# Wood Pellets Production and Trade in Russia, Belarus & Ukraine

# MARKET RESEARCH REPORT

Subcontracting to Pellets@las
(WP 6.1 Assessment of international pellet trade
developments in non-EU countries)



Written by Olga Rakitova, Anton Ovsyanko

Edited by Richard Sikkema & Martin Junginger (Utrecht University) May 2009



#### **DISCLAIMER**

The pellets@las project is supported by the European Commission under the EIE programme (EIE/06/020/SI2.448557). The sole responsibility for the content of this report lies with the authors. It does not necessarily reflect the opinion of the European Communities. The European Commission is not responsible for any use that may be made of the information contained therein.

# **Table of contents**

Inco Term Abbreviations	3
1. General overview in Russia, Ukraine and Belarus	4
1.1 Production capacities 2007	4
1.2 Internal markets 2007-2009	4
1.2.1 Russia	5
1.2.2. Ukraine	6
1.2.3.Belarus	6
1.3 Export markets 2007-2009	6
1.3.1.Russia	7
1.3.2.Ukraine	8
1.3.3.Belarus	8
1.3.4.Export by trucks	8
1.4 Import markets 2007-2009	8
2. Russia	9
2.1 Pellet production	9
2.2 Pellet transport and deliveries	12
2.2.1 Typical export delivery schemes	12
2.2.2 The most popular ways of transport packaging	13
2.3 Price data	13
2.3.1 Pellets for heating and pellets for power production	14
2.3.2 Quality standards	16
2.4 Final consumer markets	18
2.4.1 Domestic markets	18
2.4.2 Export markets	18
3. Ukraine	19
3.1 Pellet production and deliveries	19
3.2 Price data	22
3.3 Final consumers markets	22
4. Belarus	23
4.1 Pellet production and deliveries	23
4.2 Price data	23
4.3 Final consumer markets	24
5 Conclusions	25

# **Inco Term Abbreviations**

Incoterms 2000 are internationally accepted commercial terms defining the respective roles of the buyer and seller in the arrangement of transportation and other responsibilities and clarify when the ownership of the merchandise takes place. They are used in conjunction with a sales agreement or other method of transacting the sale.<sup>1</sup>

- CIF *Cost, Insurance and Freight* -- Title and risk pass to buyer when delivered on board the ship by seller who pays transportation and insurance cost to destination port. Used for sea or inland waterway transportation.
- CPT Carriage Paid To -- Title, risk and insurance cost pass to buyer when delivered to carrier by seller who pays transportation cost to destination. Used for any mode of transportation.
- DAF *Delivered at Frontier* -- Title, risk and responsibility for import clearance pass to buyer when delivered to named border point by seller. Used for any mode of transportation.
- DDU *Delivered Duty Unpaid* -- Title, risk and responsibility of import clearance pass to buyer when seller delivers goods to named destination point. Used for any mode of transportation. Buyer is obligated for import clearance.
- FCA *Free Carrier* -- Title and risk pass to buyer including transportation and insurance cost when the seller delivers goods cleared for export to the carrier. Seller is obligated to load the goods on the Buyer's collecting vehicle; it is the Buyer's obligation to receive the Seller's arriving vehicle unloaded.
- FOB *Free On Board* -- Title and risk pass to buyer including payment of all transportation and insurance cost once delivered on board the ship by the seller. Used for sea or inland waterway transportation.

<sup>&</sup>lt;sup>1</sup> Source: http://www.freightplus.eu/incoterms-2000.html

# 1. General overview in Russia, Ukraine and Belarus

As a general remark, the currency rate has been changed significantly between 2008 and in 2009. It was about 35 RUB for 1 Euro in 2007-2008 and it is 45 RUB for 1 EURO in April 2009. This has caused wood pellet prices in expressed in Euros to decline compared to 2008.

# 1.1 Production capacities 2007

The 3 pellet markets in Russia, Ukraine and Belarus are similar on one hand and different on the other hand. Russian pellet companies are concentrated mostly in the North-West of Russia and in the Central part of it in regions where there are forests or woodworking industry is developed. In general, the pellet business has started from the North-West of Russia where there are both woodworking industry and harbor. Then it was spread to the Central Russia and Ural. Thus, the Russian market is the most developed at the moment, but it is mostly wood pellets which are produced here. Some husk and peat pellet producers exist in Russia but their number is limited.

