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Biofuels Annual

Biofuels Update 2017

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Report Highlights:
As one of the world's leading producers and exporters of oil and gas, biofuels have an insignificant share in the overall energy production matrix of Russia, estimated at only 1.2 percent, with biomass accounting for only 0.5 percent. While there are no official statistics that measure the share of total energy production attributable to biofuels, it is estimated that at most biofuels accounts for five percent of Russia's heating energy and one percent of its electrical power. The development of the biofuels sector has never been a priority for the government in the past, and currently, with the strong focus on development of import substitution and export support programs, biofuels is even less of a priority. No major breakthrough is expected at least in the short-term. Wood pellet production and exports will likely continue to increase by 10 percent or to 1.45 MMT in CY2017, driven primarily by strong demand from Europe and more interest from the Asian markets, soft ruble and increasing local consumption.

Post:
Moscow

Executive Summary:

I. **Executive Summary:**

Since the August 2014 food embargo was implemented by the Russian Government, one of the major focuses of the Russian government has been further development of the agricultural sector. The goal is not only to cover the gap of banned imported products, but also to increase local production to the levels outlined in the Russian Food Security Doctrine by 2020. The development of the biofuels sector has never been a priority for the government in the past, and currently with the strong focus on the import substitution program and agricultural export support programs, biofuels is even less of a priority. There are government measures in place to support local agricultural producers and infrastructure to increase the volumes and quality of locally produced food products. Moreover, given the current economic conditions in Russia, development of the biofuels sector is not likely to get much attention or resources from either the Government of Russia or the private sector. There are no initiatives to, or even incentives to, commercialize biofuels.

Development of the bioethanol and biodiesel sectors will continue to stay low priority for the government. No major breakthrough is expected at least in the short-term. The production of biofuels still remains small and has almost no impact on Russia's overall domestic grain and oilseed prices. High excise taxes for ethanol in Russia, coupled with high production costs and increasing demand for grain for other uses, are all major obstacles for the development of the bioethanol industry. The Russian Ministry of Energy reports that there are no government-backed biofuel projects in operation at this time. The majority of biofuel ventures in Russia are supported by regional governments or financed by foreign investors. In most circumstances these projects are in a pilot phase and produce just enough biofuel to generate heat/electricity for their own facility, or for the production of organic fertilizer from agricultural waste. Currently, there is no industrial production of either bioethanol or biodiesel in Russia, except for several regional facilities that are supported by either regional administration or private companies.

The Federal Forestry Agency considers biomass production as the main alternative to Russia's developing biofuels sector. While Russia does have huge potential for biomass production; due to the large supply of high-value fossil fuels, and the lack of government incentives for businesses to utilize wood waste, only large wood processing facilities are interested in the commercial production of biomass. The Russian Forestry Agency sets total allowable cut at 670 million cubic meters, however only 208 million MT was actually harvested in 2016. Experts estimate that only 8 million m^3 of non-commercial timber and wood waste is being used for biofuels in Russia. The majority of wood waste occurs due to limited access to special equipment and modern technologies, as well as a lack of interest from the Russian government and foreign investors in further processing

Asian countries, such as Japan and Korea, are showing an increasing interest in Russia's wood

pellets, increasing demand for Russian wood pellets. This will drive Russian incentive for increasing the production of wood pellets. Currently, Russia is the third largest exporter of wood pellets to the EU, after the United States and Canada.

In 2016 and 2017, production of wood pellets is forecast to increase about 5-7 percent, due to mostly continued strong EU demand, interest from Asian markets, competitive export prices, increasing local production, new processing capacity, as well as the Russian government's call for increased efficiency in the forestry sector. However, the lack of a domestic standard for pellets, poor transport infrastructure, a lack of warehouses, and the product's seasonality will all negatively impact the development of the wood pellet sector in Russia.

Different sources estimate that renewable energies, including biofuels, represent 1.2 percent of Russia's total energy production, with biomass production accounting for only 0.5 percent of total production. While there are no official statistics that measure total energy production attributable to biofuels, it is estimated that biofuels account for five percent of Russia's heating energy and 1 percent of its electrical power. At present, Russia utilizes only 30 percent of its economically viable hydro-energy resources.

Disclaimer: This report presents the situation and outlook for biofuels in Russia. This report presents the views of the authors and does not reflect the official views of the U.S. Department of Agriculture (USDA). The data are not official USDA data. Official government statistics on biofuels are not available. This report is based on analytical assessments, trade sources and not official data.

II. Policy and Programs

Russia continues initiatives to developing regulatory norms for bio-energy development and stan
biofuels. Trade sources indicate that without government support and the development of policy
the sector is unlikely to develop.

Currently the development of the Russian bioenergy industry is outlined in the following basic d

1) Energy Strategy of Russia until 2030 (approved by Government resolution #1715-P date
November 30, 2009);
2) State Program of the Russian Federation "Energy savings and increasing efficiency for el
power generation until 2020" (approved by Government resolution #2446-P dated April 8
3) State Program "Industry Development and Increasing Competitiveness until 2020 (appro
Government resolution on December 27, 2012);
4) State Program "Development of Agriculture and Market Regulation of agricultural produ
material and food for the period 2013-2020 (approved by Government on July 14, 2012);
5) Roadmap for the Development of Biotechnology Gene Engineering until 2020 (approved
GOR in 2013);
6) An action plan aimed at transferring from old inefficient technologies to introduction of t
available technologies. (Government Resolution # 398-p dated March 19, 2014); and
7) Roadmap "Introduction of Innovative Technologies and Modern Materials in the Oil and
Sector" for the period till 2018." (Government resolution #1217-p dated July 3, 2014).

