

USDA Foreign Agricultural Service

GAIN Report

Global Agricultural Information Network

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Russian Federation

Biofuels Annual

Russia Biofuels Annual

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Report Highlights:

As one of the world's leading producers and exporters of oil and gas, Russia has limited interest in biofuels. The share of biofuels in the overall energy production matrix of Russia varies from 0.9 to 1.2 percent, with biomass accounting for 0.3 percent. The emerging Russian biofuels industry is driven primarily by growing demand for biofuels from Europe.

Post:

Moscow

Executive Summary:

The Russian government stated its objective to make Russia 40 percent more energy-efficient by 2020. While there has been vague attempts at the federal level to promote the production of biofuels, there are a growing number of activities at the regional level. The number of innovative projects aimed at production of alternative energies, such as from plant cellulose, including wood or oilseeds, and agricultural wastes has increased, along with production of biofuels raw materials for export (including fuel pellets, rapeseed, and rapeseed oil). The emerging Russian biofuels industry's export orientation is driven by the growing demand for biofuels in Europe and other nations. The production of biofuels is still small and has not yet affected Russia's domestic grain and oilseed prices. Experts believe that without government support and initiatives for biofuels the sector will not develop in Russia.

Due to its abundance of petroleum and natural gas, Russia produces small amounts of biofuels and has minimal domestic demand. Current biofuels projects that are in operation are mostly supported by regional governments and financed by foreign investors. In most cases they are pilot research projects that produce small amounts of biofuels for generating heat and/or electricity for the plant, or production of organic fertilizer from agricultural waste. Currently there is no industrial production of either bioethanol or biodiesel in Russia. Different sources estimate the share of biofuels in the overall energy production matrix of Russia from 0.9 to 1.2 percent, with biomass accounting for 0.3 percent. While not a priority, the GOR is considering the production of advanced biofuels as an alternative to developing a biofuels sector in Russia.

Policy and Programs:

Russia is still in the initial stage of establishing regulatory norms for bio energy development and standards for biofuels.

Recently GOR stated its objective to make Russia 40 percent more energy-efficient by 2020. The government has started to pursue this target by substituting incandescent bulbs for more energy-efficient lights. The government plan stipulates the need to support small energy-generating projects, like biofuels, by instituting a reasonable tax policy and subsidized interest rates. Currently there are no incentives to make energy projects economically feasible.

According to President Medvedev's economic advisor Arkadiy Dvorkovich, the key goal is "wider use of bio resources, primarily for developing local, small-capacity energy facilities and increasing the share of bio resource in energy consumption of certain regions".

According to the new plan developed by the Russian Ministry of Energy on the use of new and existing power capacity until 2030, new low-capacity power plants will produce up 1.1 gigawatts (GW) in 2021 to 2025, and another 2 GW by 2030. Total new capacity planned before 2030 is 173

GW, with 6.1 GW share from renewable energy sources that will account only 2 percent out of the total 324 GW capacity by 2030.

However, experts believe that it will be difficult to fulfill the objective of such an increase, unless the government passes a law that will require grid operators to first purchase the power from generators using renewable resources.

The next step of the government is to improve legislation on waste management that will require timber mills to send the waste to a bio-mass powered generator.

Currently there are two major legislative acts in place that stimulate the development of renewable energy sources in Russia: 1) Federal Law "On Electrical Energy Industry" that identifies types of renewable energy resources and authorities of the government of the Russian Federation in the sphere; 2) Government Resolution on the priorities through 2020 for increasing energy efficiency from renewable sources adopted by the Russian Government on January 8, 2009. The new resolution indicates a number of measures that are aimed at improving electrical power originating from renewable sources.

The government resolution established a goal to increase the share of renewable sources of energy in Russia to 1.5 percent in 2010 or 8.5 billion kW/hour, 2.5 percent in 2015 and to 4.5 percent – in 2020 which represents 80 billion kW/hour. Production of thermal (fossil-fuel) energy generated from renewable sources will increase from current 63 million Gcal to 121 million Gcal in 2020. Electricity production generated at hydro power stations with capacity over 25 MWth will go up from 168 billion kW/hour in 2010 to 284 billion kW/hour in 2020.

According to the government projections through 2020 the structure of generating capacities in Russia will see the following change:

- generation of electricity at hydro power station (with capacity less than 25 MWth) will increase from 47 million kW (20.6 %) to 57-59 million, nuclear power stations from 24 million kW(10.5%) up to 35-41 million (12.1-12.9%), powers stations on renewable sources – from 2.2 million kW to 25.3 million kW;
- share of gas will go down from 69 percent in 2009 to 61-66 percent in the 2010 fuel consumption pattern, while the share of coal will increase from 26.2 percent up to 30-35 percent. Total gas consumption will rise by 10 percent, while coal -by 1.35-1.75 times.

