



Russian Programme for Renewable Energy

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Federation**



Russian Programme for Renewable Energy

Federal and regional programmes for renewables' development

- ✓ **Federal programmes**
- ✓ **Regional programmes**

Commercial projects with private capital involvement

- ✓ **RAO UES Russia Programme for the development of wind power**
- ✓ **Chukotka project**
- ✓ **Project for the development of geothermal energy in Kamchatka**
- ✓ **Biomass projects**
- ✓ **Project for the establishment of wind and hydrogen plants (EBRD funding)**

International projects

- ✓ **GEF/World Bank project**
- ✓ **US Trade & Development Agency wind power project**
- ✓ **Geothermal Fund**
- ✓ **Swedish EAES programme**
- ✓ **Russian-Nordic programme for utilisation of biomass in Northwest Russia**



Russian Programme for Renewable Energy

GEF/World Bank Project

Russian Programme for Renewable Energy Development

Key project objectives:

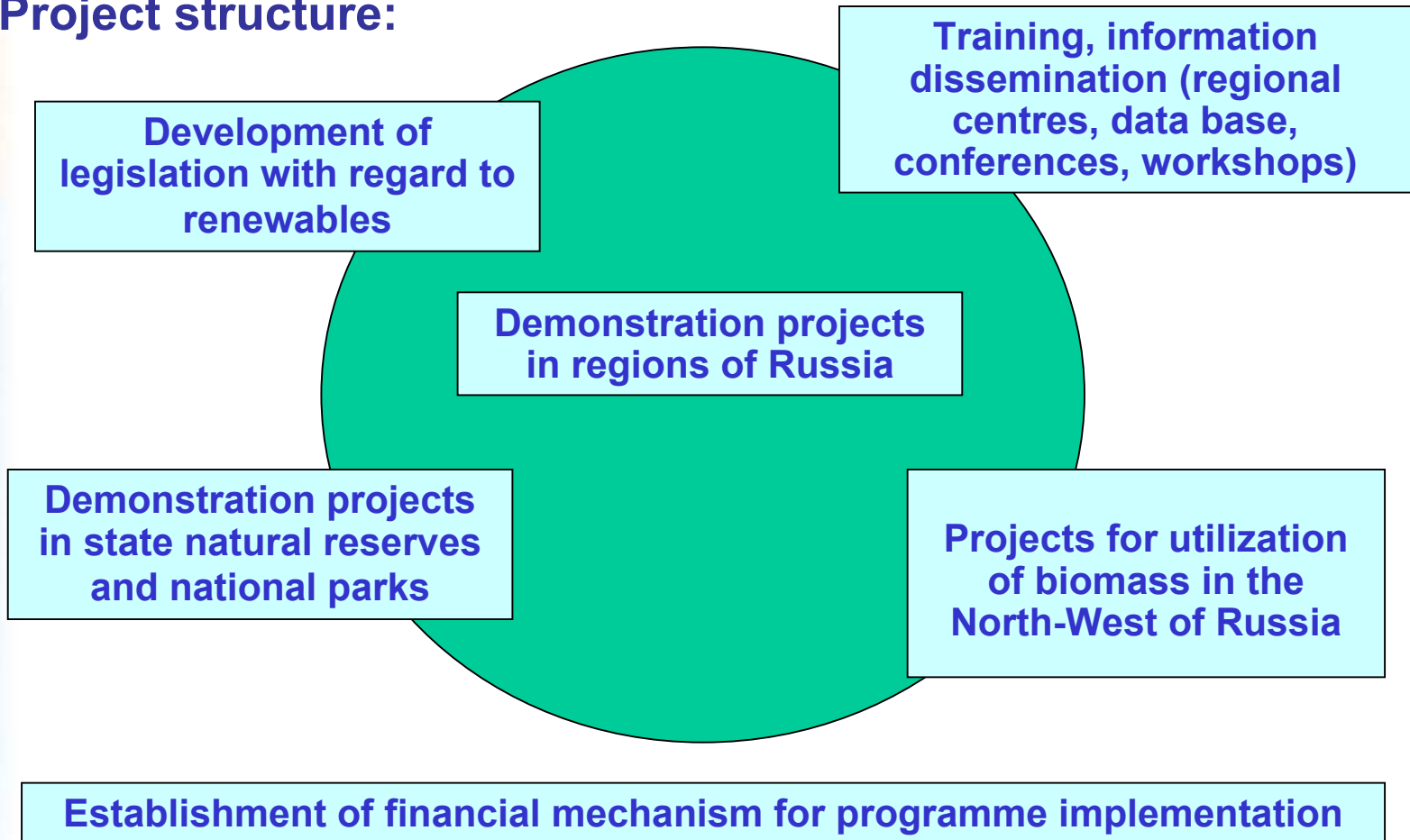
- **Establishment of a favourable investment environment for renewables' development through financial, information and institutional support**
- **Establishment of financial mechanisms for investments in renewables**
- **Motivation of innovations and development of technologies**
- **Development of local renewable energy resources**
- **Creation of conditions for GHG emission reduction**