Figure 1 The Russian, Ukraine and Belarus production of wood pellets – 2007

Country	Real production, ton/year (approximate)	Nominal capacity, ton/year (approximate)
Russia	550 000	1 200 000
Ukraine	60 000	140 000
Belarus	40 000	60 000

Belarus pellet producers are also prefer wood to other materials. A little bit different situation in Ukraine. As agriculture is more developed here than wood industry, husk pellet producers have app. the same share in pellet production as wood pellet producers.

## 1.2 Internal markets 2007-2009

If we come to the question of using pellets inside countries then we can see the following picture. Belarus doesn't use pellets inside country at all (it is based on interviews with pellet producers from this country), but there are some plans to develop the domestic market here. Russia and Ukraine use about 5-15% on the domestic markets in 2007. The domestic usage has grown in 2008-2009. It was around 10-20% in 2008 and we can tell that around 15-30% of produced pellets are used inside Russia at the beginning of 2009. Prices on domestic market are different and they are depend on location of the plant, neighborhood of a big city, desire of big supermarkets to work with pellets. For example, Ashan resale company (one of the biggest supermarkets in Russia) buys pellets for 180-190 Euro/ton.. St.Petersburg supermarket net KARUSEL has sold fuel pellets by 89 Rub for 5 kg small bags in 2008 (about 500 EURO per ton). However this is the RETAIL PRICE for final consumer.

In 2009, the Moscow price in the retail warehouse in Moscow (Novotop) is 5400 Rub/ton (120-125 EURO per ton) for 6 mm pellets in small bags. The price in supermarkets is higher. For comparison, in Siberia the price for the same wood pellets (for example Surgutmebel which sells only on domestic market) is about 2500-3500 Rub/ton (60-80 Euro/ton) ) with VAT ex works. Cat toilets made of pellets are also expensive. Some small-scale producers sell pellets only for cat toilets, because prices are the most attractive here. Pellets as biofuel are only coming to the markets of Russia, Ukraine and Belarus. Number of private boilers as well as professional boiler houses using pellets as fuel in Russia Ukraine and Belarus is still is limited to several thousand household boilers (15-100 kWt) and several dozens of professional boilers (100-1000 kWt).

#### 1.2.1 Russia

Russia used around 5-15% of pellets on the domestic markets in 2007. The domestic usage has grown in 2008-2009. It was around 10-20% in 2008 and we can tell that around 15-30% of produced pellets are used inside Russia at the beginning of 2009.

Prices on domestic market differ and depend on the location of the plant, neighbourhood of a big city, desire of big supermarkets to work with pellets. For example, in 2007-2008 Auchan retail company (one of the biggest supermarkets in Russia of the French origin) has purchased pellets for 180-190 Euro/ton. St.Petersburg supermarket net KARUSEL has sold fuel pellets by 89 Rub for 5 kg bags in 2008 (about 500 EURO per ton). However this is the RETAIL PRICE for the final consumer.

Domestic market for fuel pellets keeps growing in Russia as well as in Ukraine and Belarus. Main growth contributors in 2008 were:

- private boiler-house owners production enterprises, warehouses and logistics centers switching to pellets to decrease fuel costs and improve heat supply reliability
- municipal boiler houses
- private house owners

The domestic market keeps growing in 2009 as well. New boilers are installing on biofuel.

Boiler suppliers claim to have supplied over 1000 pellets boilers (below 200kWh) in 2008 + several dozens professional pellets boilers (over 200 kWh) have been installed in different regions of Russia by autumn 2008. It is important to know, that while in 2006-07 there were no more than 10 companies offering pellets heating systems, by this time (autumn 2008) the number of pellet boiler suppliers is over 50 companies. And they are covering most regions of Russia – at least the regions where pellet are being produced.

At the same time in general the Russian pellet boiler market is shared among several East European biofuel boiler produces and Scandinavian producers at the moment (end 2008-beginning of 2009). The big European boiler producers as Buderus, Viessman and others are not presented in Russian pellet segment. They consider still Russia is not attractive for them. Another disadvantage of these famous brands is high prices.

There are some Russian biofuel producers. The pellet boiler producers with actual produciotn and models on the market are "SOYUZ" (Kovrov), Automatic\_Les (Kovrov), Poli-NOM (St.Petersburg) which have installed some pellet boilers in Russia. Other Russian producers as "BaltKotlomash", "EcoProm", "Biysky Biofuel Plant" mainly declare their plans to produce such boilers.

