

7th Japan-Russia Energy and Environment Dialogue in Niigata

«Prospects of cooperation of Primorsky Krai and prefecture Niigata in the field of energy saving»

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Primorsky krai – Niigata prefecture 2014

General information

- ❖ In Primorsky Krai lives about 2 million people, a share of urban population of 76,1%.
- ❖ The total area of the territory of Primorsky Krai makes 166 thousand sq.km - about 1% of all territory of Russia.
- ❖ Average temperature of January is from -12 to -27 °C, the average temperature of July is from +14 to +21 °C.
- ❖ Duration of the heating period makes of 192 days in the south till 240 days in the north of edge.
- ❖ In Russia the heating period begins if average daily temperature doesn't exceed 10 °C within 5 days in a row.



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Power complex

- ❖ Main types of the fuel and energy resources consumed in Primorsky Krai are:
 - oil products
 - coal
 - wood fuel
 - the liquefied hydrocarbon gas
- ❖ Since 2011 in Primorsky Krai the natural gas delivered on the gas pipeline «Sakhalin - Khabarovsk – Vladivostok» is used.
- ❖ The most important feature of Primorsky Krai is its power deficiency practically by all types of the main energy carriers.
- ❖ To Primorsky Krai it is from the outside delivered:
 - 18-23% the consumed electric power
 - 33-35% of the coal burned in the region
 - 100% of the used fuel oil and natural gas



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Heat energy supply

- ❖ Thermal networks of municipalities of Primorsky Krai make about 2600 km from which about 600 km are shabby thermal networks which demand full-scale reconstruction. Wear of thermal networks makes more than 70%.
- ❖ Heat supply of consumers of Primorsky Krai is carried out by 1035 heating boiler rooms of housing and communal services, with the developed power about 5000 Gkal, demanded annual volume of fuel for which makes about 1 million tons of coal and about 500 thousand tons of liquid fuel.



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Legislative base of the Federal Program of Energy Efficiency

- ❖ The state program of energy saving and increase of power efficiency for the period till 2020, is approved by the Resolution of the government of the Russian Federation 2009.
- ❖ Now in Russia the Federal law No. 261 (in an edition from 04.10.2014 y.) «About energy saving and about increase of power efficiency and about modification of separate acts of the Russian Federation».
- ❖ Within this law in Primorsky Krai the «Energy Efficiency, Development of Gas Supply and Power in Primorsky Krai» program which includes subprograms «Energy saving and increase of power efficiency in Primorsky Krai» for 2013 - 2017 is developed.

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Purposes of the Federal Program of Energy Efficiency

- ❖ The purpose of the subprogram is increase of efficiency of use of fuel and energy resources in the territory of Primorsky Krai.
- ❖ Achievement of a goal assumes the solution of the following tasks:
 - energy saving and increase of power efficiency in housing and communal services of Primorsky Krai
 - energy saving and increase of power efficiency of the organizations financed from the regional budget
 - stimulation of carrying out actions for energy saving and increase of power efficiency by the population and organizations of Primorsky Krai
 - stimulation of attraction of investments into projects in the field of energy saving and increase of power efficiency
 - increase in amount of the objects using secondary energy resources or renewables as power sources

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Analysis of the Federal Program of Energy Efficiency

- ❖ The analysis of the subprogram «Energy saving and increase of power efficiency in Primorsky Krai» shows that actions are generally reduced to granting subsidies for modernization in systems of municipal infrastructure and housing stock, namely:
 - reconstruction of boiler rooms
 - repair and restoration of worn-out thermal networks and systems of water supply
 - to promotion of knowledge in the field of energy saving
- ❖ To key tasks of stimulation of attraction of investments into projects of power efficiency, and also use of renewables is almost not paid attention.
- ❖ In spite of the fact that the share of use of renewable resources doesn't exceed 0,01% now, the program provided the beginning of financing of use of renewable resources only since 2016 of only 22 million rubles, and in 2017 – 32 million rubles. Such state is connected with shortage of means in the budget.