The Government of Russia (GOR) declared 2017 as the year of ecology. In an effort to support t
initiative, the government adopted a number of initiatives to address ecological problems and app
technologies in this field. GOR by Resolution #240, dated February 28, 2017, Order #354-p, and
allow for distribution of government support for renewable energy sources generated at utilities t
function on the burning of solid municipal waste (http://government.ru/docs/26648/). These orde
the rules for conducting competition in selecting utilities for the production of energy through bu
municipal solid waste and provide preferences for such facilities. Order # 355 determines in whi
provinces (Republic of Tatarstan, Moscow and Moscow province) where new generators for mu
solid water (with total capacity of 335 MWh) will be constructed. By Order #354-p the GOR am
Main Directions of the State Policy of Increasing Efficiency of Electrical Energy Produced by Re
Energy Sources for the Period up to 2024." (http://government.ru/docs/26594/). This Order prov
structure and power input capacity by type of renewable energy resources which will be eligible
receiving government support. It is planned that by 2024, the total input capacity of wind power
will reach 3,351 MWh; solar power generators 1,759 MWh, and thermal energy generators with
capacity less than 25 MWh will reach 425 MWh.

The Government of Russia Order No.892-p of May 10, 2017 approved "The Development Strate
Russian Export Center until 2019" (http://government.ru/docs/27640/). The Russian Export Cen
will act as the government agent for distribution of subsidies and state guarantees and will direct
exporters and investors abroad. The total budget for the programs under the "Development Strat
REC until 2019" for 2017-2018 is estimated at 16.8 billion rubles. Specifically, REC will compe
companies for their expenditures for certification, logistics and registration in foreign markets. A
the second half of 2017, exporters will also be able to receive co-financing for participation in ex

and fairs. The planned allocation is 2.72 billion rubles for this purpose. From the third quarter c program for partial compensation of costs for transportation of products (planned allocation of 1 rubles in 2017), is expected to be fully operational. (Official Rub to Dollar Exchange rate as of J is 56.61 Rub per USD). Experts believe that this measure will stimulate further expansion of the development of wood pellet producers which is currently export oriented.

Russian Energy Situation

Currently, Russia utilizes only approximately 3.5 percent of its potential renewable energy resou total power generation in Russia, the share attributable to renewable resources accounts for less t percent. For energy for heating, renewable resources account for approximately five percent.

The Russian Unified Energy system consists of 69 regional energy systems that in turn form 7 ur energy systems in the Eastern region, Siberia and Urals. Middle Volga, south, central and north w electrical energy complex of Russia includes 700 electrical stations with capacity over 5 MWh. installed capacity of electrical stations in Russia is estimated at 218,145 million kWh. The percer of stations, by type of electrical generation, is as follows: thermal power stations 68.4 percent, hy 20.3 percent, and nuclear about 11 percent. Please refer to FAS GAIN Biofuels Report 2016 for information on Russia's energy situation and government initiatives.

III. Gasoline and Diesel

Russia's abundant resources of petroleum and natural gas (and subsidized natural gas prices) are disincentive for both more efficient use of fuel and for any development of alternative energy sou Russia owns 23 percent of global natural gas resources, 19 percent of global coal resources, and of global resources of petroleum. Russia provides 12 percent of the total world trade of coal. Ru accounts for 13.1 percent of world production of oil and 17.9 percent of world production of gas to Russian Customs Statistics, in 2016 Russia produced 547 MMT of oil, including gas condensa percent higher than in 2015. Natural gas production slowed to 558 billion cubic meters in 2016, percent increase over 2015.

Russia's nuclear energy accounts for five percent of total world nuclear electricity generation, 15 the nuclear reactor industry, 45 percent of the world market of uranium enrichment and provides f percent of the world production of natural uranium.

Large companies, such as Rosneft, LukOil, SurgutNeftegas, Gasprom Neft, Tatneft , Slavneft an account for 87 percent of Russia's total production of oil. The remaining share is divided among independent companies. Rosneft was a leader in oil production in CY2016. The company's total of oil is estimated at 189.7 MMT, followed by LukOil, with production of 82.9 MMT of oil, SurgutNefteGas with its annual production of 61.8 MMT, "GazPromNeft" with 37.8 MMT, and with 28.7 MMT of oil.

In 2008, the Russian government adopted the Technical Regulation on Fuels. In 2011, the GOR a

regulation in reference to the requirements for gasoline, diesel, shipping diesel, jet fuel and residu stipulates a smooth, staged, transfer to production of oil products that will comply with world eco standards.