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GEF/World Bank Project Russian Programme for Renewable Energy Development

Project structure:





Examples of Projects in Renewable Energy in the Russian Federation

Energy efficient residential building in Nikulino-2 district (Moscow)

- establishment of heat and hot water system in the sample residential building based on heat pump system. Energy saving of 45.5% was received as compared to norms.

Energy supply of the special astrophysical observatory (Tiberda natural reserve, village of Arkhyz, Karachaevo-Cherkesskaya autonomous region)

Energy efficient village school in the village of Philippovo (Yarosalv region)

- village school equipped with a heat pump system for heat supply, utilizing low-potential soil heat with heat accumulation
- Energy saving of 31% was received as compared to norms



Examples of Projects in Renewable Energy in the Russian Federation

Development of technologies and equipment for anaerobic and thermochemical biomass processing

- refuse of cattle-breeding complex – a cattle-breeding complex Poyarkovo (Moscow region)
- solid wastes – K.D. Pamfilov Academy of Communal Economy
- poultry-breeding wastes – poultry complex Lunevo (Moscow region)
- plant-breeding refuse – agricultural firm Iskra (Moscow region)

Establishment of a combined autonomous solar power system for energy supply of individual houses (in the conditions of Central and North-Eastern Asia)



Examples of Projects in Renewable Energy in the Russian Federation

Development of small hydro power system

- Tuva Republic - capacity 1.12 MW
- Central Federal County – 4.8 MW
- Altai Republic – 78.6 MW

Construction of geothermal power plants

- 1999 Verkhne-Mutnovskaya geothermal power plant 12 MW
- 2001 Mutnovskaya geothermal power plant 50 MW
- 2003 4th unit of Verkhne-Mutnovskaya geothermal power plant with binary cycle