The internal market in Russia is growing. But it hardly gets any consequent support or even serious attention from the state – but for rare exceptions on local level. As a result the market is developing voluntarily - without any plan. Pellets market infrastructure is almost absent and has to be established every time by interested pellets producers or boiler suppliers. Pellets can in most case be only purchased from producers or from boiler suppliers. Retail chains do not sell pellets, because of relatively low turnover on this product. However, some retailer companies do it (IKEA in Nizhniy Novgorod, Sedmoy Continent in Moscow, some Karusel and Okey supermarkets in some cities)

Pellets producers were actively promoting the use of pellets inside Russia in 2007-2008 because export market was less profitable than it was in 2006. And internal prices are 30% higher than export prices in general.

At the end of 2008 - beginning of 2009 the export pellet prices went up and pellet producers became more active in export. The April price on FOB St.Petersburg in 2009 is 120 EURO per ton or industrial bulk pellets. Moreover the currency rate has changed and pellet producers receives more profit in Rubles. In 2009 the prime costs in Rubles are approximatelly the same as in 2008 (there is small increase maybe because of some growth of electricity tariffs and some other costs), but thanks to increase of Euro the profit out of export pellets is higher in Rubbles than in 2007-2008.

#### 1.2.2. Ukraine

Ukrainian domestic pellets market is also largely disorganized. But it is also growing very quickly, because of the growing fossil fuel prices, which are in any case higher than in Russia. At the same time the cost of transportation of pellet to Western Europe from Ukraine is lower than from Russia, which makes export more profitable.

Specific features of the Ukrainian market compared to Russia are determined by another structure of biomass resources. The share of sunflower husk pellets is relatively high. Much of them are being sold to Ukrainian consumers, because this product is less known in Western Europe.

We have little figures on domestic consumption of pellets in Ukraine. However, equipment suppliers in Russia, Baltic States as well as in Central Europe are getting a lot of inquiries for pellet boilers from Ukraine.

State support of the pellets use is not very consequent in Ukraine, but for at least one regulation: VAT exemption for energy saving projects realized in Ukraine.

Pellets production in Ukraine develops slower than in Russia. This is mainly due to less investment resources and less wood waste and other suitable biomass resources.

#### 1.2.3.Belarus

Belarussian authorities claim to pursue a consequent policy aiming at the development of renewable energy. This has also a political meaning in terms of avoiding too much dependency on oil and gas import from Russia. However, this does not seem to contribute the actual pellets industry development in the country. All operating pellets producers are owned by SME's. Most of the private. Most of them have been constructed without significant state support. And there is still little internal demand for pellets. Most pellets produced in Belarus are being exported via the Baltic States or via Poland.

All pellets factories in Belarus were established with very tough budget limitations. As a result most or all of them are using domestic, second hand equipment and have very much down time. We do not know any state of the art pellets production facilities in Belarus - even compared to what has been built in Ukraine and Russia.

# 1.3 Export markets 2007-2009

Most pellet producers are oriented at exporting to Western Europe. There are no export duties on this product so far. But the price crisis of 2007-2008 led to the decrease of production volume growth pace in all countries as well as to temporary decrease in the level of interest to investment projects related to pellets production. Some pellet producers told us in 2007-2008 that they operate at or below the break even point, meaning that their production costs exceed actual revenues. Other factories confirmed that they ere still profitable, but the business was not very

attractive as it used to be when they had 100% profitably. In 2008 the profitability level of pellets production rarely exceeds 10-15%.

About 90% of produced pellets were exporting to Europe from Russia in 2007. in 2008-2009, the situation has been changed thanks to currency change in Russian (because of the crises) and real winter in Europe which led to positive results for Russian pellet producers. As other industries have problems the biofuel producers have good times in 2009. The price went up in 2008-2009 and the Ruble went down. As a result the export oriented pellet production became double profitable.