The Russian Ministry of Energy reports that production of high octane gasoline in Russian recentl increased. During the period between 2011 and 2014, the share of Euro-5 increased from two per percent, while the share of Euro-4 and Euro-3 decreased from 26 percent to nine percent and from to 11 percent, respectively. The change in the fuel production structure was due to the on-going re of oil production facilities and government policies on excise taxes that encouraged companies to production of Euro-5 gasoline. According to the Technical Regulation on Fuels, starting from 201 processing facilities in Russia should start producing gasoline and diesel of class "Euro-5" only. I order to help producers with conversion, trade of diesel Euro-4 was allowed until July1, 2016. Ru Ministry of Energy estimates production of gasoline of class "Euro-5" increased by 12 percent ve same period in 2015, and reached 37.4 MMT. The total amount of investment aimed at oil proces reported at 236 billion rubles in CY 2016.

Post revised the "Fuel Use" table to reflect official, published historical usage data for fuel. The h fuel use data was sourced from the Russian Statistical Committee (www.gks.ru) and the Ministry of the Russian Federation. The fuel use projections are based on a variety of industry and governm sources.

Gasoline use projections take into account projections stipulated in the Energy Strategy Develop Russian until 2030, published at the Ministry of Energy official site (https://minenergo.gov.ru/no The projections also take into account the economic scenario, number of automobile licensed for gasoline price in the domestic market, evolution of the vehicle efficiency, as well as projections institutions, such as Russian Savings Bank.

Diesel use projections take into account the economic scenario, all means of transportation using more specifically the size of the fleets, specific consumption, average mileage/year, occupa number of passengers/mileage, tonnage/mileage, etc. Diesel breakdown is not available earlier t

Table 1: Russia: Fuel Use History and Projections

Fuel Use History (Million Liters)									
Calendar Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**201**
Gasoline Total	37,145	32,824	34,212	37,610	36,738	36,358	38,725	38,559	40,27
Diesel Total	35,612	35,835	36,210	36,735	38,260	38,810	38,350	38,600	37,2
On-road	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5,80
Agriculture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,20
Construction & Mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5,20
Shipping & Rail	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8,30
Industry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5,50
Heating	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6,20
Jet Fuel Total	8,600	8,600	9,000	9,300	9,900	10,400	10,900	9,600	8,50
Total Fuel Markets	81,357	77,259	79,422	83,645	84,898	85,568	87,975	86,759	85,9

Fuel Use Projections (Million Liters)								
Calendar Year	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	
Gasoline Total	42,842	43,148	46,387	47,135	47,905	48,145	49,200	49
Diesel Total	38,100	38,000	36,900	37,000	36,800	36,000	36,200	36
On-road	5,900	5,900	5,700	5,700	5,700	5,800	5,700	5
Agriculture	6,100	6,000	5,900	5,900	6,100	5,700	5,900	6
Construction & Mining	5,500	5,700	5,400	5,300	5,200	5,200	5,200	5
Shipping & Rail	8,500	8,300	8,200	8,400	8,200	8,100	8,200	8
Industry	5,900	5,900	5,700	5,700	5,600	5,400	5,300	5
Heating	6,200	6,200	6,000	6,000	6,000	5,800	5,900	5
Jet Fuel Total	9,300	8,600	8,600	9,000	9,300	9,900	10,400	10
Total Fuel Markets	90,242	89,748	91,887	93,135	94,005	94,045	95,800	97

Source: Rosstat (Russian Federal Statistical Service), Russian Ministry of Energy, Ru
Transport, Russian National BioEnergy Union, Russian National Biofuels Associatio

IV. Bioethanol/Biodiesel Projects

In March 2015, the Ministry of Economic Development of the Russian Federation (MED) approved amendments to Federal Law "On State Regulation of Production and Turnover of Ethyl Spirt, Alcohol Products Containing Spirt and Limitations of Consumption of Alcohol Products," developed by the Federal Service for Regulation of Alcohol Market. MED supported the idea of defining bioethanol and motor bioethanol as an individual product. The documents include a more specific definition of bioethanol identifying that motor oils that contain no more than 10 percent of bioethanol are not subject to regulation as products containing spirt. Also, it exempts the production of bioethanol as an additive to motor oil from excise taxes. The Russian bioethanol community has been lobbying for many years for this exemption. However, so far the amendments have not been approved and there is no indication of when they may get final approval from the government. According to the Russian Biofuels Association, if enacted, the potential for expansion of bioethanol production in the near term will increase up to 2 million MT. This expansion would be primarily for use as an additive. And, the potential for expansion for the use of bioethanol production for blending with 95 percent fossil gasoline (B5) could increase up to 5 percent. However, without strong support from the federal level, these targets are unlikely to be achieved.

Experts estimate potential production capacity of the bioethanol market in Russia at 850 million liters.
According to experts, the demand for ethanol to be used as a gasoline additive is estimated at 320,000 MT (including 200,000 MT of hydrolysis ethanol and 120,000 MT of synthetic ethanol), or about 1 percent of the total

volume of gasoline production in Russia. Current production for fuel is estimated at 210,000 MT.

Currently, "bioethanol" is classified in the general category as "ethyl spirt from all types of raw material" and is not considered as a product of specific intended use. High excise taxes for ethanol in Russia, coupled with high production costs and other increasing uses for grain, are the major obstacles for the development of the bioethanol industry.

