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The Importance of Connecting Small to Medium-sized Cities in the Russian Federation to the Natural Gas Grid

Technical Cooperation Eastern Europe

Friedhelm H. Wannagat

Head of Technical Cooperation with Eastern Europe / Gastechnology Competence Centre

E.ON Ruhrgas AG, D-45138 Essen, Germany

Co-Authors

- Stativko V.L. OAO Gazprom
- Oskolkov, G.N. OAO Gazprom
- Zorya, A.U. OAO Promgaz
- Karasevich, V.A. OAO Promgaz

contact

friedhelm.wannagat@eon-ruhrgas.com

Fon: +49 201 184 4996
Fax: +49 201 184 1580

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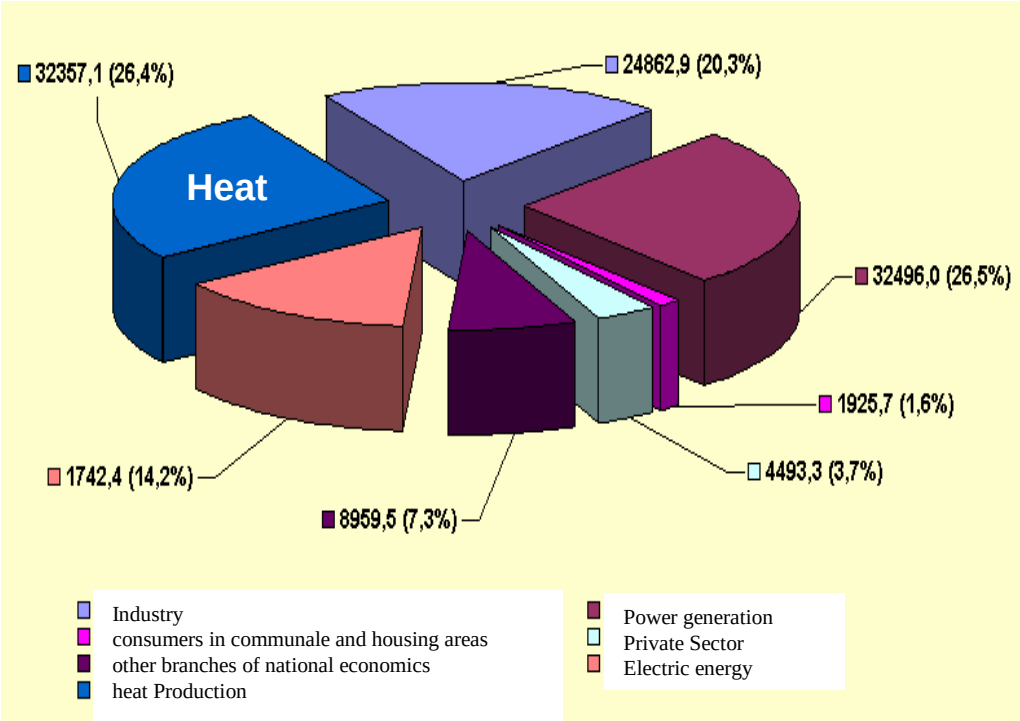
GENERAL

- **NG penetration in RF about 50%** (average)
  - high energy cost / economic breaks
  - for developping living standards ‚breaks in'
  - available energies = high environmental burden (masut, lignite/brown coal, wood)
- **NG sound solution under all respects**
  - potentials obvious
    - inter fuel substitution
    - upgrading energy supply systems
    - improving enduse efficiency

Saving Potentials
(RF wide)

- **Some 120 bln m³/a Natural Gas**
- **¼ thereof in field of Heat Production**

Even the longest journey.....