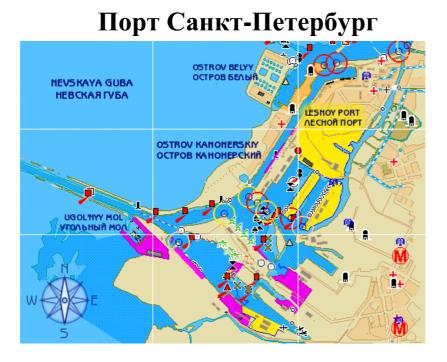
However, also the internal market has been developed in 2007-2008 and some pellet producers are still oriented on the internal market. The internal consumption is growing, but export is growing as well thanks for new pellet plants and modernization of existed plants which increase there capacities.

But, there is a crisis in wood working and forestry industry which supplies the wood pellet producers by resources and some plants could not increase the production because of this in 2009.

#### 1.3.1.Russia

More than 50% of all pellet exports is going though different harbors of the Seaport St.Petetsburg and Ust-Luga. You can see the logistics of pellets in St.Petersburg harbour on the map below.

Figure 2 Harbour map of St.Petersburg



Some pellets are exported though ports in Estonia, Lithuania and Latvia. <sup>2</sup> Klaipeda (Lithiania), Liepaya, Vetspils (Latvia), Paldiski (Estonia), Sillamae (Estonia) Tallinn (Estonia)

<sup>2</sup> See data on main traders in an earlier version of this report, available for download at <a href="www.pelletsatlas">www.pelletsatlas</a>.info

#### 1.3.2.Ukraine

Ukranian pellets are exported though ports Baltic ports (Klaipeda (Lithiania), Liepaya, Vetspils (Latvia), Paldiski (Estonia), Sillamae (Estonia), Tallinn (Estonia))

Probably some pellets go via Black Sea ports, but not systematic as far as we know.

Pellets are also transported to Europe by trucks and railway from Ukraine.

#### 1.3.3.Belarus

Pellets are exported though Baltic ports (Lithuania, Latvia, Estonia) as well as by trucks and railway to Europe and Russia. Most active Baltic Ports re-exporting pellets from Belarus and Central Russia are: Klaipeda, Liepaya, Ventspils, Paldiski, Sillamae,

# 1.3.4.Export by trucks

Some pellets producers in all three countries are selling their product to small European traders and retailers, which offer better prices for small batches of consumer quality pellets. In such case the product may be delivered to EU by trucks or in marine containers. Sometimes the producer pays for transportation and sells his pellets on DDU basis. Other producers sell the product ex works and the buyers send the transport for loading directly at the factories.

In all cases return trucks or containers have to be used to enjoy low freight rates. And it leads to certain geographical limitations. To make this channel profitable, the producer has to be located close to transport ways with much empty truck / container traffic towards the EU.

Truck / container delivery also allows to have the pellets packed into small bags in production and simplify the logistics inside EU, which may also results in better profitability of the whole channel. It is very hard to estimate the exact share of this channel in the whole export volume. But it is substantial for all three countries. Especially – for Ukraine and Belarus – situated closer to EU. Main directions of truck delivery are: Southern Germany, Austria, Switzerland, Italy, Poland, Check Republic, Slovakia. Delivery in containers is mainly done to customers in Northern Europe.

# 1.4 Import markets 2007-2009

There is no import in 2007-2009. The domestic market consumes 5-10% of the domestic production, both in Russian and Ukraine.

More details are presented below, based upon primary data gathered through interviews with pellet producers, consultancy and trade companies. In total, more than 90 companies were interviewed. Most respondents are based in Russia. We have put all interviewed companies in the list but if it needed other companies answers could be mentioned. Belarus market is not as big as Russian and Ukrainian markets because of this the number of interviewed companies from Belarus is smaller than from other countries.

# 2. Russia

More than 90 producers of pellets in Russia were interviewed about price, quality of pellets, their opinion about market, consumers, ways of delivery and etc. On the base of this data the following information is presented. Other knowledge which were received during the work in the biofuel industry in Russia are used to present the following market research as well.

# 2.1 Pellet production

Bigger facilities are being opened these days. The most profitable model of pellets production is processing own waste by large sawmills and woodworking factories. There are several producers of the kind in Russia at the moment.