Please refer to FAS GAIN Biofuels Report 2016 for more information on what measures needed for the government to implement to facilitate development of ethanol sector in Russia.

Table 2. Russia: Bioethanol Used as Fuel and Other Industrial Chemicals (million liters)

Calendar Year	2009	2010	2011	2012	2013	2014	2015
Beginning Stocks	0	0	0	0	0	0	0
Fuel Begin Stocks	0	0	0	0	0	0	0
Production	71.0	68.34	80.0	85.08	106.2	107.95	107.575
Fuel Production					0.12	0.15	0.175
Imports	0	0	0	0	0	0	0
Fuel Imports	0	0	0	0	0	0	0
Exports	25.86	22.34	32.89	39.68	61.0	59.3	58.1
Fuel Exports	0	0	0	0	0	0	0
Consumption	45.14	46.0	47.11	45.4	45.2	49.85	49.475
Fuel Consumption	0	0	0	0	0.120	0.150	0.175
Ending Stocks	0	0	0	0	0	0	0
Fuel Ending Stocks	0	0	0	0	0	0	0

Source: Rosstat (Russian Federal Statistical Service), Russian Customs Committee, trade sources, Russian National Biofuels Association.

V. Biodiesel

Some industry analysts believe that bioethanol and biodiesel in Russia could become profitable in Russia if the government exempts production from excise taxes. However, this is not a priority for the government and some attribute this to the strong influence of the oil industry.

Industry analysts also attribute the limited presence of bioethanol in Russia to high wheat and grain prices worldwide, which makes biofuel production less profitable. Currently, Federal biofuels policy is not under the National Agricultural Priority Project. With the lack of government support, the sector

is unlikely to develop. The major reasons for the government lack of interest include: high cost of biodiesel; inadequate regulations pertaining to the sector; limited domestic demand; higher availability of alternative energy sources and poor infrastructure (in particular machinery) that cannot be adapted easily to biodiesel use.

There is also vast potential for exploiting agricultural waste in Russia. However, there are only a small number modern agricultural plants that can utilize agricultural waste efficiently. Experts estimate total annual agricultural waste in Russia at 250 million MT, in addition municipal solid waste is estimated at 60 million MT. The programs for agricultural waste are supported by the regional budgets. Most of the resources could be used for biofuel production or be exported. However, to date, government is in the initial stage of developing programs that would entice producers to utilize these wastes.

Biogas

Experts from the Institute of Energy Strategy estimate that due to vast supplies of agricultural wastes, food processing wastes and municipal wastes 66 billion m^3 of biogas and 112 million MT of high value granulated fertilizer could theoretically be produced in Russia. In addition, experts estimate potential production of electricity from biogas is 121, 200 GWh, and heat – 169, 344 GWh. In 2012-2013 two large state corporations "GasEnergoStroy" and "BioGas EnergoStroy" were planning to build 50 biogas power stations in 27 Russian regions with total capacity of 120 MWh. However, so far there are four major biogas projects in 3 regions that are operating in Russia. Currently there is no government program to stimulate construction of biogas facilities in Russia.

VI. Biomass for Heat and Power

The government of Russia has identified the development of Russia's domestic forestry sector as a necessity, and production within this sector is expected to substantially increase by 2020. While not a priority, the Federal Forestry Agency considers biomass production as the main alternative for Russia's developing biofuel sector. Russia has huge potential for biomass production: experts estimated annual waste from timber harvesting and processing at nearly 200 mln. m^3. However, due to the large supply of high-value fossil fuels, and lack of government incentives for businesses to utilize wood waste, only large wood processing facilities are interested in the commercial production of biomass. In addition, due to the Russian government's continued focus on import substitution and investing into production agriculture and infrastructure, experts do not anticipate a large increase in development of biomass production.

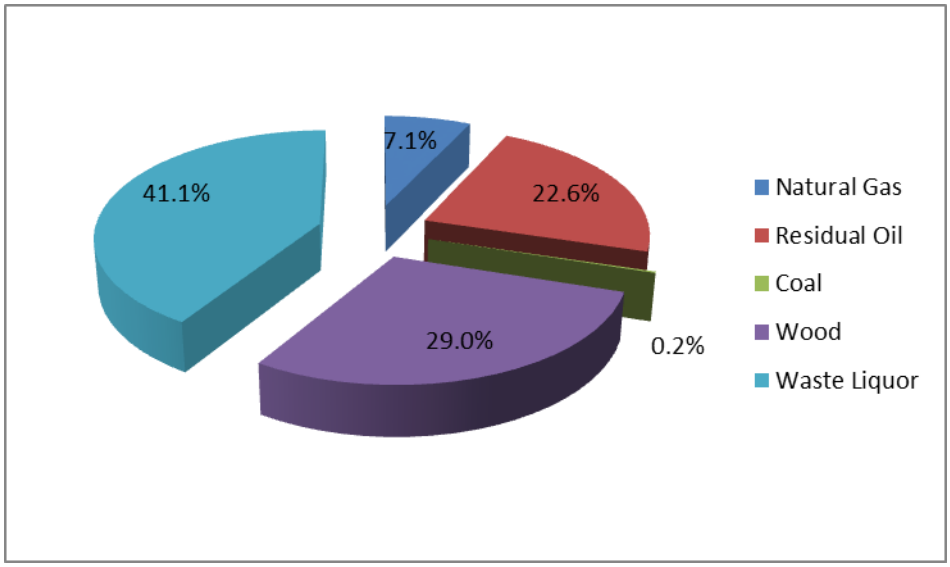
Industry experts also agree that individual regional plans aimed at increasing biofuel production should be considered. The only significant industrial biomass factory is the thermal electricity station "Beliy Ruchey" operating in the Vologda oblast. Its energy capacity is estimated at 6 MWh, which covers partially electricity needs in Vologda region and supplies electricity to the local forestry processing plant. The local administration in Komi Republic has stated that it is supportive of biomass development projects. In 2013, the International Co. Metso, was reported to have supplied technological equipment for wood waste utilization to a processing facility in Syktyvkar. Reportedly, the operation of the project started in the end of CY 2015. The capacity of the electrical station is 4 MWh with annual burning of forestry waste of 83,200 MT.