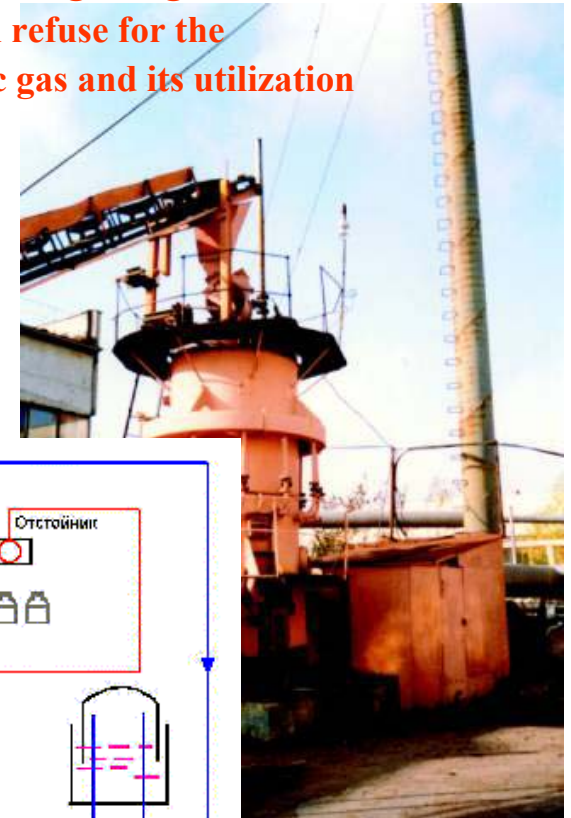
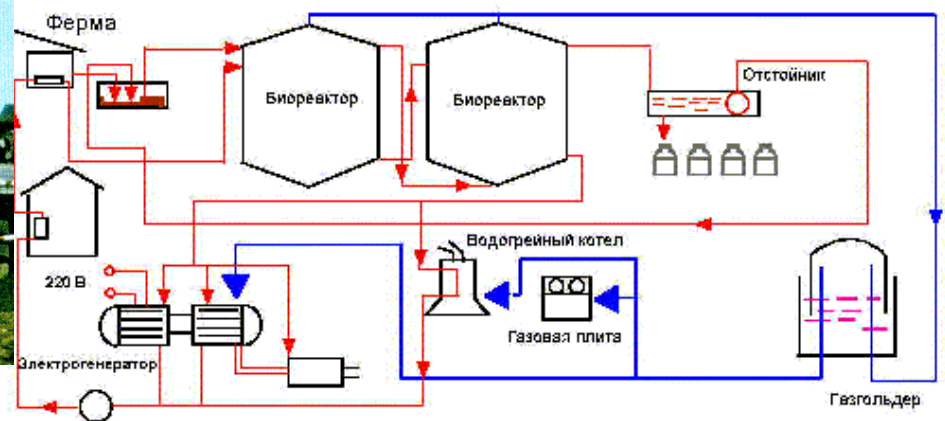
Examples of Projects in Renewable Energy in the Russian Federation

Biomass utilization

Biochemical processing of organic refuse in agriculture for:

- biogas production,
- sanitary refuse refining,
- production of highly effective fertilizers

Thermochemical processing and gasification of wood and municipal refuse for the production of synthetic gas and its utilization in energy





Examples of Projects in Renewable Energy in the Russian Federation

Project in bioenergy, Essolia, Karelia

- Establishment of boiler with 5 KW capacity
- Replacement of 1885 t of coal per year
- Replacement of 1500 t of fuel oil per year
- Biomass produced at the local saw-mill





Examples of Projects in Renewable Energy in the Russian Federation

The Sawmill Project, Arkhangelsk region

- Old and inefficient boilers operating on wood and fuel oil
- Independent heat supply for the village

Installation of dry sorting line and new biomass-fueled boilers for saw-mill provision and increase in the local population supply. Replacement of the municipal coal-fueled boiler plant for the heat supply of the local population.





Examples of Projects under Preparation in Renewable Energy in the Russian Federation

The system of heat and electricity supply for the demonstration and training complex of the Rybinsk instrument-making plant in the village of Yakunniki, Yaroslavl region 2003-2008

- Cost 5 mln. USD, 80% - Russian party

Wind and hydrogen system for energy supply of the aerodrome complex in the city of Kumertau, Republic of Bashkiria, 2005-2010

- Cost 5 mln. USD, 80% - Russian party

Wind and hydrogen plants for energy supply of 13 inhabited localities in Chukotka autonomous region 2005-2010

-Cost 40 mln. USD, EBRD tender

Bioenergy complex for energy supply of tourist complex in the city of Rybinsk, Yaroslavl region 2005-2010

- Cost 6 mln. USD, 75% - Russian party



Examples of Projects under Preparation in Renewable Energy in the Russian Federation

Autonomous energy supply of residential district in Novoshakhtinsk, Rostov region, based on heat pump systems 2005-2010

- Cost 6 mln. USD, 75% - Russian party

Autonomous energy supply, based on renewables, of the special astrophysical laboratory in Karachaevo-Cherkessia 2003-2008

- Cost 3 mln. USD, 60% - Russian party

Autonomous energy supply, based on renewables, of research and production centre with the Russian Academy of Sciences' Institute of Bioenvironment in Kosino district, Moscow.

- Cost 3 mln. USD, 40% - Russian party

Establishment of information and analytical renewables centre with the system of regional affiliates and distant formation, Kosino district, Moscow.

- Cost 2 mln. USD, 50% - Russian party