Figure 3. Overview of Russian pellet producers and their capacities (per April 2009)

rgure 3. Overview of Russian		Nominal	Real production, ton/month
Company name	City, region	capacity, ton/month	ton/monin
2008 production	Cuy, region	ton/monn	
Algir Pellets	Republic of Komi	1200	800
Argoinvest, Gruppa (argo pellets)	Nihznyi Novgorod	1000	1000
Argonivest, Gruppa (argo penets)	Tillzilyi Novgolod	1000	500
Biogran-Alexandrov	Vladimir area	500	300
Biogran (for 2009)	Karelia	2500	1500
Biom	Archangelsk area	4000	3000
Biomag Ecotechnology	Karelia	1000	800
Biotop	Novgorod region	2000	800
Biotek	Leningrad region	1000	400
Biotopresurs	Saint-Petersburg	1500	1200
Biotopresurs, OOO	Sverdlov region	1000	700
Brilit	Velikyi Novgorod	450	300
Bioles	Tver region	500	150
DOK №5	Moscow	500	500
DOTS Salon Parketa	Bryansk	1000	1000
Degtyarev CP (husk)	Krasnodar	1000	800
Grinlat (husk)	Rostov region	8000	10000
Granula Granula	Moscow region	2000	200
Green-power	Leningrad region	2 000	2 000
Grog	Adygeya	70	50
EuroMAB	Moscow	1200	500
Europellet	Leningrad region	600	400
Enisey DOK	Krasnoyarsk region	4000	2500
EuroMAB	Moscow area	1200	500
Ekoross, OOO (Kedr)	Nizhney Novgorod	500	500
Ekoles	Tver	2500	2000
Enbima (peat)	Vladimir	7000	600
Ekopel	Leningrad region	6000	1000
Ecotekh	Leningrad region	1000	500
Ecoenergy (SPIKO)	Pskov region	200	200
EMS Dnepr	Smolensk	1200	1000
Ekoros (Kedr)	Nizhney Novgorod	500	500
Furor	Mariy El	150	90
Ingeneer center	Leningrad region	500	700
Interteplo	Kostroma region	1000	1000

		Nominal	Real production, ton/month
Company name	City, region	capacity, ton/month	ton/monin
Kruglov CP	Nizhney Novgorod	1000	800
KosmoEnterprise	Irkutsk	1000	1000
Lesprom	Vologda region	1500	800
Lespioni	Belongs to Moscow	1300	1000
Lespromsever (SU 155)	group	2500	1000
Lesnye Technologii	Tver region	1000	1000
Lesimpeks	Perm	1000	500
Mebel Buya	Kostroma region	300	200
Murashinsky Biotoplyvnyi zavod	Kirov region	600	450
Pavlovsk agroproduct (husk)	Voronezh region	700	700
Permskaya Bitoplyvnaya companya	Perm	600	200
Pellemax Group (Euro Techno)	Vologda region	7000	1200
Pellet	St.Petersburg	100	100
Plussky DOK	Leningrad region	1000	600
PLK	0 0		300-400
IP Feniks	Pskov region	900	200
	Perm region	500	700
Reley  Remonstrative Versionst	Kostroma region	1000	
Romanovsky Kombinat Kheleboproduktov (corn waste)	Saratov	650	650
Rospolitechles	St.Petersburg	4000 <sup>3</sup> ()	2500
Ruskhimprom	Perm region	2000	600-1500
Sernurskyi opytno-proizvodstveniy	Perin region	2000	400
zavod (SOPZ)	Maryi El Republik	500	400
Spektr	Perm	300	250
Stolyrnya mastersyay	Moscow	300	300
STOD	Tver region	5000	2500
Trans-Trek	Orienburg region	600	n/a
Terry	Vologda	700	600
Tehnokom	Vologda	200	200
Tikhomirov IP	Ivanov region	100	100
	Š	100	50
Tumenprodresurs	Tiumeni region	1000	1000
Topgran	Kostroma region		400
TD Elmon	Moscow-Karelia	500	1500
VEEK + Salotti	LO, Lodeinoe Pole	2000	500
VEEK + Salotti	LO, Lomonosov Pskov (Velikie Luki <sup>4</sup> +	1000	900
VEEK	Pskov (Velikie Luki + Plussa)	1000	900
Toplivno-energeticheskaya	110000)	1000	200
Kompaniya, OOO	Rostov	1000	
Voronezhmelservis (husk)		1500	1500
Vologdabioexport	Vologda	3000	3000
Vologdalesprom	Vologda	2000	400
VtorExpo	St.Petersburg	500	400
UBK	Smolensky region	250	150
ULPK	Ulynovsk region	800	600
Uralskaya Biotoplyvnaya Company	Ekaterinburg	600	30-50
Ulyanovskiy Lesopromyshlenniy	LKatermourg	000	3030
Komplex	Ulyanovsk	800	400-600
Zakamskyi DOK	Perm	200	100