The Russian Forestry Agency sets a total allowable cut at 670 million cubic meters; however, only 208 million MT were actually harvested in 2016. Experts estimate that only 8 million m^3 of non-commercial timber and wood waste is being used for biofuels in Russia. The majority of wood waste occurs due to limited access to special equipment and modern technologies, as well as a lack of interest from the GOR and foreign investors in further processing. Current available resources of fuel wood is estimated at 90 million cubic meters, including firewood at 57 million m3 (63 percent); crown, stumps, bark at 14 million m3 (15 percent); wastes from sawmilling at 12.7 million m3 (12 percent); wastes from veneer production at 4.3 million m3 (5 percent); wastes from cellulose and paper production at 4.1 million m3 (4 percent). Total energy potential of fuel from wood is estimated at 500 PetaJ. This is enough to satisfy forestry production industry in heat and electricity by nearly 75 percent. Industry experts believe that transfer of forestry processing facilities to local energy sources, such as wood waste to generate heat and electricity can result in a significant increase in efficiency. It will also improve the ecological environment and make utilization of wastes from the forestry sector profitable. In an effort to support this initiative the government should develop and start implementation of the program of transferring outdated heaters that operate on fossil fuels to pellet heaters. Industry sources indicate that Russia should be more proactive in studying EU policies that stimulate energy corporations to transfer to renewable energy resources. It is also important to raise consumer awareness and to partially compensate the costs of pellet boilers. To date, there are no government-supported programs for transferring older boilers to pellet boilers, except for at the municipal level. There are a few regions in Russia that support local producers of solid fuel, including Moscow province, Republic of Komi, and Arkhangelsk province. For example, in Komi Republic, the local administration subsidizes local energy heating companies that purchase fuel briquettes from local producers. Also individual consumers get compensated for purchasing boilers. However, these provinces represent only eight to nine percent of the total Russian population and the use of

renewable solid fuel is insignificant compared to the potential overall use of renewable solid available in Russia.

Currently, 1256 steamers and heat boilers, 23 thermal and 97 diesel power stations operate in the Russian forestry processing sector. Thirty-five percent of total energy assets are located in the North Western Federal District (FD), followed by Siberian FD with 30 percent and in the Far Eastern FD with 13 percent, and the Central FD with 10 percent. In terms of structure, water heating boilers, mostly of smaller capacity, account for 68 percent. The share of steamers account for 32 percent. Thirty-nine percent of the total pool of boilers and steamers in Russia are more than 30 years old, 26 percent of boilers are between 21-30 years, and 19 percent of boilers reportedly have been in operation between 11 to 20 years.

Graph 1. Russia: Fuel Structure Consumed by Energy Sources (heaters, boilers and power stations) in Forestry Processing Sector, in %



Source: Science Russian Center of the Forestry Sector for Technology and Energy (GNC LPK TE).

The “BioChemPlant” Co., Ltd., located in Kirov, is the only plant currently in Russia producing ethanol from nonedible raw material, such as waste from lumber production. In addition, the plant also produces wood pellets. The facility plans to start production of bio-methane from the hydrogenation of the carbonic gas formed in the course of fermentation of yeast. This technology creates “green gas.” The company "Biochemical plant" together with the Russian center of science «Applied chemistry» in St. Petersburg

produces the technology for green gas, and in the near future is expected to produce 4 million $м^3$ this fuel.

Wood Pellets

While Russia's wood pellet production is relatively young, it accounts for a six percent share of world wood pellet exports. Russia ranks 8th in the world for total wood pellet production, with three percent of total world wood pellet production. According to FAOSTAT, production of wood pellets in Russia is forecast to increase significantly by 4 MMT by 2020, and by 8 MMT by 2025. However, the Russian Ministry of Energy and Industry analysts forecast that production will increase at a lower pace, between 10 and 12 percent annually. Stabilization of world prices for wood pellets in CY 2017, after a downward trend in 2015 due to a drop in oil prices, will also be a driver for stimulating export from the Russian producers.