Most specialists believe that the Russian government will achieve lower than its potential by 2020 for the following reasons:

- Higher construction costs of the facilities producing alternative energy in comparison with fuel-burning power plants. The equipment for facilities producing alternative energy has to be imported as domestic equipment production lags behind.
- Domestic electricity network is not adapted to support operation of the facilities for alternative energy.
- Lack of financial support from the federal government.

The Russian Ministry of Energy reports that volume of technically accessible renewable sources of

energy in Russia is estimated at 24 Btoe. The share of electricity generated by renewable sources is accounted for about 1 percent, while the share of thermal energy originated from renewable resources represents about 3 percent or 2000 million Gcal.

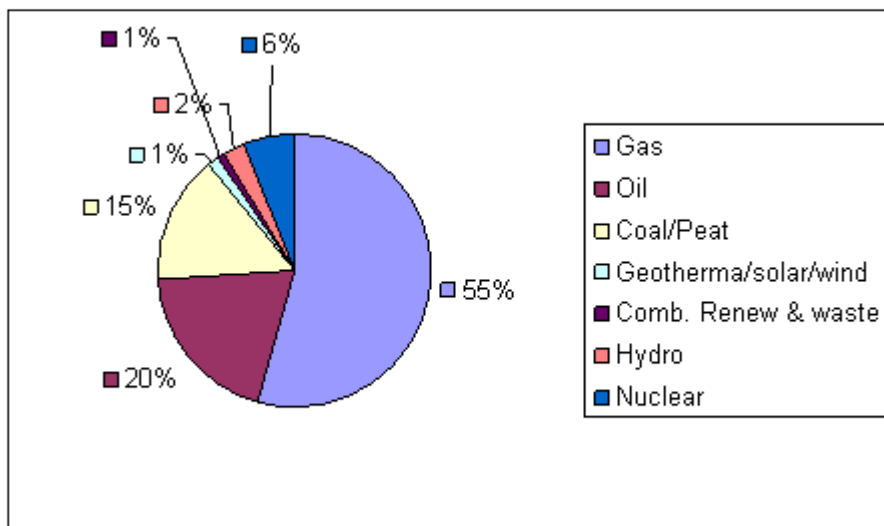
The rising costs for energy resources and electricity has prompted the government to be more proactive in adopting more solid legislative base for stimulating production of alternative resources. Three more legislative acts related to production of alternative energy in Russia are currently under consideration by the Russian government: 1) Resolution on the Order of capacity added for power-producing facilities; 2) Resolution on criteria for distribution federal government subsidies to compensate connection cost to facility producing renewable energy resources; 3) Resolution that stipulates order and procedures for registering of green certificates. However, these drafts are not on a particular timetable and are unfunded. It is uncertain if they will make it through the legislative process and become policy in the near future.

Experts believe that Russia has great potential in developing wind energy and tidal energy, however, biomass has more potential in terms of economic efficiency given Russia's enormous forestry resources.

The Natural Resources Committee of the State Duma strongly advocates the idea for increasing the share of renewable sources for environmental reasons, such as considerably reducing greenhouse gas emissions versus fossil fuels. In this aspect, Russia has an advantage over EU countries because of previous failures to reduce greenhouse gas emissions. As a result, EU countries would have an option of either purchase quota for pollution from Russia or increase production of ecological fuel where Russia owns raw material (major resources) for production of alternative energy.

Graph 1: Russia: Share of Total Primary Energy Supply in 2007

Total generation: 672,139 ktoe



Source: International Energy Agency (latest data available).

The Ministry of Agriculture of the Russian Federation believes the agricultural sector can easily become energy-independent due to large amounts of organic waste. Specialists estimate annual

average waste from cattle production at 90 million MT. Several Russian provinces have adopted their conception for the development of biotechnology and bio energy for 2009-2012. Belgorod province is most willing to implement such practices. Local authorities will install 20 bio gas stations in the province, including 12 at pork processing facilities. Local experts estimated that agricultural waste from cattle in Belgorod province would produce 500 m³ of biogas daily and reduce the agricultural production costs by a minimum of 25 percent.

The Governor of Rostov province recently reported on construction six facilities for processing agricultural, wood and municipal wastes into fuel, fertilizer, chemical and medical products. The media report says that the region allocated 4.2 billion Ru (\$320 million) to implement the project.