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Analysis of the Federal Program of Energy Efficiency

- ❖ It should be noted that, despite the adopted law on energy saving and a number of acts, introduction of technologies of energy saving in Russia and, in particular, Primorsky Krai is tightened.
- ❖ In our opinion, are the main reasons of it:
 - lack of interest of consumers of energy to introduce energy saving technologies. At introduction of energy saving technologies the consumer along with costs of introduction at once loses grants of the state and incurs additional expenses on operation of the introduced technologies
 - lack of mechanisms of stimulation of introduction of the most advanced energy saving technologies. Upon purchase of foreign technologies - the high import duties
 - lack of mechanisms of crediting for introduction of energy saving technologies.
 - lack of sufficient financing for introduction of energy saving technologies
 - existence of considerable fuel and energy resources and insufficient knowledge of the population



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Implementation of alternative energy sources

- ❖ In our opinion full-scale introduction of energy saving technologies in Russia can come not earlier than 5-10 years. But already today there are areas where it is possible to introduce them gradually.
- ❖ Introduction of these technologies in municipal authorities, such as the day nursery, gardens, schools, hospitals located in rural areas is the most acceptable. Today these establishments are subsidized, and the state incurs big expenses for power supply of these objects.
- ❖ We will consider resources nonconventional energy and possibility of its use in Primorsky Krai.

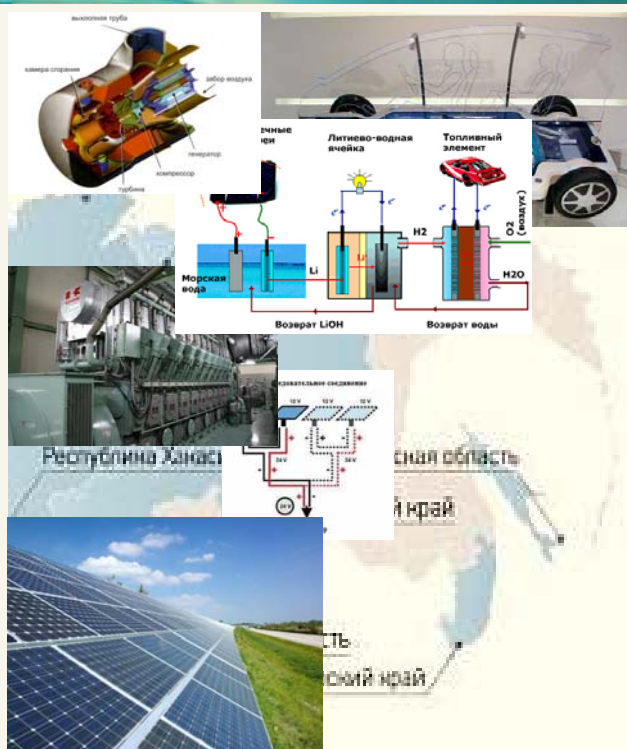


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Implementation of alternative energy sources

- ❖ In the Far East systems of the combined type will be demanded generally:
 - photovoltaic panels + wind turbines
 - solar water heaters + photovoltaic panels
 - cogenerators on gas (microgas-turbine, piston) + photovoltaic panels
 - diesel cogenerators + photovoltaic panels, diesel cogenerators + wind turbines
 - fuel elements, etc.