The growing interest from the European Union for biofuels, particularly wood pellets, will continue to be a major incentive for Russia to increase production of wood pellets. Also, recently Asian countries, such as Japan and South Korea, have become more interested in Russian wood pellets and as this interest grows it will also contribute to an expansion of Russian wood pellet production. Currently, Russia is the third largest exporter of wood pellets to the EU, after the United States and Canada.

Production

According to Rosstat (Russian Federal Statistical Service), Russia produced 1.013 MMT of wood pellets in 2016, a 3.5 percent increase from CY 2015. Sources report that production statistics for wood pellets are not accurate. The statistics primarily capture large-capacity factories, and mid-sized and smaller facilities which operate as part of larger wood processing plants, do not report their production. Inaccuracy of statistics for production of wood pellets also contributes to the high difference in production in CY2013 and CY 2014. As a result, Post believes the actual wood pellet production is underreported by Rosstat.

Post estimates production of wood pellets in Russia in CY 2016 at 1.33 MMT, or five percent increase over production in CY 2015. Production is forecast to increase by 10 percent in CY2017, primarily driven by continued strong demand from European Union as well as Asian countries, specifically South Korea. Construction of new smaller and middle-sized wood pellets facilities oriented for export coupled with strong dollar will support and motivate local producers. In addition competitive export prices, increasing local production, new processing capacity, as well as the Russian government's call for increased efficiency in the forestry sector will contribute to an increase. However, the lack of a domestic standard for

pellets, poor transport infrastructure, a lack of warehouses, and the product's seasonality will all negatively impact the development of the wood pellet sector in Russia. Industry sources believe that Russia will require large investments in order to upgrade its facilities and expand its production capacity. Domestic demand can also absorb some of the increased, near-term production, however, at a very moderate pace.

The top-10 producers of wood pellets in Russia in 2016 include:

1. "Vyborg Forestry Industrial Corporation Ltd." (Vyborg Limited) was the leading production facility until 2016. Its total annual production capacity was reported at 400,000 MT. However, sources report that due to several legal claims regarding tax issues and change in the management of the facility resulted in to significant slowing down and eventually halting production of wood pellets by mid CY 2017. Reportedly, its production in 2016 shrank to 40,000 MT. Market experts believe that the facility will go bankrupt and/or diversify into other production. The potential shut down of "Vyborg Forestry Industrial Corporation Ltd." did not affect exports since there are a number of new production facilities that started operation in 2016 in the North Western Federal District, including Arkhangelsk, Kostroma and Novgorod provinces. Their production volumes were able to offset slowing down of the leading facility.
2. "SP Arkaim Ltd." in Khabarovsk province. The facility was built in 2011 to utilize wood waste from sawn timber and laminated panel production facilities in the area. Total annual capacity is reported at 130,000 MT.
3. JSC "LDK-3" in Arkhangelsk province has been in operation since 2014. In 2016, the facility increased its annual production and almost reached its projected capacity of 100,000 MT. The company owns its pier, so most production is exported by sea to EU countries.
4. JSC "Lesozavod-25 (part of the State Corporation "Titan"). The plant sources low cost raw material from timber processing facilities of the Titan group, translocating pellets through its own port. The second facility of "Lesozavod-25" has been in operation since 2013. Sources report the projected annual capacity as 100,000 MT. Annual log inputs for both production facilities are estimated at more than 1 million cubic meters.
5. The forestry company "NovoYeniseyevskiy" in Krasnoyarsk province has been in operation since 2010. Its annual capacity is 50,000 MT, however, in 2015 the company built a new production line for pressed fuel to utilize waste. The annual capacity is 80,000 MT.
6. "Mir Granul Ltd" is located in Leningrad province and started operations in 2004. The annual production capacity is 45,000 MT.
7. "DOK Yenisey" is located in Krasnoyarsk province. The facility increased its production from 6.3 thousand MT in 2010 to 45,000 MT

in 2014.

8. "North Western Holding Ltd." is one of the largest wood pellet producers in Leningrad province. Its annual production is 50,000 MT which is mostly shipped to EU and Asian markets.
9. "SvedWood Tikhvin" Ltd. is part of the "Svedwood" industrial group founded by IKEA in 1991. The facility has been in operation since 2002, an annual production estimated at 55,000 MT.
10. "RusForest Magistralniy Ltd." is a part of the leading Swedish forestry production and operation company. Its annual wood pellet production capacity is estimated at 30,000 MT.

Table 3: Russia: Leading Wood Pellet Production Facilities in 2016:

	Name of the Facility	**Province**	**Annual Production, 1,000 MT**
1	Vyborgskay Forestry Industrial Corporation	Leningrad province	50
2	"SP Arkaim"	Khabarovsk province	130
3	JSC LDK-3	Arkhangelsk province	95
4	NovoYeniseyskiy	Krasnoyarsk province	80
5	Mir Granul	Leningrad province	45
6	JSC "Lesozavod-25"	Arkhangelsk	90
7	DOK Yenisey	Krasnoyarsk	45
8	Svedwood Tekhvin	Leningrad	55
9	RusForest Magistralniy	Irkutsk province	30
10	Biogran	Republic of Karelia	30
11	Setnovov	Novgorod province	25
12	STOD	Tver province	20
	Total		**695**