Bioethanol and Biodiesel:

To date there are no official statistics on bioethanol and biodiesel production, consumption and trade. Different sources estimate the share of biofuels production in overall energy production matrix of Russia from 0.9 to 1.2 percent.

Production of bioethanol in Russia can become profitable only if the Russian government abolishes the excise tax. However, the government has not moved in this direction yet; due to their influence of oil industry lobbying. Production of bioethanol can be produced for export only since it is exempt of the excise tax. According to experts at the Institute of Conjuncture for Agricultural Market, Russia currently can easily convert 2.3 million MT of grain into 830,000 MT biofuels.

Experts of the Institute estimate that Russia will need 110-120 million MT of grain to substitute current total gas oil consumption with 100 percent of biofuels. On the other hand, for total substitution of diesel for biodiesel 70-80 million MT of rapeseed would be needed, while current production of rapeseed is less than 1 million MT.

Experts attribute this failure also to the higher prices of wheat and oilseeds worldwide making biofuels production less profitable. The development of the biofuels sector is not stipulated in the National Agricultural Priority Project, and with lack of the government support, the sector is deemed for failure.

According to trade sources the Omsk oblast facility, Titan, previously started production of bioethanol and has closed its operation as a result of higher cost of production and lack of raw material.

However, there are projects being considered, such as in the Tyumen oblast. According to trade sources, JSC Biotechnology, in partnership with Tyumen company Particom, together they have agreed to invest \$60 million in biofuel production from cellulose waste. The facility is expected to produce 30,000 MT of bio buthanol, 3,000 MT of acetone and 59,000 MT of wood pellets annually. The plant is scheduled to start operation in 2012.

Aston, in the Rostov province, renovated its oilseed processing plant with an annual capacity of 400,000 MT, including rapeseed, soybeans and other oilseeds. The facility sources electricity from its own power station that is being operated from pod and sunflower waste. The Russian side collaborated with specialists from Canada, Belgium and Germany to bring in innovative

technologies to develop the project.

Biomass for Heat and Power:

The long-term plan for developing the forestry sector by 2020 is to substantially increase production of value added forestry products. While not a priority, the Federal Forestry Agency also considered an increase in biomass production as the main alternative for developing Russia's biofuel sector. Russia is endowed with abundant forest resources; comprising one-fifth of the world's forested area and one-quarter of the world's timber stock. Russia's northwestern region offers tremendous potential for production of bio energy for export to European markets. Analysts estimate that current forestry producers use 40 percent of allowable forestry cut; annually harvesting only 200 million cubic meters from a potential 500 million cubic meters of allowable annual cut.

The Russian forestry sector produces about 14-15 billion MT of biomass per year, equivalent to 8 billion Toe. Various experts estimate that Russia can use up to 800 million MT of wood biomass for energy production. In the European part of Russia alone experts estimate annual wood waste at 17 million MT equivalent to 4 million MT of wood pellets. Total wood waste volumes at forestry processing facilities vary considerably from 5 to 60 percent depending on the processing technology of the plant. A small number of forestry facilities utilize wood waste at the facility to generate energy and heat; while other facilities supply wood waste and saw dust to larger neighboring forestry plants or paper mills. However, the majority of wood waste is not being used due to lack of special equipment, modern technologies and the lack of government incentives and foreign investments.

During the conference held in April 2010, "Forests of Russia", forestry community experts and business's met to address policies to increase the use of biomass for stationary heat and electricity production. Most forestry processing facilities are looking into ways to reduce constantly rising electricity prices by processing low grade timber or sawdust.

Experts believe that forestry processing facilities can easily switch to alternative fuels, specifically those that produce plywood and fiberboard. During the same conference most experts agreed that biofuel production from wood waste is a promising sector to counter act rising electricity tariffs, oil and gas, and occasional breakdown in heating and electricity because of the abundance of wood waste in Russia.

Participants at the conference from the scientific and research society reported that there are 1,256 units of steam and water-heating boilers, 23 thermal and 97 diesel power stations in Russia.

Wood Pellets

Experts estimate the annual wood pellet market capacity in Europe at 7-8 million MT. The forecast for 2020 calls for a major increase in demand from the European market, rising to 20-22 million MT annually. EU experts estimate Russia's share of the EU import market in 2009 was 20 percent. Russia has a large export potential and European pellet demand will likely stimulate an increase in production. Russia will require large investments to upgrade facilities and expand production capacity; additionally domestic demand could absorb some of the increased near-term production.