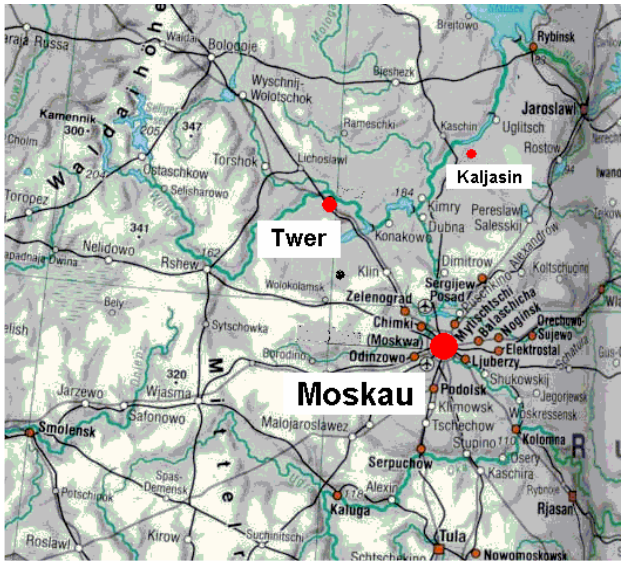


base 2003 statistics

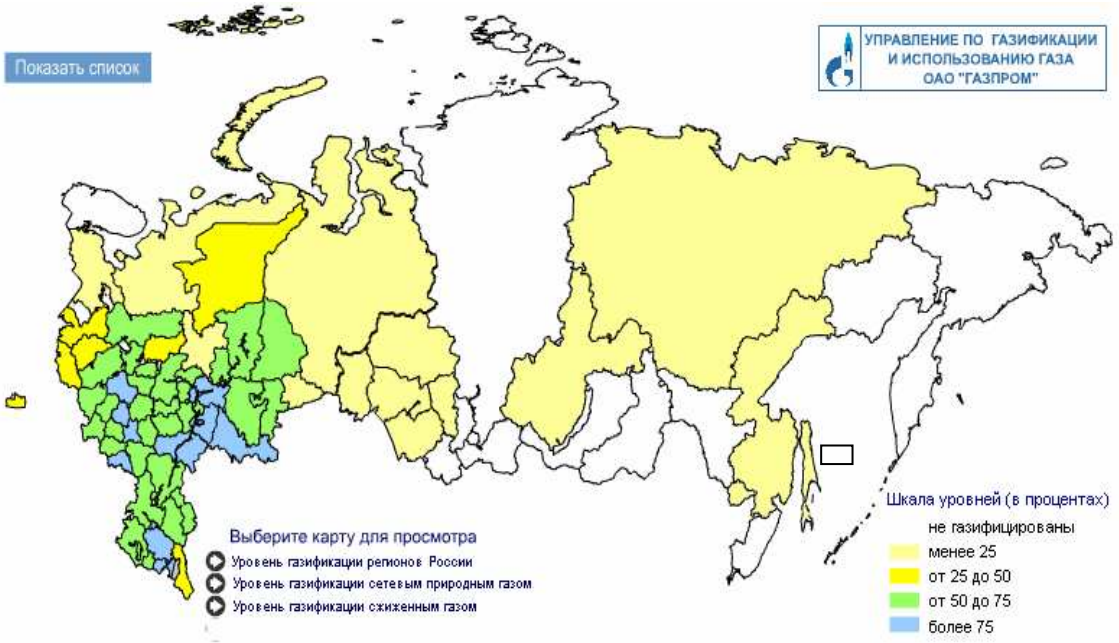
Model Case *Kaljasin*

- typical rural
- < 20.000 inhabitants
- 200 km northeast Moscow
- quay for barges, railway link

- Industry (metal, food, textile)
- Fuel (oil,coal,wood,diesel,petrol)
- central Heating (masut)



Even the longest journey starts with first steps !



State of Connection of RF-Regions to Natural Gas Networks:

- **Actually 64 of 89 Regions connected**
- **with NG Penetration 25 to 75 %**

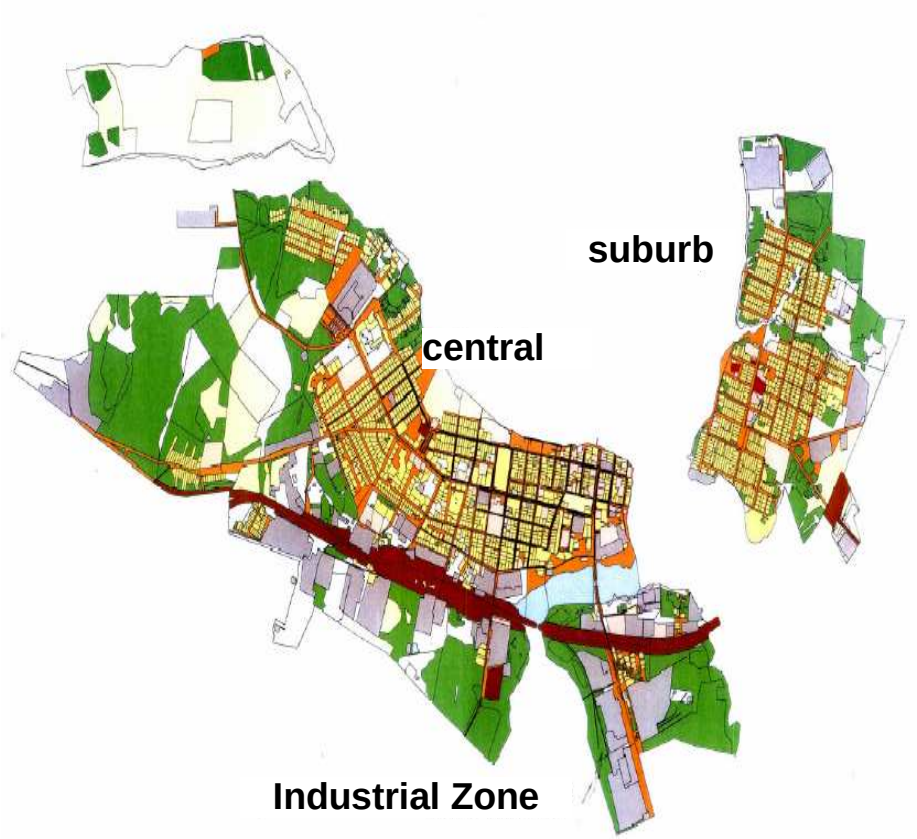
Energy Audit Results

Kaljasin City

Energy Consumption:
~ 20,000/a
standard fuel units (~tce)

- light and heavy fuel oil
- coal, wood
- diesel,petrol

Electricity 35,000 MWh/a



Energy Audit Results

Kaljasin City

72 % of living space
municipal property,
housing around
75 % of population

25 % of population
private homes

no uninterrupted hot water supply

Energy Audit Results

Kaljasin City

Space Heat / 100 residential Bldg.

- central boiler station
- some 20 small local boiler plants (municipality operated)

remaining 500 residential Bldg.

- Stoves
- Electrical*) heating systems

Industrial Heat

- 22 boiler plants (industry operated)

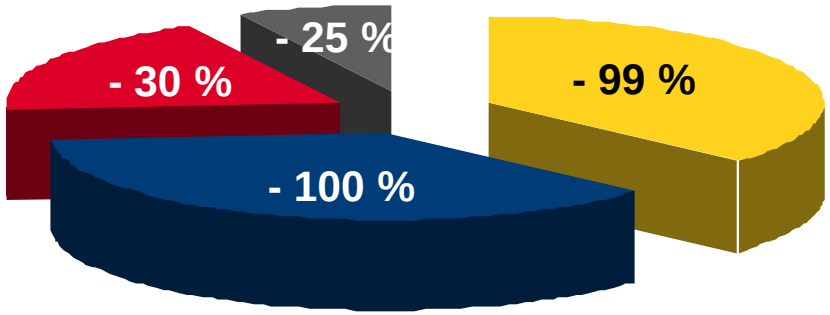
Production wastes fired

- Wood chips
- flax processing waste

*) **Electrical energy purchased externally for distribution through the municipality's own grid**

Energy Audit Results

Kaljasin City



(round figures / Graphic not to scale)

Environmental benefits
from bringimg NG into rural regions:

- *Dust and particle emissions* to almost zero in the long term
- *sulphur dioxide* by more than 99 %
- *nitrogen oxides* by around 30 %
- *carbon dioxide* by some 25 %

Participation *Joint Implementation* process under Kyoto Protocol only logical

Case Study Results

Kaljasin City

Central Heating Station Kaljasin

The Core: *Central boiler plant*

- modernisation
- conversion to natural gas
- cogeneration system retrofit

economic benefits

- significant lighthouse effect entire region – particularly for commercial and industrial customers.

proving

- natural gas conversions are not just environmentally friendly but also

extremely profitable

- worthwhile copying.

CONCLUSIONS

Once connected to the NG grid, market penetration time essentially depends – apart of the lighthouse project success – on two factors:

- **scope and extent energy advice is provided to private, commercial and industrial customers (key industries) in the district**
- **tailor-made advice on efficient gas technologies and how to introduce natural gas into industrial processes**

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CONCLUSIONS

Further window to future opened:

- **start-up assistance instead of subsidise**
- **core for self driving renewal process**
- **copyable in many other regions of RF**
- **High practice relevance**
- **Snowball effect supported by Gazprom's gasification program**
- **Attracting investors / Funds by producing trust in Energy investments**
- **Being fully on track with international activities** (UNECE 21EE, EU Tacis programs**)**

We will continue .....

... thanking you for your kind attention !