Source: www.biointernational.ru based on the Russian State Customs Service data

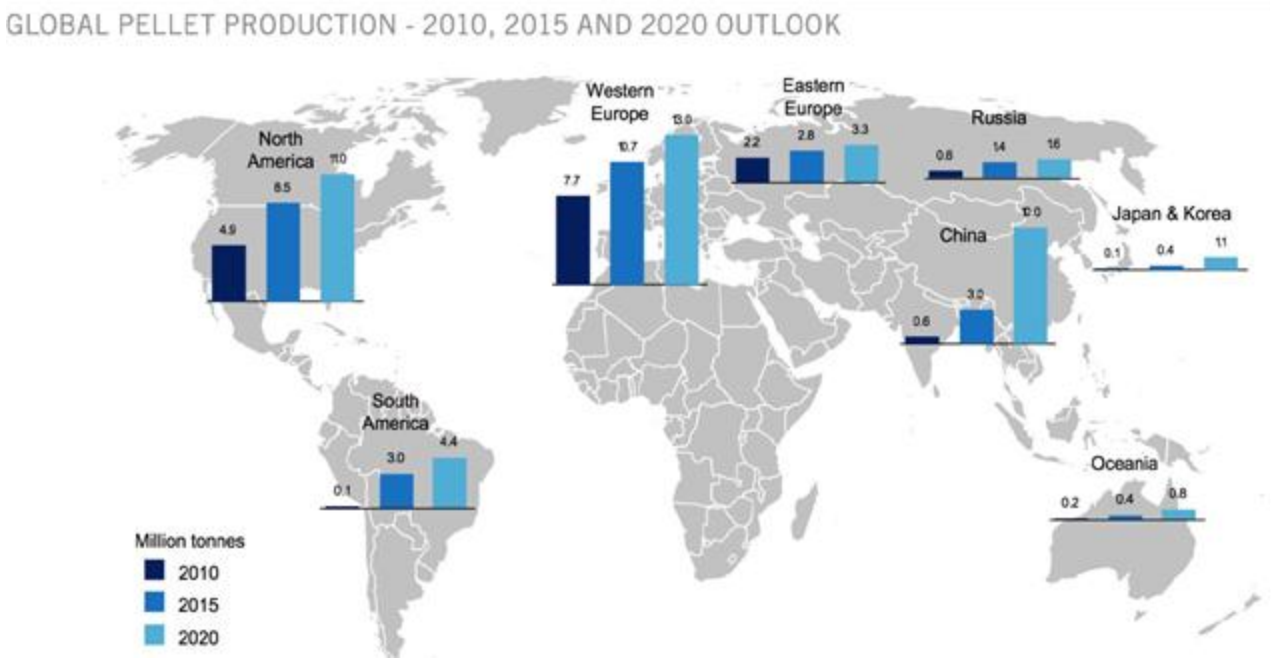
Reportedly, about 65 percent of total Russian production of wood pellets is manufactured by 12 processing facilities. According to experts from Lesonline.ru portal, there are about 20 wood pellet facilities in Russia with production capacity from 30,000 to 70,000 MT that have had stable operations since 2010. They produce 50 percent of all wood pellets in

Russia. However, analysts project a trend away from large facilities with an increasing number of facilities with smaller capacity, up to 20,000 MT. However, the share in overall pellet production from the smaller facilities accounts for only 14 percent. Given the current economic situation, the number of smaller-capacity facilities is forecast to increase because they have more mobility in sourcing raw materials and can easily market their production locally. In addition, recent government initiatives to support exporters and call for improving ecology and environments are likely to stimulate producers of forestry processing industries to construction wood pellet production facilities.

Certification

According to the National Bioenergy Association, European Union currently enforces more stringent requirements for wood pellet imports. Reportedly, 7 to 10 large industrial groups of companies in Europe develop the rules and import standards and these corporations may also influence prices in the wood pellet market. This makes Russian pellet producers vulnerable and dependent on these decisions. Starting 2016, there have been an increasing number of wood pellet facilities are being certified. Experts from "Bioenergy International" Magazine report that starting 2017, 24 wood pellet producers were certified with EN- Plus, issued by AEBIOM - European Biomass Association, that are in compliance with the EU standard. Special media reports site more middle-sized and smaller pellet facilities were being certified or have plans to invest in EN-Plus and ENB certification programs, including in Leningrad, Tver and Novgorod provinces. Experts believe that if government compensates at least part of the certification costs to smaller facilities, they will be able to compete for export markets. Though it will be harder for them to implement this task since most of the smaller facilities do not have a very good distribution and sales departments so they have to act through middle man. This scheme results in increasing products cost of the product and make it less competitive in the European market.

Table 4.



Source: Biofuels portal wood-pellets.com, General Director "Portal Engineering Ltd."

