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Prospects for Increasing Energy Efficiency and Introducing Renewable Energy Sources in the Black Sea Region of Russia

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- **Black sea region**

- In Russia resource for increasing energy efficiency is 3-4 times higher than resource for increasing production of primary energy carriers up to the year 2020.
- As for the Black sea region of Russia – this is one of the most suitable regions for improving energy efficiency and introduction of energy saving technologies

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Prospects for RES in the Black Sea region of Russia

- Black Sea Region of Russia – zone of energy deficit
- The region has great potential for the development of alternative energy sources
- Among member-states of BSEC only Russia and Azerbaijan are self-sufficient in in the context of non-renewable resources
- Other states are pushed to develop alternative energy, use renewables and increase their share in the energy balance
- Full use of RES potential requires political support and facilitation of their competiveness in comparison with traditional resources
- Full realization of the potential of all RES for energy supply of the region requires strengthening of cooperation of partners and creation of a long-term regional energy strategy of all member-states of BSEC

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Prospects for RES in the Black Sea region of Russia

The state of alternative energy sector in the Black sea region of Russia reflects the overall state of the energy sector .

While traditional sources of energy (heat power plants) still have the leading role in the Black Sea area of Russia their condition is less than adequate.

Amortization of some power stations makes up 50-70% and the costs of fossil fuel increases. Therefore, prospects for alternative energy sources are rapidly.

Planned introduction of the Rostov nuclear power plant raises concerns of the population and facilitates possible use of RES.

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Renewable energy sources in the Black Sea region

- Practically all Russian regions possess at least one type of renewable energy sources while the majority of regions, including the Black sea region – several RES
- In some cases their use is more profitable than the use of traditional sources, such as fossil fuels, if their supply is expensive and not reliable
- Non-network energy supply on the basis of RES proved its effectiveness and efficiency
- It seems expedient to use hybrid wind-diesel installations, boilers using biomass and small hydropower stations that might be competitive in comparison with traditional technologies based on the use of fossil fuels

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Prospects for RES
Solar energy

Location of the region is one the most favorable in the country. Therefore:

- Application of solar collectors and batteries is expedient for small and medium size installations in industry, agriculture and municipal sector.
- Pilot systems using solar energy for heating water for boilers are installed in Anapa, Krasnodar,Timashevsk and other towns of the Black Sea area of Russia

-There are good prospects for applying solar collectors in combination with systems of central heat and water supply and with boilers for getting hot water

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Prospects for RES
Solar energy

Russian state firm Rusnano and energy company Renova plan to construct Russia's first solar power plant in the spa town of Kislovodsk near the Black Sea. It will have a 12.3 megawatt (MW) capacity, split evenly between photovoltaic (PV) and thermal power.

The deal is worth US$97mn and the plant is expected to come online by 2013. Additionally, the two companies plan to start manufacturing solar film panels in late 2012.

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Prospects for RES
Energy of biomass

It is expedient to construct plants for processing of wastes with anaerobic processing in order to produce **biogas** in all big cities of the region

Well-developed cattle breeding creates good prospects for construction of biogas installations in the region.

Such installations might be constructed on treatment facilities in many big cities of the region –Krasnodar, Rostov, Makhachkala – in order to get biogas for the use in boilers and getting heat and hot water.

A new government program was adopted that would provide financial support for the construction of 30 new bio-fuel plants, as well as for upgrading existing facilities.

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Hydro-energy of small rivers and geothermal energy

There is a big number of small rivers in the Black Sea region of Russia. In 1940-1950-ies many small hydropower plants were constructed in the North Caucasus. They are now outdated and replaced by centralized power supply.

Recently their renovation and restoration began. Construction of 29 new small hydro-power stations is under way in Stavropol krai and the North Caucasus. Their total capacity is about 215 mWt

Serious deposits of underground thermal waters exist in the north Caucasus – Krasnodar and Stavropol regions, Dagestan. There are plans for construction of pilot geothermal power plant in Stavropol region

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Prospects for RES
Wind energy

Though the development of wind energy is much lower than in other European countries Black Sea region of Russia is one of the most promising areas in this field, There are plans for implementation of projects in the following areas of the Black sea region:

- Coastal zones of the Sea of Azov and the Black Sea,
- Pre-mountain areas of the North Caucasus
- Watershed between Volga and Don

Russia also plans to invest US$200mln in the construction of the country's largest wind farm (Yeisk) in the Black Sea region of the southern part of Krasnodar krai. The wind farm is set to enter commercial operation already in 2012 and will have a total capacity of 100MW.

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What need to be done?

Favorable conditions for development of RES in the Black Sea region of Russia require a breakthrough in four main directions:

- **First,** national and regional governments should formulate national and regional policies in the given field
- **Second**, new national and regional legislation is needed that will create a solid base for creating incentives for and investments in the development of alternative energy
- **Third,** raising the interest and awareness of the general public is necessary
- **Finally,** it is necessary to develop partnerships between Russian and international and foreign companies that will create stimulus for the development of strong markets for RES

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Is ready to cooperate on the development of a relevant regional strategy on improving energy efficiency and RES

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