

# Regional aspects of energy efficiency in Russia



***E. Zenyutich***

***Regional Center for Energy Saving***

***Nizhniy Novgorod***

***Russia***

***zenyutich@hotmail.com***

# **Energy strategy of the regions of the Privolzhskiy federal district**

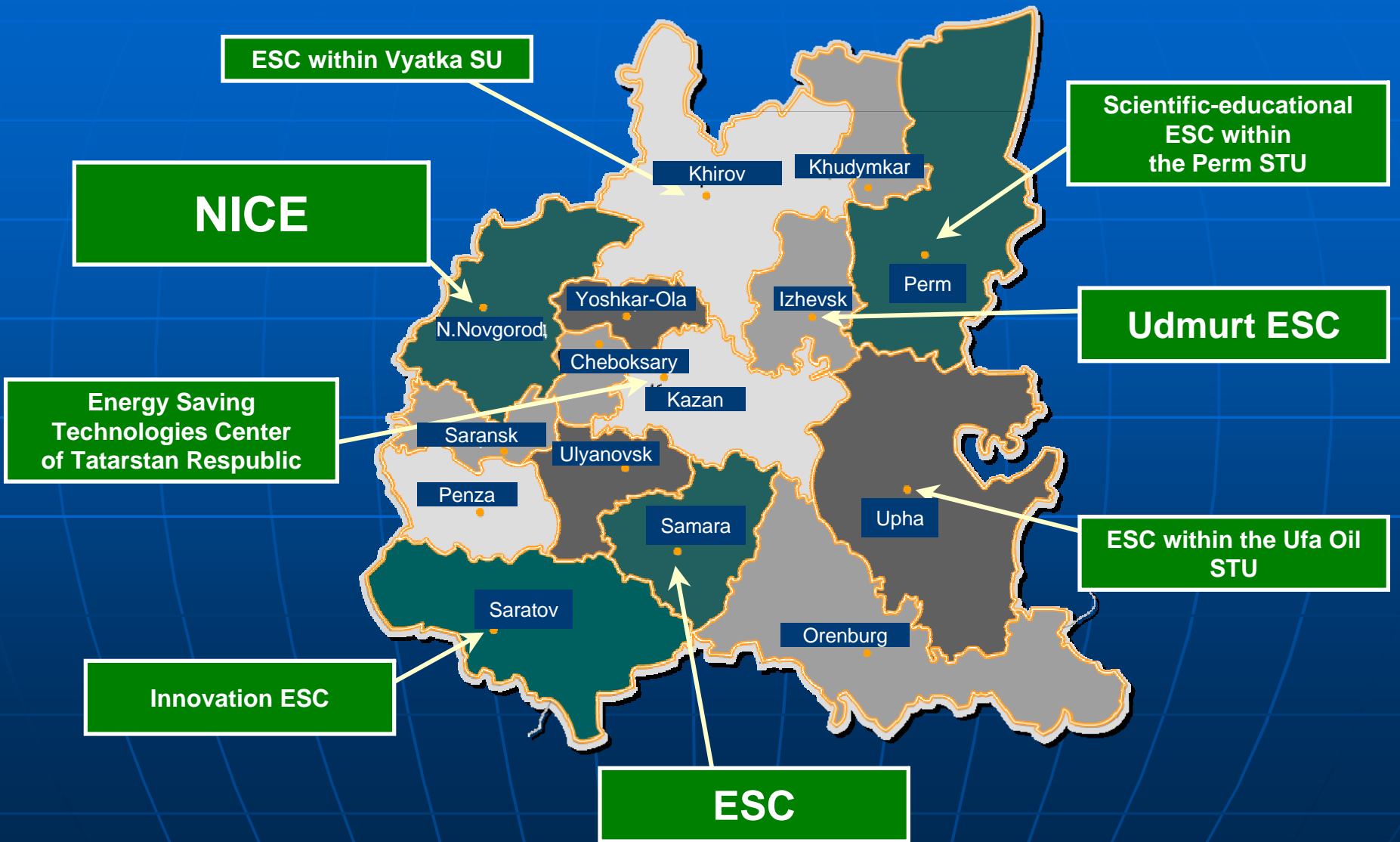
---

---

**Provision of energy safety due to increase  
of reliability and energy efficiency  
of energy resources utilization**

**Usage of renewable energy sources  
and local types of fuel**

# REGIONAL ENERGY SAVING CENTERS OF THE PRIVOLZHISKY FEDERAL DISTRICT



# ACTIVITIES OF NICE

Development of energy efficiency and environmental projects and programmes



Development of business-plans and financial mechanisms for investments into energy saving



Development and management of demonstration projects in the framework of the High Energy Efficiency (UN ECE Project "Energy Efficiency-21")



Energy audit and development of energy passports of enterprises



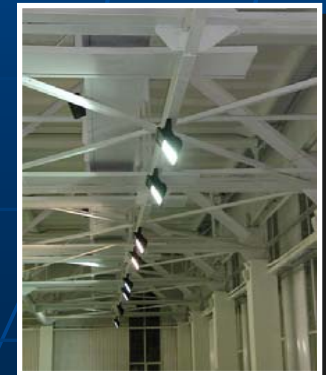
Professional training of energy auditors and energy managers

# Energy Service Company (ESCO)

**systematic approach towards energy saving**

- ◆ Development of investment basis (feasibility study, business plan) for implementation of energy efficiency programs and projects;
- ◆ Conduction of independent energy examination of the enterprises of different branches of national economy;
- ◆ Expertise of the projects, equipment, technological solutions with reference to energy utilization and energy saving;
- ◆ Proposals on optimization of schemes, technological solutions and usage of energy saving equipment;
- ◆ Attraction of alternative energy sources, installations, utilizations etc;
- ◆ Development and turn-key implementation of energy saving projects

# Nizhniy Novgorod Holding "Energy saving"



# The Saratov region

- ▶ **Governor program of energy saving has been implemented.**  
Reduction of power intensity of Gross Domestic Product - **14,1%**.  
Reduction of emissions – **5%**.
