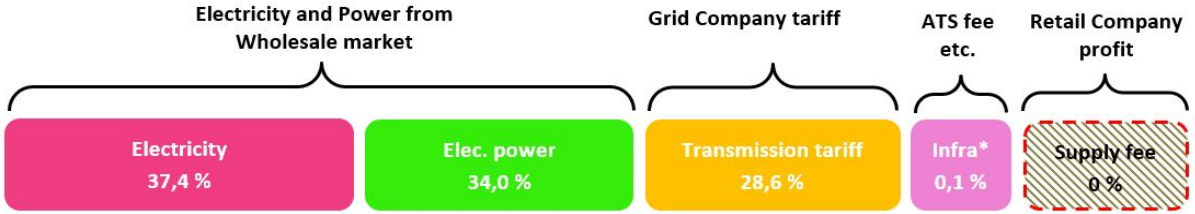
- **Klin Supplier – Energopromsbyt, LLC**
  - One of the leading electricity retail suppliers in Moscow Region
  - Total annual volume supplied (all clients) – **3 000 000** MWh
  - Unique approach in Moscow Region: electricity is supplied at wholesale market price (no supply fee)

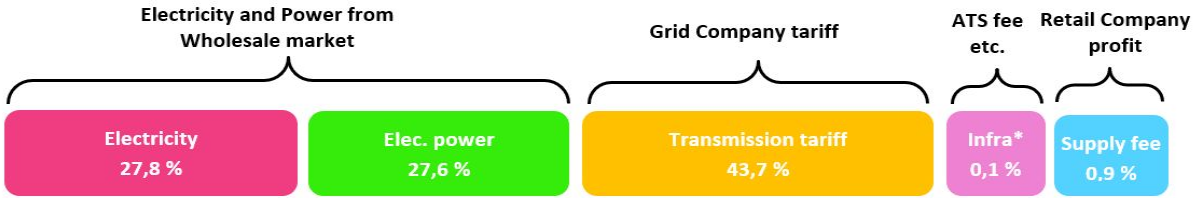
Unique supply terms on the electricity market
Annual savings ~ 4 900 kRUB



Electricity tariff structure – Klin

- **Bor Supplier – KMA Energosbyt, JSC**
  - One of the leading wholesale electricity market operators in Russia
  - Total annual volume supplied (all clients) – **10 000 000** MWh
  - Customer-oriented approach, competitive price and terms of cooperation

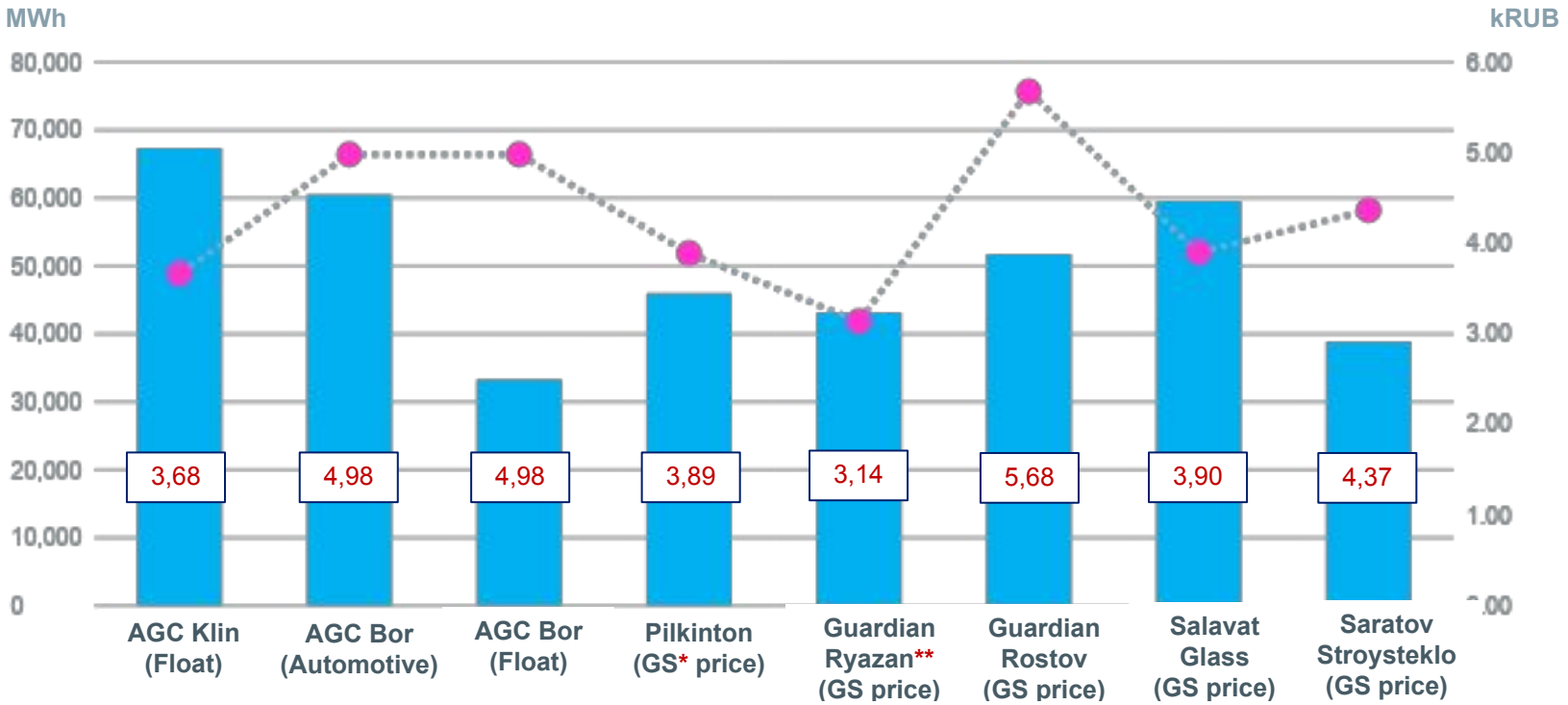
Successfully realized CRP Project in 2020
Annual savings ~ **17 345** kRUB