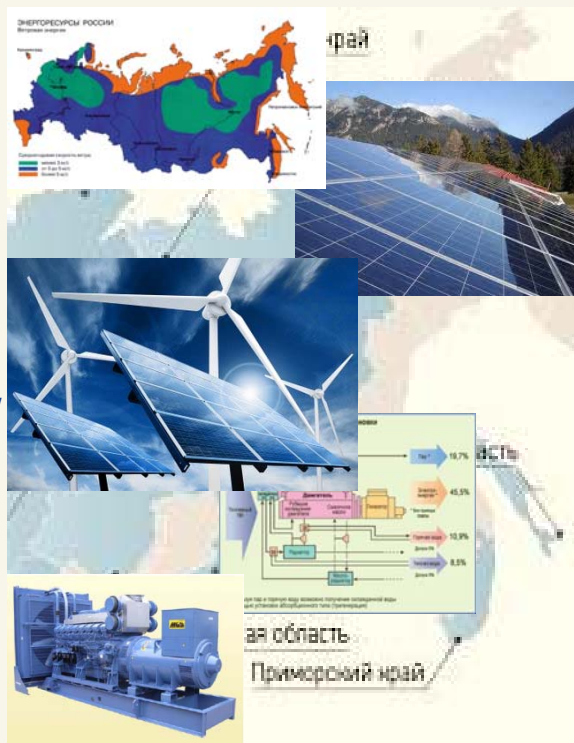


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Implementation of alternative energy sources

- ❖ The greatest interest is represented today by the following types of power installations on the basis of RES made in Japan:
 - photovoltaic solar panels
 - 2-30 KW wind generators
 - cogenerators on gas (including on the liquefied gas) with power up to 30 KW electric and 30-50 kW the thermal
 - diesel cogenerators with power up to 30 kW of electric and 30-50 kW the thermal
 - fuel elements on gas or liquid fuel. with power up to 30 KW electric and 30-50 kW the thermal
 - solar collectors with high efficiency



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Center of Power Effective Technologies project

- ❖ Project purposes:
 - justification of prospects of creation of the demonstration ground of power effective development of the Japanese companies on Russky Island
 - a choice of technologies for coproduction of the energy saving equipment in the Russian Federation
 - cooperation in development of devices for use of renewables
 - create the Center of Power Effective Technologies



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Center of Power Effective Technologies. Project creation

- ❖ The center must include:
 - the operating VEU samples, the photovoltaics power plant heat generating installations on the basis of solar collectors, accumulators of warmth, thermal pumps and a geothermal borehole field
 - skilled cogeneration and binary power installations, fuel elements on hydrogen and natural gas
 - installations for receiving and storage of fuel hydrogen
 - electric power stores on the basis of modern lithium - ion accumulators, kinetic stores, etc.
 - equipment for natural modeling of electric network processes and processes of management of production, transportation and distribution of energy
 - experimental water-wheels and installations for use of energy of sea currents, inflow and sea waves
 - complex of the buildings of the center designed on the principles of energy saving, taking into account the experience of design and construction of a design like «Clever house» equipped with the equipment for monitoring, control and management of work of the power equipment skilled and demonstration grounds and the operating objects of generation

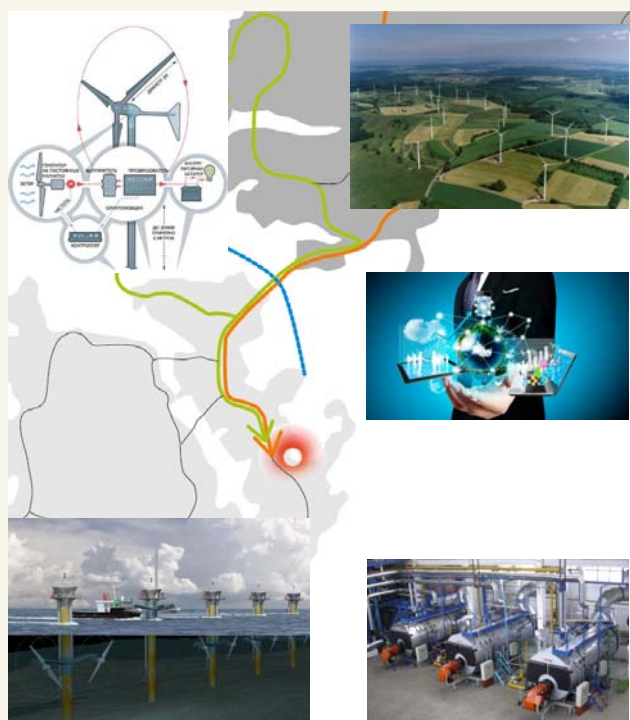


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Center of Power Effective Technologies. Project realization