- ▶ **Interdepartmental Council on the strategy of fuel and power complex development was created.**
- ▶ **The statement on energy saving tender was developed.**
- ▶ **The Agency of energy saving was created at the Administration of the Saratov region.**
- ▶ **The program of production of new energy efficient materials and introduction of energy saving technologies was developed.**

# The Volgograd region

## Priorities of the program of energy saving:

- ▶ **Structural reconstruction of the enterprises of fuel and power complex aimed at stabilization of energy resources cost.**
- ▶ **Utilization of secondary resources and of renewable energy sources.**
- ▶ **Reduction of heat losses at transportation and heat energy consumption.**
- ▶ **Introduction of energy saving technologies.**

# The Volgograd region

**Amount of financial resources for realization of the Program in 2006-2007.**

**56,2 million USD**

**Acquired economy:**

**468,0 thousand tons of equivalent fuel including:**

- electric energy – 858,3 mln. kW/hour**
- heat energy – 914,6 thousand GCal.**

# The Nizhniy Novgorod region

Program of energy saving for the years 2007-2010 includes 4 subprograms on basic directions of energy-fuel resources consumption.

Total amount of finance— **780** million USD

## Results:

- ▶ Reduction of energy resources consumption in the field of consumption— 60 thousand tons of equivalent fuel
- ▶ Economy of budget expenses on energy resources – 7% per year
- ▶ Creation and mastering of production of 9 types of energy saving equipment
- ▶ Utilization of local types of fuel (peat and biomass)

# Kazan, Republic Tatarstan

**Program of energy saving for the years 2001-2006.**

**Amount of finance – 51,2 million USD**

## **Results:**

- ▶ **Economy of energy resources– 1,27 mln. tons of equivalent fuel, including residential sphere– 480 thousand tons of equivalent fuel**
- ▶ **Reduction of amount of energy resources consumption by 7,2%**
- ▶ **1940 devices of heat energy account and more than 6000 devices of water consumption account were installed.**