According to trade, most Russian factories process wood pellets destined to Europe in conformity with DINPlus quality norms approved by the EU. Trade sources report that EU currently does not require certification for the Russian wood pellets as long as the product is manufactured in compliance with DINplus. Traders believe that an implementation of new standards to quality and technologies for production of fuel pellets in Europe would not affect Russian producers since physical and chemical indicators of raw material in Russia and Europe are identical. Therefore it will not be hard to obtain an EU certification for the Russian plants exporting wood pellets.

Currently there are about 150 facilities processing wood pellets, with a total annual production capacity of about 1.3 million MT. Trade sources report construction of an additional 50 wood pellet facilities is likely to occur in the near term. The majority of the facilities are located in the Northwest, Central and Volga regions of Russia. About 80-85 percent of their total pellet production is exported to Europe. The forecast for 2011 calls for increasing wood pellet production mostly driven by greater demand from the EU market; coupled with government calling for an increase in the forestry sector efficiency

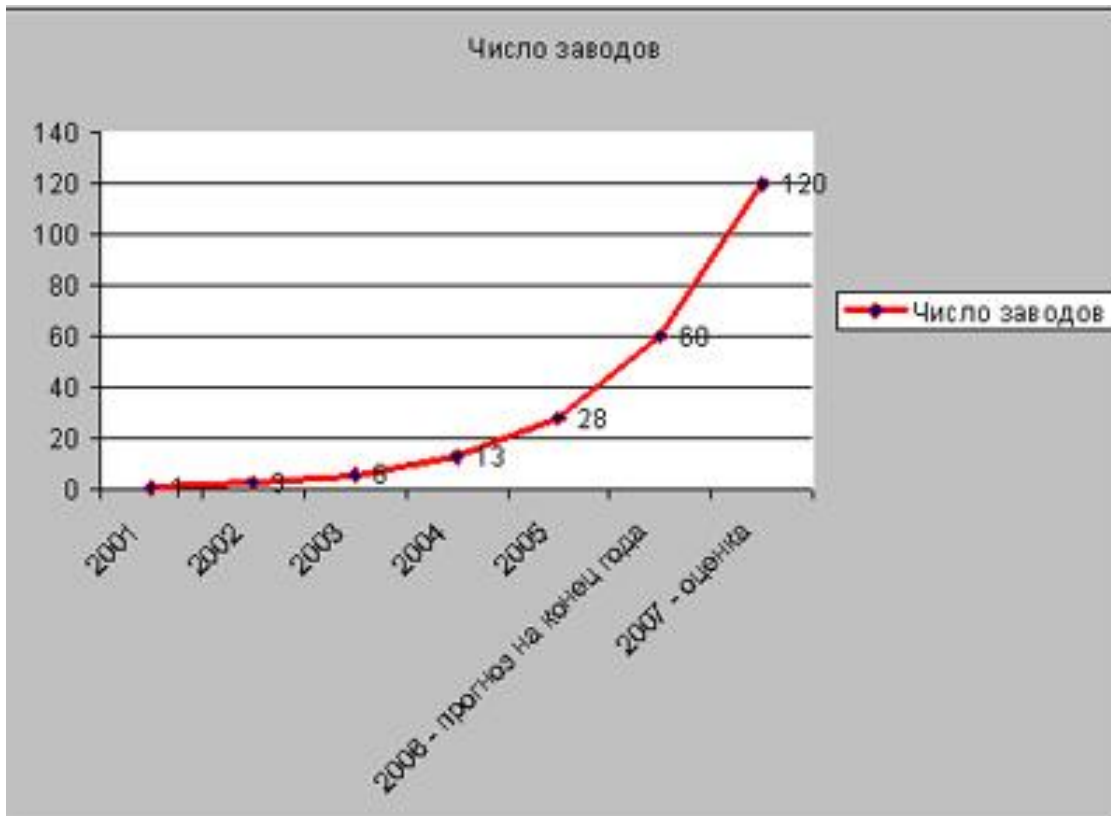
Trade sources also report that a number of new wood pellet production facilities for are being constructed in different regions of Russia, mostly in the Northwest because of its proximity to Europe. A large facility is set to start processing wood pellets in the St. Petersburg area, Vyborg Cellulose. Its production capacity is estimated at 1 million MT annually. A new facility will begin operation in Vetluga by the end of 2010 with a pellet production capacity of 15-20 thousand MT. One of the largest facilities for wood pellet production is located in Vologda oblast, Vologdabioexport with a production capacity of 500,000 MT annually.

There are also a number of facilities that will start operation in Siberia, such as Lesozavod-25 and Yenisey. Both reported a wood pellet production increase from 50,000 MT to 80,000 MT.