Electricity tariff structure – Bor

3. Competitors Position – Regional level

- **AGC** VS **main competitors** – electricity consumption & prices 2020



* Guarantee Supplier

** Connection on the busworks of Novoryazanskaya TPP – tariff has no transport fee

4. SWOT Analysis

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Strengths

- Stable and reliable electricity consumption
- Klin: unique supply terms on the electricity market – no supply fee
- Bor: electricity supply switched to the Wholesale electricity market ~ 3,5% price decrease from Regional Guarantee Supplier prices (successfully realized project in 2020)

Weaknesses

- Market fluctuations in electricity price affect tariff to consumer
- Bor: low accuracy of electricity consumption forecasting in short-terms perspective

Opportunities

- Cogeneration project – Klin & Bor
- Electricity supply switch to FGC – Bor

Threats

- Occasional and unpredictable tariff rise in certain periods
- The risk of changes in the regulatory framework in the field of electric power industry – “Reserve power payment”

5. Strategic Objectives

- Targets
  - Global targets □To be more efficient than our competitors
  - Local targets □ Electricity tariff decrease – Klin & Bor

- Strategic projects
  - Cogeneration project – Klin (in the scope of Industrial Park)
  - Cogeneration project – Bor
  - Connection to Federal Grid Company – Bor

7. Conclusions

- Set of market-based CRP measures are almost realized
- Some peripheral instruments will not give substantial effect
- Only realization of strategic projects will enable to achieve substantial results

8. Cogeneration project – Klin

Construction of compact power plant in order to supply needs of AGC in electrical energy. Investor – is a third party

- **Project's SPV company becomes a resident of the Technopark**
  - **SPV** is organized by Investor
  - **SPV** performs operation and maintenance of power plant
- **100% volumes of electricity are supplied to AGC**
- 100% volumes of thermal energy are supplied to residents of Technopark
- Free capacity of the electrical substation 110/10 kV "Zerkal'naja" is distributed to all other residents of Technopark
- Power plant operates in parallel with Regional Network

8. Cogeneration project – Klin

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- **Basic Commercial Offer**

  Discount from current electricity tariff:

  - **D**uring payback period **– 10%**
  - **A**fter payback period – more than 10% (subject of further negotiations)

  Annual economic effect for AGC: ~ **35 000** kRUB

  Annual thermal power realization for residents of Technopark ~ **123 076** kRUB

- **Efficiency of the Investment Project**

  - Investment – **539 100** kRUB
  - Discounted payback period – **3,8** years
  - **NPV – 799 389** kRUB
  - **IRR – 34,1%** (discount rate 10%)

8. Cogeneration project – Klin

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Needs of AGC

- Optimum electrical power capacity – **10** MW
- Forecasted electricity consumption ~ **92 935** MWh per year