# Programme "Energy Saving" in educational establishments the Russian Federation

In 1999 a Complex Programme on  
Saving and Rational Use of Energy  
Resources in Educational  
Establishments was sanctioned by the  
Board of the Ministry of Education  
of the RF

# Institutional-financial scheme of the Programme management

## Agreement

Ministry of Education  
of the RF

Regional  
Administrations

Ministry of Energy of  
the RF



Equipment  
Supply

R&D woks

Methodology  
development

Organizing  
the Energy  
Audit

Personnel  
training

Base Institution of  
Higher Education

Regional Energy  
Saving Center

Coordination

Design and  
installation  
works

Methodology  
development

Energy Audit

Monitoring

Educational  
establishment

Funding

Information

Facilities

# Regional Energy Saving Centers at Universities

## North-Western FD

- ESC within the Arkhangelsk State University (SU).
- ESC within the Murmansk SPU.
- Educational-scientific ESC within the Novgorod SU.
- ESC within the Petrozavodsk SU.
- Interuniversity ESC on a basis of the St. Petersburg SEU.
- Institute 'Energy Saving' within the Vologda STU.
- Regional ESC within the Ukhta STU.

## Urals FD

- ESC within the South Urals SU.
- RESC within Ural STU

## Siberia FD

- Regional Innovation ESC within the Altai STU.
- CENEf of the Krasnoyarsk STU.
- Regional ESC at the Novosibirsk STU.
- Technical Center "Energy" within the Omsk STU.
- Regional Scientific Technical ESC within the Tomsk STU.
- Regional ESC within Irkutsk STU

## Central FD

- STESC within the MEI (TU).
- STK "Energy saving" within the Belgorod STA of building materials.
- ESC of the Ivanovo SEU.
- Regional ESC within the Kostroma STU.
- Innovation ESC within the Kursk STU.
- Regional ESC within the Orel STU.
- ESC of the Tambov STU.
- Center "Energy efficiency" within the Tver STU.
- Educational-technical Center "Energy efficiency" of the Tula SU.
- Laboratory of energy audit and resource saving within the Bryansk SITA.

## Southern FD

- Regional ESC within the Volgograd STU.
- ESC of the Southern-Russia STU.

## Privolzhskiy FD

- NICE within the Nizhny Novgorod State Technical University (STU).
- ESC Tatarstan within the Cabinet of Ministers of Republic of Tatarstan.
- Innovation ESC within the of Saratov STU.
- ESC within the Samara STU.
- ESC within the Ufimskiy Oil STU.
- Scientific-educational ESC within the Perm STU.
- ESC within the Vyatka SU.
- Udmurt ESC of the Izhevsk STU.

## Far-East FD

- ESC within the Far-East SAEU



# Programme "Energy Saving" in educational establishments the Russian Federation

During 5 years energy saving measures have been implemented at 923 educational establishments.

The amount of extra-budgetary funds raised totals to more than \$35 million.



# **Economically efficient energy saving measures in Russian Educational Sector**

## UNDP/GEF Project

---

### LONG-TERM

**Energy saving in educational establishments,  
reduction of green house gases emissions**

### **GOAL**

### SHORT-TERM

**Development and testing of replicable  
models of implementation of low-cost  
energy saving measures in schools and  
universities**



## THE BASIC DIRECTIONS OF THE PROJECT

**I**

**Educational Program on  
Energy Saving**

**II**

**Realization of demonstration projects,  
development and realization of revolving  
finance mechanisms**

**II**

**Creation of conditions for sustainable  
development of the results of the pilot phases  
of the project in Russia**



# PROJECT BUDGET

**Total budget:** – 4.1 mil.USD

**Major Donor:**

GEF - Global Environment Facility – 1 mil.USD

**GEF Executive Agency:**

UNDP – United Nation Development Program

**Co-financing Agencies:**

- \* Russian Ministry of Education and Science – 700 thsd. USD
- \* Regional / local administrations in the pilot regions ~ 700 thsd. USD
- \* Russian higher education institutions ~ 700 thsd. USD
- \* Norwegian Ministry of Foreign Affairs – 600 thsd. USD
- \* Nefco - Nordic Environment Finance Corporation ~ 300 thsd. USD
- \* Administrations of the pilot regions – 100 thsd. USD