Consumption

In the mid-term, domestic demand for wood pellets is forecast to increase at 10-12 percent annually. In the local market wood pellets are in demand by private heating stations and municipal housing, primarily in heavily forested areas where traditional sources of energy are not accessible. Production of wood pellets is, in most cases, cheaper than gas. According to the National Bioenergy Union, a number of regions, including Moscow oblast, Karelia and Nizhniy Novgorod, Republic of Mari El, and Arkhangelsk oblast, have started implementing initiatives to transfer local heating stations from coal or residual oil to wood pellets. However, experts believe that in the mid-term there will not be significant breakthrough in switching to wood pellets due to lack of additional investments needed for transfer from boilers adapted for gas and other residual oils to wood pellet boilers.

Post forecasts domestic consumption in CY 2017 to increase by 3 percent and 8 percent in CY2018 primarily as a result of implementing government call to increase energy efficiency by utilizing waste from forestry processing industry and improve the ecological situation. Experts believe that another constraint for a significant increase in domestic consumption is the difference in prices that vary from one province to another, as a result of various prime cost of raw material in different territories. Also, the distance to the consumer result in significantly varying increases in transportation costs that affects prices. In the mid-term wood pellets in Russia primarily will be used

in municipal heating and individual heating systems.

Trade

The Russian Customs Service reports exports of wood pellets from Russia in 2016, at 1.075 MMT, or more than 14 percent higher than in 2015. The leading export destination for these products was Denmark at 399,400 MT, followed by Sweden at 129,700 MT, and South Korea at 129,300 MT, and the Netherlands at 79,100 MT. These four destinations account for almost 70 percent of total Russian export share of wood pellets worldwide. Europe will continue to be the largest importer of Russian wood pellets.
The "International BioEnergy" magazine estimates that 17 Russian wood pellet facilities account for 70 percent of total export share of wood pellets to the foreign markets. The same source also estimates that 16 large foreign companies import nearly 80 percent share of total Russian wood pellet production. These large foreign buyers include CM Biomass Partners A/S from Denmark, "Kaymar Ltd." from South Korea, and Engie Energy Management from Belgium.

Currently there are six major export oriented provinces in Russia that account for almost 88 percent of Russia's total wood pellet exports. More than 50 percent of total Russian wood pellet exports originate from Leningrad province, followed by Krasnoyarsk (12 percent) and Arkhangelsk (10 percent) regions.
Irkutsk province has recently expanded production and export of wood pellets as a result of stronger demand from South Korea and potentially from Japan.

Table 5: PS& D for Fuel Pellets

Wood Pellets (1,000 MT)										
Calendar Year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Beginning Stocks	0	0	0	0	0	0	30	80	30	10
Production	570	620	718	935	1010	1185	1260	1330	1450	1500
Imports	0	0	0	0	0	0	0	0	0	0
Exports	405	430	520	730	750	895	930	1070	1150	1230
Consumption	165	190	198	205	260	260	280	310	320	340
Ending Stocks	0	0	0	0	0	30	80	30	10	40
Production Capacity										

Number of Plants	97	145	120	120	103	98	95	110	115	118
Capacity Use (%)	67	75	75	78	80	80	85	85	87	90

Source: Rosstat (Russian Federal Statistical Service), Russian Customs Committee, Federal Forestry Agency, trade contacts, Forestry Forum “Green press”, National Bioenergy Union.

Table 6. Russia: Export of Wood Pellets, CY: 2012 - 2015, Year To Date: 12/2015 & 12/2016

Partner Country	Unit					Year To Date		
		2012	2013	2014	2015	12/2015	12/2016	%Change
World	T	728382	743640	879028	934864	934864	1073088	14.79
Denmark	T	301509	280937	381957	381501	381501	399437	4.7
Sweden	T	220908	265819	218470	154052	154052	129750	-15.77
Germany	T	8247	15570	40484	73389	73389	20785	-71.68
Korea, South	T	48307	73070	43532	72113	72113	129374	79.4
Italy	T	6500	25273	56582	68808	68808	62333	-9.41
Finland	T	17968	31799	47208	47908	47908	51207	6.89
Netherlands	T	13212	258	24542	38448	38448	93391	142.9
Latvia	T	22348	21289	25797	24691	24691	43278	75.28
Belgium	T	20311	1385	1709	22390	22390	25994	16.1
Lithuania	T	431	3239	10097	13832	13832	30839	122.95
United Kingdom	T	0	633	7302	12695	12695	51487	305.58

Source: Federal Customs Service Statistics

Notes on Statistical Data

Bioethanol and biodiesel production in Russia is insignificant. There are no official data for these products in Russia. The development of the biofuels sector has never been a priority for the government in the past, and currently with the strong focus on development of the import substitution and export support programs, it will be even less of a priority. Russian official statistics on fuel use by industry sectors either are not available or differs from the data provided by trade sources and some energy companies and corporations. Also wood pellet production statistics is not very accurate. FAS based estimates on fuel projections on a number of sources, including Ministry of Transport, Ministry of Energy, Industrial Union "Energy Efficiency and Savings", National Biofuels Association and National Bioenergy Union, as well as trade sources, media and general economic situation in the country with propriety government objectives. Production and trade data for wood pellets is based on GTA, Official Russian Federal Customs Service, and estimates of the FAS posts in EU. FAS Moscow revised PS&D for wood pellets to be consistent with EU FAS Post data and forecasts. Also Post based its estimates on figures of National Biofuels Association, sources from research, analytical institutions as well as agricultural trade sources.