 <sup>&</sup>lt;sup>3</sup> standstill in 2009 due to technical problems
 <sup>4</sup> Pellets production has been moved away from Velikie Luki to Lodeinoe Pole

	Nomina capacity		Real production, ton/month
Company name	City, region	ton/month	
New companies which started production in 2008			
Baltisky Lesopromyshlenyi		2000 (haven't	
Holding (have not started)	Leningrad region	started, are sold)	
Oyat'	Leningrad region	2000 (started)	500 (started)
Surgutmebel	Khanti-Mansyisk	1000 (started)	1000 (started)
Novotop	Smolensk	200 (started)	200 (started)
Ural-Pellets	Chelyabensk	400	n/a
Setles	Impilachti	2000	n/a
Lesozavod 25	Archangelsk	3500	3500
Toplivnye granuli	Solikamsk	600	400
Biocalorian group	Leningrad region	1500	1200
Green Energy	Pestovo	2000	400
Altbiot	Krasnodar	10000	500
Sialon	Tatarstan	500	500
Companies which plan to start production in 2009			
Swedwood	Tikhvin	4000	
Biogran	Karelia (increase in 2009)	2000-2500	
Surgutmebel	Khanti-Mansyisk (increase in 2009)	2000	
Altbiot (second plant)	Vologda	10000	
Progres-Neva Lizing	Podporohzye	4000	
Hzarkovsky DOK	Tver	4000	
Ural Biofuel Company	Ural	200	
Hzelenodolsky Fanernyi Combinat	Tatarstan	4000	
Setnovo (Stora Enso)	Novrogod region	4000	

The production capacity of pellet plants was about 1.2 millions tonnes of pellets per year in 2008. We expect that the capacity will grow between 1.7 and 2.0 million tonnes per year in 2009.

- 2008: more than 50 000 tons of pellets were produced per month and totally more than 650 000 tons per year were produced. Some plants were built but have not started operating (Baltisky Lesopromyshlenyi Holding) they have operated for several months and have closed due to internal problems. Rospolitechles are not operated due to internal problems (this plant is one of the pioneers on the pellet market)
- 2009: several big plants will start operating as well as working plants are going to increase production volums. We expect that to the end of 2009 more than 850 000 tons of pellets could be produced per year.

# 2.2 Pellet transport and deliveries

This section is split into delivery schemes (2.2.1) and way of packaging (2.2.2)

# 2.2.1 Typical export delivery schemes

Export transportation in big bags is normally more expensive than in bulk. This might lead to lower price paid for pellets in big bags. However this dependency cannot be proven by statistics. Pellets in small consumer bags are normally sold at a higher price

Figure 4. Examples of Russian pellet deliveries

	Situation	Solution
1.	Small production in European part	Big bags or palleted small bags by trucks directly
	of Russia. High quality pellets	to retailers in WE (Germany, Austria, Italy etc.)
2.	Small production in European part	Big bags by trucks to a seaport (St.Petersburg,
	of Russia. Industrial pellets. No	Klaipeda, Liepaya, Paldiski, Ventspils etc.)
	railroad in the neighborhood	Reloading in bulk or in big bags. Sea transport to
		seaports in WE (mainly Northern Europe)
3.	Small production in European part	Big bags by railroad. Sometimes also bulk rail cars
	of Russia. Industrial pellets.	to a seaport (St.Petersburg, Klaipeda, Liepaya,
	Railroad in the neighborhood	Paldiski, Ventspils etc.).
		Reloading in bulk or in big bags. Sea transport to
		seaports in WE (mainly Northern Europe)
4.	Medium sized or bigger producers in	Big bags to a seaport by trucks (within 300-500
	European part of Russia. No railroad	km. range). Or big bags by trucks to a railroad
	in the neighborhood	station and to seaport by railway.
5.	Medium sized or bigger producers in	Big bags by railroad to a seaport.
	European part of Russia. Railroad in	
	the neighborhood	
6.	Medium sized or bigger producers	Bulk containers (hard or soft) to seaport.
	close to seaport	

# 2.2.2 The most popular ways of transport packaging

Typically big bags are used by Russian pellet producers rather as transport packaging than end packaging. It is rarely that pellets are exported in big bags. It is even more rarely, that pellets are shipped from the production in bulk. In most cases big bags with pellets are being torn by reloading of the product in the port and shipped abroad in bulk. Therefore it is hard to judge on the price difference depending on either pellets are packaged in big bags or sold bulk.