# PROJECT TERRITORY

## Pilot regions:

- Republic of Karelia
- Arkhangelsk Oblast
- Murmansk Oblast
- Tver Oblast





## ENERGY EFFICIENCY EDUCATION PROGRAM

### Results achieved:

- School educational program on environment and energy efficiency developed and approved on local and regional level as elective course;
- Teachers training system developed for the pilot regions;
- Public boards in operation in the pilot regions;
- NGO activities established to participate in dissemination of the results;

### Expected results:

- Scientific evaluation of the results and documentation of energy saving from 60 schools.



## SUSTAINABLE FUNDING MECHANISMS FOR FINANCING ENERGY EFFICIENCY

### Results achieved:

- 15 experts on energy saving project management trained;
- 20 school energy efficiency projects prepared;
- Key Numbers method developed and approved for typical Russian buildings and climatic zones;

### Expected results:

- 20-30 % energy saving in 8 to 10 municipal schools and in 4 university buildings;



## CAPACITY BUILDING AND DISSEMINATION OF PROJECT RESULTS

### Results achieved:

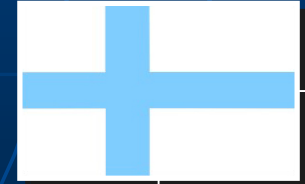
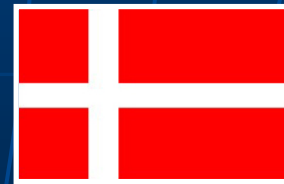
- 15 experts trained and follow-up training started;
- 7 Federal Energy Efficiency Centers based at universities defined, dissemination launched;

### Expected results:

- Pilot projects on energy efficiency developed for every 7 Russian Federation Okrugs;
- Information System covering the network of all project stakeholders and interested parties all over the Russia created.

# RUSSIAN SUSTAINABLE ENERGY EFFICIENCY FINANCE PROGRAMME

- Programme is financed by the GEF, IFC, Danish Agency for Environmental Protection, Ministry of Foreign Affairs Finland and Ministry of Industry and Trade Finland.



# RUSSIAN SUSTAINABLE ENERGY EFFICIENCY FINANCE PROGRAMME

- IFC developed the programme aiming at stimulating investments into modernization projects which lead to energy efficiency of industrial enterprises of Russia.

# PROJECT "ENERGY EFFICIENCY – VOLGA REGION"



Project is implemented with financial support  
of the Free State of Saxony  
GERMANY

# Goals of the project (1)

- Identify the solid pipeline of energy efficiency/clean production projects in Volga region
- Market these investment opportunities to local financial institutions
- Conduction of advisory and training activities for companies and financial institutions of the Volga region in the field of energy efficiency and clean production in industry

## Goals of the project (2)

- Project implementation shall lead to substantial efficiency of energy use by the end-consumer
- Borrows - private enterprises (with direct or indirect state participation of less than 49%)

## Goals of the project (3)

- Technologies to be financed – only proven technologies (Russian, as well as foreign)
- The size of investments is determined by the financial institution but generally does not exceed 2 million dollars
- The maximum project payback - 5 years

# PROBLEMS

- **Insufficient activity of state policy on stimulation of investments into energy saving**
- **Absence of special financial institutions oriented at financing of projects and programs of energy saving and climate preservation**

# PROBLEMS

- Creation of favorable conditions for development of energy service companies (ESCO) and formation of energy service as profitable business
- Absence in the majority of the regions of a set of detailed business plans of energy saving projects including estimation of technological, design, financial and other risks obligatory for work with the investors

**THANK YOU**