The market for wood pellets in Moscow is small but growing fast. In 2009, product market capacity

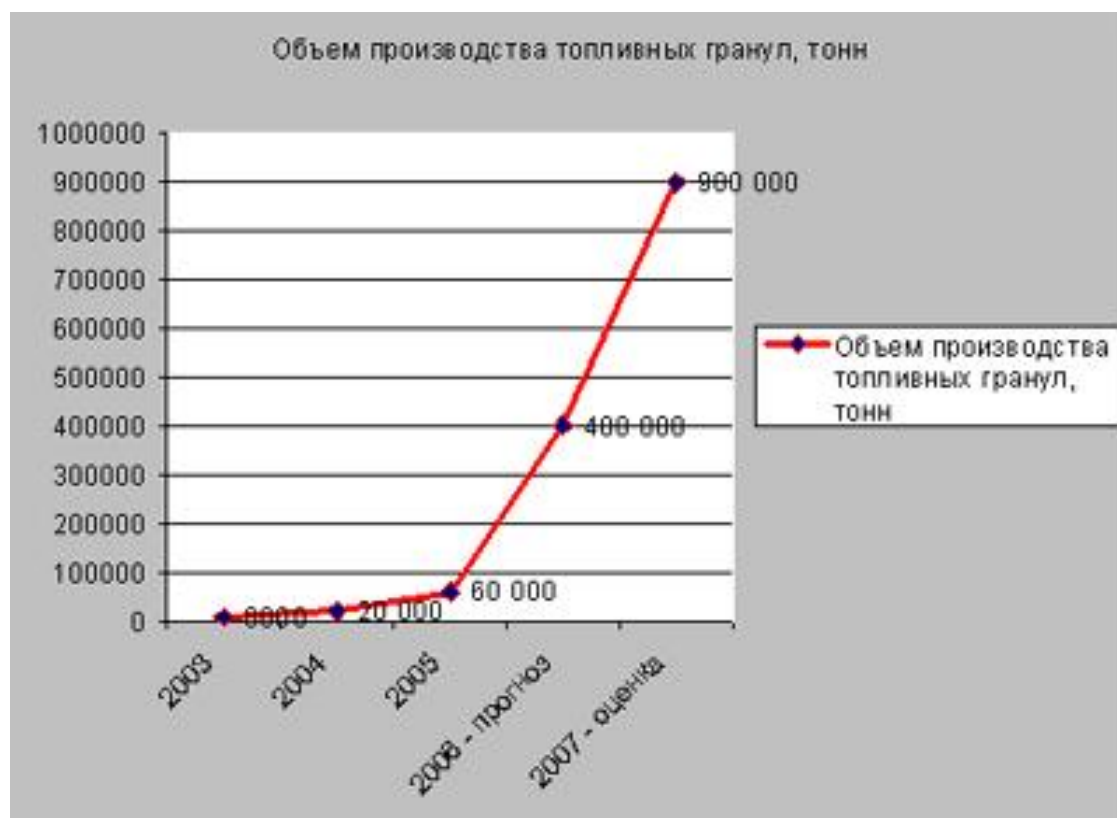
in Moscow was estimated at 2,500 MT annually. In 2010, the demand increased 2,000 MT per month. The major consumers are cottages in a close proximity to Moscow and a number of pilot apartment buildings recently constructed in the Moscow oblast. However, demand for wood pellets domestically is forecast to increase but at a modest pace. Experts believe that poor transport infrastructure, warehouses, and the product seasonality; will negatively impact the domestic wood pellet market development.

Graph 2: Russia: Dynamics of Number of Wood Pellet Facilities in Russia, 2001-2007.



Source: Internet Portal: www.wood-pellets.com (expert A.D. Ovsienko)

Graph 3: Russia, Dynamics of Wood Pellet Production in Russia, 2003-2007, MT



Source: Internet Portal: www.wood-pellets.com (expert A.D. Ovsienko)

Table 1: Russia: PS&D for Fuel Pellets, 1,000 MT.

CY	2006	2007	2008	2009	2010	2011
Production	555	670	731	967	1,320	1,590
Imports	0	0	0	0	0	0
Exports	407	490	511	707	990	1,220
Consumption	148	190	220	260	330	370

Notes on Statistical Data:

Bioethanol and biodiesel production in Russia is very small. There are no official data for these products in Russia. Production and trade data for wood pellets is based on WTA, Official Russian Federal Customs Service, and estimates of the FAS posts in EU. The trade data for wood pellets may not correspond to the EU data since there is no HS Code for wood pellets alone in Russia. Currently it is subsumed under HS 440130. FAS Post based its estimates on figures of National Biofuels Association, sources from research, analytical institutions as well as agricultural trade sources.