Figure 5 Some examples of pellet packaging in Russia

	Market segment	Strengths	Weaknesses
		&opportunities	& threats
1.	Big bags 500-1500 kg	The easiest way to handle pellets by non-specialized facilities and means of transport. Used big bags can be obtained relatively cheap in all regions of Russia	Cost of big bags Much time and high cost of loading/unloading operations
2.	Small bags consumer packaging (12-25 kg)	More value added – more profit Easier logistics in WE – can be delivered directly to retail shops	High packaging cost High transaction cost – more requirements to be met by producers.
3.	Bulk by grain cars	Cheapest way of delivery to port and bigger consumers with bulk reloading facilities	Practically no seaports in Russia can accept bulk rail cars with pellets on regular basis and store pellets in bulk
4.	Bulk containers (20-40')	Good compromise between big bags and bulk cars	High cost of returning containers. Only feasible for producers located within 100 km. distance from seaport. High cost of containers
5.	Bulk containers soft (9 t)	Efficient delivery of bulk goods for long distances Low cost of returning containers Easy and cheap loading/unloading operations	High cost of the containers. Only rental. Requires special arrangement at the production

# 2.3 Price data

The only seaport with regular flow of fuel pellets in Russia is St.Petersburg. There are three terminals where pellets are reloaded in St.Petersburg area:

- Seaport St.Petersburg (so-called 'old port')
- St.Petersburg Fish Port
- Ust-Luga Coal terminal

Some other terminals are planned to start reloading pellets, but no actual volumes nowadays. Price level at all these terminals is more or less the same. Any deviations reflect particular terms of business.

Figure 6. The dynamics of bulk industrial pellet prices FOB and CPT Seaport St.

Petersburg (in € per ton)

	2003	2004	2005	2006	2007	2008 September	2009
							March
FOB	85-90	90-95	95-105	110-125	90-100	95-105	105-120
St.Petersburg							
CPT	70-80	75-80	75-90	80-105	75-85	85-95	95-115
St.Petersburg							

The price for **industrial bulk** pellets in St.Petersburg harbor was about  $90 \le / \text{ ton}$  excluding VAT on FOB SPb in April 2008. It went up till 95-105  $\le / \text{ ton}$  excluding VAT on FOB SPb in September 2008.

In March 2009 prices went up (despite spring) for 5-10 Euros or even more. The maximum price which was announced in March 2009 was 120 Euro per ton on FOB St.Petersburg. There are some offers for 125 Euro per ton in April 2009.

The main foreign traders which work with Russian pellet producers are Norwegian Syr. Pedersen AS and Sweden Lantmannen Agroenergi. The new trader from Denmark has come to the market in summer 2008.

They buy at this price from big- and medium-sized producers which produce 1000-2500 tons per month. (the max volume for Russians). The biggest producer in Russia is DOK Enisey. Norwegean and Sweden traders work with Rospolitechles, Vologdabioexport, Green-Power, DOK Enysey and some other big-scale producers. A Danish trader started to work with Rospolitechles and some other companies. Swedish and Norwegians pay for trucks which come to the harbor at the moment of delivery. Stock costs in harbor are covered by them. It is the most suitable way of working for Russians. None of Russian factories are capable of producing 3000 tons (one shipload) per month to charter their own ship to Europe.

The Russian trader RBA is working with small producers. They buy for 200-300 kg of pellets from each producer which deliver it to them to the plant near the harbour in St.Petersburg. The maximum price was 70-80 Euro/ton including VAT (18%) in 2008. They buy in big-bags (500-1500 kg) industrial pellets. They sell 5000 tons of pellets monthly.

# 2.3.1 Pellets for heating and pellets for power production

Seasonal price fluctuations practically cannot be identified for two reasons:

- insignificant internal market share means that most pellets are being sold to intermediaries traders, who buy based upon long term contracts with fixed prices, finance the producers and keep pellets on stock during the low season.
- medium-term price trend has much influence upon the export price than seasonal. E.g. in May 2006 one could expect stable price or price decrease due to the beginning of the low season.