- ❖ Creation of the demonstration and exhibition ground to base of the advanced models of the power installations made in Japan, using RES and realizing effective ways of energy saving
- ❖ Creation on Russky Island of a number of the enterprises for production and introduction of the energy saving equipment on the basis of joint Russian-Japanese development
- ❖ Expansion of a technical exchange in the field of RES and technologies of energy saving on condition of mutual interest of the parties
- ❖ Carrying out basic actions for introduction of power effective installations of the Japanese companies on Russky Island, to design and construction of life support systems at the level of structure of the building like «Clever house»



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Center of Power Effective Technologies. Project realization

- ❖ Detailed study of the feasibility study with a territory choice for placement of the ground and «Clever house»
- ❖ Design engineering of the ground on the basis of offers of the Japanese companies – suppliers of the demonstration equipment
- ❖ Construction of the building like «Clever house», installation and adjusting of the Japanese companies on the demonstration ground on Russky Island
- ❖ Development and implementation of the program of joint research and developmental works on the Energy Saving Technologies direction on the basis of the installations placed on the ground
- ❖ Formation and implementation of the program of basic researches in for the purpose of creation of new energy saving technologies



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Coproduction of power effective equipment and goods

- ❖ To organize coproduction in Primorsky Krai of wind power installations of low power:
 - the 0,5 - 1 kW wind generator for autonomous consecration (columns for street consecration with wind generator and the photovolta solar panel)
 - the 2 - 10 kW wind generator for autonomous power supply of buildings of a housing estate and small enterprises
- ❖ The Japanese party delivers to Russia the main accessories of wind generator and the photovolta solar panel
- ❖ The Russian side makes a necessary metalwork - masts, lighting columns, supporting frameworks of the base and carries out assembly and adjustment of wind generator , and also marketing of the market and sale of installations in the territory of the Russian Federation



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Coproduction of power effective equipment and goods

- ❖ Coproduction of installations of the combined type on the basis of RES by the principle of SKD assembly on the basis of import supplies of equipment is possible (for example, wind generators, thermal pumps, solar collectors)
- ❖ The power installations working on the brought liquefied gas and systems of storage of gas with the highest level of safety and automation are of interest



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The Road Map of project

- ❖ To organize coproduction in Primorsky Krai the photovoltaic solar power plants of low power:
 - photovoltaic solar stations with a power of 2 - 3 kW
 - photovoltaic solar stations with a power of 5 - 6 kW
- ❖ The Japanese party delivers to Russia the photovoltaic solar panels worth generation of 1 W not higher than \$1.
- ❖ The Russian side provides a complete set of stations with inverters, controllers and accumulators
- ❖ The Russian side carries out assembly and adjustment the photovoltaic solar power plants
- ❖ The Russian side carries out marketing of the market and sale of the made installations in the territory of the Russian Federation