Author Defined:

Rapeseed Production

Russia’s production of the major oilseed crops (sunflower, soybean and rapeseeds) is forecast to increase in 2010 to 8.5 MMT with rapeseed share of about 9 percent. Sowing area for rapeseed for 2010 is forecast to increase by 170,000 hectares, as demand for protein feeds is growing. Specialists consider that the climate in many agricultural territories of Russia is good for production of rapeseeds. In 2009 export demand for rapeseeds and rapeseed oil was supported by growing domestic demand for rapeseed meal. Transportation, storing and crushing of rapeseeds is also improving. About 95 percent of rapeseed and rapeseed oil are exported to the EU and most of that is for biofuels.

Russia increased exports of rapeseeds in MY 2009, but in MY 2010 exports are forecast to decrease to 80,000 MT due to high domestic crushers’ demand.

Country	MY 2008		MY 2009 (estimate)
The World	62,539	The World	110,000
Germany	16,093	Netherlands	31,175
Lithuania	14,846	Germany	21,140
Netherlands	11,763	Greece	17,980
Denmark	7,460	Belgium	14,690
Mongolia	6,556	Finland	6,600

Austria	3,117	United Kingdom	2,630
China	2,016	Iran	2,465
Latvia	687	Mongolia	1,800
		Turkey	1,500
		Austria	1,105
Other	1	Other	8,915
MY for rapeseeds is from July through June			

Source: WTA for MY 2008 and FAS Moscow Post estimates for MY 2009.

Please refer to GAIN RS1018 Annual Oilseeds and Products for more details.

Petroleum, Natural Gas and Coal Based Energy Market

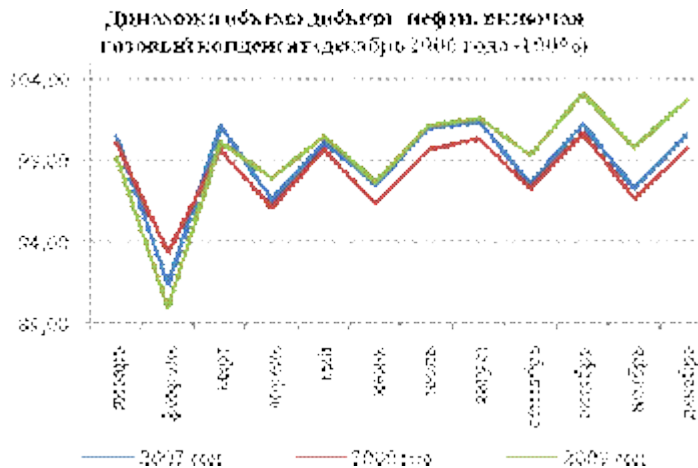
According to reports of the Russian Ministry of Economic Development, in 2009 the production and distribution of fuel and energy resources have decreased by 5.6 percent and are estimated at 94.4 percent of production levels in 2008. The industrial index for production and distribution of fuel and energy resources in 2009 is 99.4 % versus 2008. Production volumes for oil, including gas condensate, in 2009 are estimated at 493.7 million MT, an increase of 1.2 percent over 2008.

After a 2009 drop in oil production, the forecast for 2010-2011 calls for a continued increase in the oil production sector due to stronger demand in domestic and international markets.

Table 3: Russia: Production and Distribution of Electrical Power in 2009.

	2009	As a percent of 2008
Production and distribution of electrical power		94.3
Electrical power, billion kVT/h	992	95.4
Including produced by:		
Electrical power stations		
Nuclear power plant	164	100.3
Thermal power plant	652	91.8
Hydroelectrical power station	176	105.6
Production and distribution of steam and hot water (thermal energy)		
Thermal energy, million Gcal	1341	98.6
Including produced by:		
Electrical power stations	594	98.0
Heating (boiler) plants	673	100.0
Waste-heat utilization plant	68.7	91.6
<i>Source: Federal Statistics Service of the Russian Federation</i>		

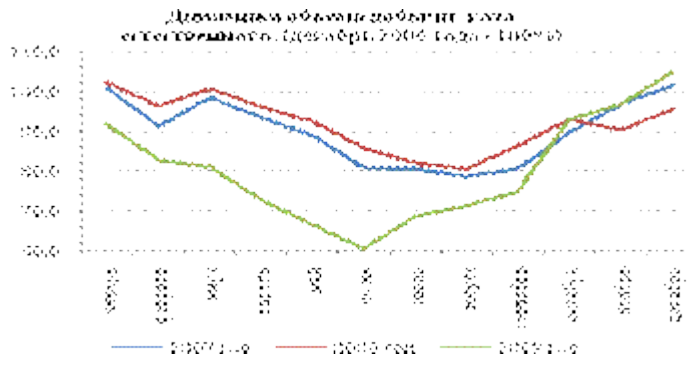
Graph 4: Russia: Dynamics of Oil Production, including Gas Condensate, January-December 2007-2009, in percent, (December 2006 – 100 %).