Proposal of Investor

Investor offers a construction of the power plant with the following parameters:

- Electrical power capacity – **10** MW
- Thermal power capacity – **9,9** MW
- Annual electricity production ~ **87 600** MWh
- Annual thermal power production ~ **74 682** Gcal

11. Cogeneration Road Map

- **Project main steps:**
  - Green light for the Project
  - Organization of tender procedures in order to determine Investor and project operator
  - Conclusion of long-terms Contract with the winner of the Tender
  - Project realization – design elaboration, construction and commissioning works

9. Cogeneration project – Bor

Construction of compact power plant in order to supply needs of AGC BGW in electrical and thermal energy. Investor – is a third party

- **Project's SPV is organized by Investor**
  - **SPV** performs operation and maintenance of power plant
- **100% volumes of electricity are supplied to AGC**
- **100% volumes of thermal energy are supplied to AGC**
- **Power plant operates in parallel with Regional Network**

9. Cogeneration project – Bor

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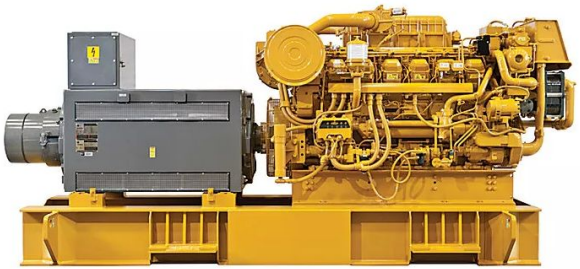
- **Basic Commercial Offer for AGC**
  - Discount from current electricity tariff: **10% – 15%**
  - Discount from current thermal energy tariff: **20% – 50%**
  - Potential economic effect for AGC: ~ **75 000 k**RUB per year



9. Cogeneration project – Bor

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Needs of AGC

- Optimum electrical power capacity ~ **12,5** MW
- Thermal power capacity ~ **30** MW
- Forecasted electricity consumption ~ **110 000 000** kWh per year
- Thermal energy consumption ~ **58 000** Gcal per year

Proposal of Investor

Investor offers a construction of the power plant with the following parameters :

- Electrical power capacity – **12,5** MW
- Thermal power capacity – **32,7** MW
- Electricity production ~ **106 000 000** kWh per year
- Thermal energy production ~ **58 000** Gcal per year

10. Cogeneration project – SWOT Analysis

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Strengths

- Attaining a substantial economic effect – up to 15% from total electricity costs
- Financing is provided by Investor
- The main risks associated with construction and operation of power plant are assumed by Investor

Weaknesses

- Conclusion of a long-term contract with the Investor. There is no opportunity of painless contract cancellation for AGC (in case Investor complies with the terms of the contract)
- Thermal energy production costs increase – if the existing boiler-house will continue to operate
- Big scope of various sensitive works implying construction of a complicated industrial object

Opportunities

- Improving the reliability of electricity supply (provided parallel operation with the electricity network)

Threats

- The risk of changes in the regulatory framework in the field of electric power industry, which may affect the need to revise the long-term contract
- The risk associated with possession of a hazardous industrial object

9. Connection to Federal Grid Company (FGC)

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- Project implies to switch electricity supply of AGC BGW to Federal Grid Company (FGC) on connection level – 220 kV. The targets are:
  - To exclude from electricity supply chain regional grid company – MRSK
  - To decrease elec. transportation component of electricity tariff by **1,76** RUB per 1 kWh
  - Project realization period – 3 years:
    - 1st year: documentation elaboration
    - 2nd , 3rd years: construction, start-up and commissioning activities
- Economic efficiency
  - Investment – **640** 000 **k**RUB
  - Annual economic efficiency – **160 000 k**RUB
  - Payback period – **4** years*

* Calculation doesn't imply cost of Credit

10. Connection to FGC – SWOT Analysis

Strengths

- Attaining a **substantial economic effect** – up to 29% from total electricity costs
- Project's technical part realization is less complicated than in the case of cogeneration project
- Improving the reliability of electricity supply (exclusion of the intermediate networks from the electricity supply chain)

Weaknesses

- Loss of the status of a network organization and refusal to receive amount of 15 000 **k**rub per year (compensation for network organization services)

Opportunities

- Equipment upgrade and technology modernization
- Personnel optimization – decrease by 4 specialists

Threats

- The risk of changes in the regulatory framework in the field of electric power industry, which may affect **FGC-tariff * increase**
- Item 3