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The Road Map of project

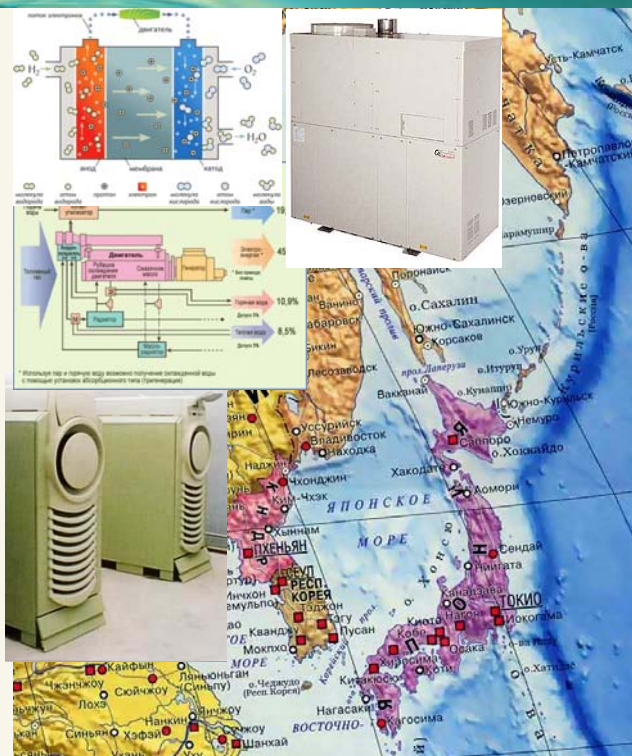
❖ To organize coproduction in Primorsky Krai cogeneration power stations of the low power for power supply and heating the objects of individual housing construction IHC:

-the diesel cogenerators with the power to 30 kW

-cogenerators on gas fuel with the power to 30 kW

-fuel elements with the power to 30 kW

❖ Scheme of joint actions the same



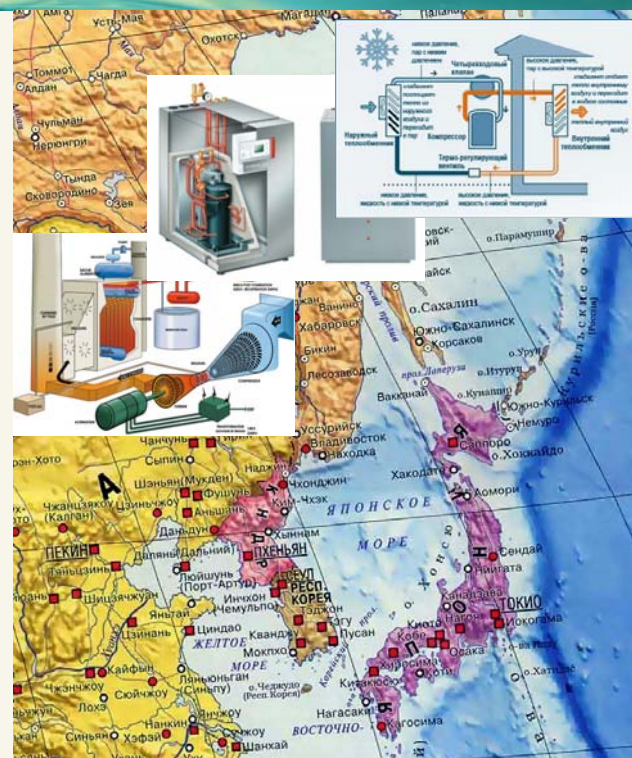
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Our offers for implementation of joint projects

❖ At development of the relations with partners from Japan it is necessary to concentrate attention on the modern installations using gas (or the liquid fuel replacing it) for obtaining thermal and electric energy, cold - it is better on the principle of a cogeneration: micro gasturbine cogenerators, fuel elements

❖ Coproduction of installations of the combined type on the basis of RES by the principle of SKD assembly on the basis of import supplies of equipment is possible (for example, wind generators, thermal pumps, solar collectors)



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Our offers for implementation of joint projects

- ❖ Due to the increased cost of production coming from Japan to Russia the most perspective is construction in the territory of Primorsky Krai of the enterprises of assembly in the beginning, and then - productions of the energy saving equipment and devices of local power on the basis of renewables
- ❖ Earlier on «5th Japan–Russia Energy and Environment Dialogue in Niigata» we offered the scheme of realization of cooperation in energy saving. Even it is created joint the WINPRO-RUS enterprises, but unfortunately cooperation in this sphere goes extremely slowly

It is sure that in the future cooperation in this sphere will be successful...



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Thanks for attention

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