Source: Official report of the Ministry of Economic Development (MED), 2010

In 2009, gas production dropped to a level in 2000 and is estimated at 583.6 billion m³ compared to 664 billion m³ in 2008. Gazprom companies produced 461.5 billion m³; oil companies and other independent producers – 122.1 billion m³. The drop in 2009 gas production in comparison with 2008 is attributed to lower demand in the domestic market, specifically in energy and machine-building sectors, as well as weaker demand from international markets as a result of higher export prices for gas in the first half of 2009 and restrictions on the transit of the Russian gas through Ukrainian territory in early 2009.

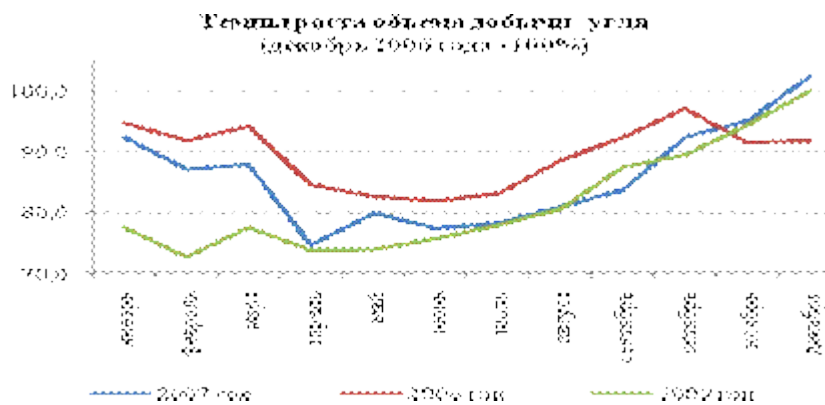
Graph 5: Russia: Dynamics of Natural Gas Production, Jan.-Dec. 2007-2009, in percent (Dec. 2006 – 100%).



Source: Official report of the Ministry of Economic Development, 2010 (MED).

Coal production in 2009 decreased close to 2005 levels and is estimated at 298.5 million MT. Experts attribute downward tendency in coal production in 2009-2010 in comparison with 2008, to weaker demand from the main sectors of the national economy affected by economic downturn. Leading regions for coal production in Russia continue to be Siberia, Far East, and North-western Federal district.

Graph 6: Dynamics for Coal Production, Jan.-Dec. 2007-2009, percent (Dec. 2006 – 100 percent)

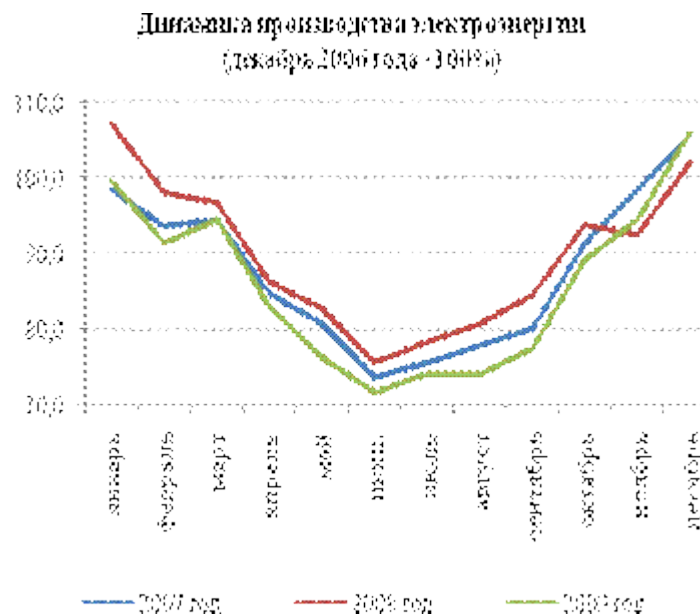


Source: Official report of the Ministry of Economic Development, 2010 (MED)

In 2009, Russia produced 992.2 billion kW/hour of electrical power, a drop to almost 2006 level. While production of electrical power from hydro electric and nuclear power stations increased by 5.6 percent and 0.3 percent respectively, electricity production declined in thermal electric power stations by 8.2 percent versus 2008. Lower production in 2009 is attributed to a production decline in major electric consuming sectors of the economy and warmer climate conditions during the normal “heating” season.

Graph 7: Russia: Dynamics of Electrical Power Production, Jan.-Dec. 2007-2009, percent

(December 2006 - 100 %)



Source: Official report of the Ministry of Economic Development, 2010 (MED)

Table 4: Russia: Production of Major Energy Sources, 2009

	2008	2009	As a percent of 2008
Electricity, billion kVT/hour	1040	992	102.5
Production of oil with gas condensate, million MT	488	494	101.2
Primary oil processing, million MT	237	236	99.6
Automobile gasoline, million MT	35.6	35.8	100.5
Diesel Fuel, million MT	68.9	67.3	97.7
Bunker oil, million MT	63.9	64.4	100.8
Production of natural gas, billion m ³	664	584	87.9
Coal production, million MT	329	298	90.8

Source: Ministry of Economic Development of the Russian Federation, 2010

Table 5: Russia: Distribution of petroleum products in 2007-2009, 1, 000 MT.

	2007	2008	2009
Automobile Gasoline			
Resources	35,092	32,623	32,782
- production	35,096	32,462	32,719
- imports	14.9	205.7	177.9
- change of stocks	+19.7	+44.6	+115.2
Use			
- sales in the domestic market	29,085	28,456	28,555
- - - through gas stations	25,478	25,133	25,842
- exports	6006	4,167	4,226
Diesel Fuel			
Resources	66,265	62,749	61,203
- production	66,302	62,902	61,463
- imports	0.7	221.0	208.9
- change of stocks	+37.2	+374.1	+469.0
Use			
- sales in the domestic market	29,479	28,602	24,936
- exports	36,786	34,147	36,277

Bunker Oil (Mazut)			
Resources	66,534	62,520	61,990
- production	66,742	62,142	62,210
- imports	21.9	257.2	260.3
- change of stocks	+229.8	-121.5	+480.3
Use			
- sales in the domestic market	15,380	10,811	7,988
- exports	51,154	51,709	54,002
<i>Source: Social-Economic Situation in Russia (Monthly statistics of the Federal Statistical Service), January 2009, January 2010</i>			

Table 6: Russia: Production of Oil and Major Oil Products January - June 2010.

Indicators	Jan.-June 2010	+/- Jan.-June 2009
Oil (1,000 MT)		
Production of oil with gas condensate, million MT	249,424	6,738
Sales in the domestic market	120,647	5,443
Exports	121,236	-1,222
Primary processing of oil raw material domestically	119,804	4,514
Production of major oil products (1,000 MT)		
Gasoline	17,258	-267
Diesel Oil	34,090	1,357
Crude oil	33,527	1,628
Jet fuel	4,203	94.3
Gas (mln. m3)		
Production (total) :	333,999	59,558
including Gazprom	262,174	45,393
Domestic consumption	242,215	18,834
Export	91,662	31,365
Coal (1,000MT)		
Production	155,886	17,915
Total supply	148,818	18,824
Including export	48,448	2,459
Electricity		
Total Electricity generation (million kW/hr)	520,200	25,600
Balance/power flow(million kW/hr)	6,800	0
Production of heat energy (1,000 G/kl)	303,400	27,700
<i>Source: Ministry of Energy of the Russian Federation</i>		

Abbreviations and Definitions

Biodiesel = Fatty acid methyl ester produced from agricultural feedstock

(vegetable oils, animal fat, recycled cooking oils) used as transport fuel to substitute for petroleum diesel

= Ethanol produced from agricultural feedstock used as transport fuel

Mtoe = Million tons of oil equivalent

MWh = Mega Watt hours = 1,000 Kilo Watt hours (KWh)

Toe = Tons of oil equivalent = 41,868 MJ = 11.63 MWh

Btoe = Billion Tons of oil equivalent

Gcal = Giga calories

1 Toe = 41.87 GJ

1 MT Gasoline = 1,342 Liters = 1.03 Toe

1 MT Ethanol = 1,267 Liters = 0.64 Toe

1 MT Diesel = 1,195 Liters = 1.02 Toe

1 MT Biodiesel = 1,136 Liters = 0.90 Toe

Related Reports

Title	Date
RS 1031 Oilseeds July Update	6/24/2010
RS 1022 Grain and Feed Annual	04/16/2010
RS 1018 Oilseeds and Products Annual	04/13/2010
RS 9037 Biofuels Annual	6/01/2010

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