However we observed price increase instead. In April pellets were selling at 83 CPT St.Petersburg and in June the price grew to 87-90 euro at the same basis. In particular cases of small producers sending their pellets directly to small wholesalers and retailers in Europe, seasonal fluctuations can be observed, but these cannot be used as basis for serious analysis, because of small scope.

The price rate is very wide and it depends on a region. Some companies are operating on domestic market only at the moment. For example, Surgutmebel, Novotop, some Perm companies and other.

Figure 7 Market prices for 3 pellet segments (March 2008, September 2008 & March 2009)				
Non industrial pellets for heating	March 2008			
In small bags (< 25 kg)	150 Euro/ton in Europe.			
Unit: € / ton including VAT.	7000 Rub/ton (190 Euro/ton) ExWorks (resale –			
	supermarkets as Ashan)			
	September 2008			
	160-165 Euro/ton in Europe. (prices went up apr on			
	10%)			
	17000 Rub\ton in the supermarket KARUSEL for 5			
	kg small bags (One bag costs 89 RUB)			
	M1 2000.			
	March 2009:			
	(the current rate Euro/Rubble has changed dramatically). It was 1 Euro=35 Rub in Autumn			
	2008 and it is 1 Euro = 45 Rub in Spring 2009.			
	Thus, the prices in supermarkets are not changed in			
	Rubles but the Euro equivalent has decreased.			
Non industrial bulk for heating	March 2008			
Unit: € / ton including VAT.	3500 Rub/ton (95 Euro/ton)ExWorks (domestic			
ome of ton merading viii.	market to private cottages)			
	3000 Rub/ton (80 Euro/tonn) for export,			
	September 2008			
	4 RUB/kg (Novgorod region, for example). Thus,			
	4000 Rub/ton (110 Euro/ton) Ex Works (domestic			
	market to private cottages			
	March 2009:			
	4600-5500 Rub/ton (105-122 Euro/ton) Ex Works			
	in Central Russia			
	Perm: 70-100 Euro/ton in Siberia (on a plant			
	without delivery)			
Industrial bulk for power production,	March 2008			
Delivered volume of 5.000 tons at international	70-80 Euro in St.Petersburg. Source: RBA and			
harbor, preferably in CIF prices (import) but	some pellet producers. They buy from small-scale			
alternatively in FOB prices (export). Unit: € / ton	producers. (delivered volume to the trader is 200-			
excluding VAT.	300 kg)			
	90-95 Euro/ton on FOB SPb which pay Swedish			
	and Norwegian traders which buy from big-scale			
	producers. (delivered volume is 1000-2000-3000			
	kg per month – maximum for Russia)			
	Contombon 2008			
	September 2008 It went up till 95-105 € / ton excluding VAT on			
	FOB SPb in September 2008. Danish trader have			
	came to the market			
	came to the market			
	March 2009:			
	105-120 on FOB St.Petersburg or Baltic harbors.			
	<u> </u>			

# 2.3.2 Quality standards

The Russian and Ukranian markets are very specific and different from European pellet markets. Companies prefer to export pellets than to sell locally because the domestic pellet infrastructure is not developed. There is small number of private consumers and the number of houses with pellet boilers is very limited.

Figure 8 Overview of Russian pellet production, quality schemes and consumer markets

Figure 8	Figure 8 Overview of Russian pellet production, quality schemes and consumer markets						
Company name	Answer about quality	Answer about price	Consumers				
Company A (St.Petersburg)	Bulk and big-bags High quality industrial pellets our of birch chips from the plywood factory where this plant is situated. Diameter of pellets: 8 mm Humidity - less than 7 %. Calorific value: 18 GJ/tons Ashes - 0,7 %. Flying substances - 85 %. Volume for delivery is 3000 tons in month. Delivery by ship party (by the gross in holds of the ship). The Industrial equipment - "Andritz Sprout" (Denmark) Plant are located near the harbor, the pellet production is situated on the base of a big plywood company which constantly supplies us by raw material.	It is 90-95 Euro/ton on FOB SPb in 2008. It was 177 FOB SPb in 2006  March 2009: the plant is not operating due to internal problems.	Sweden and Great Britain. 5% is private cottages inside Russia				
Company B (Krasnoyarsk)	Big-bags 800 kg. High quality softwood pellets out of sawdust from their own sawmill.  Diameter of pellets: 8 mm. Ash -0,3%  Equipment: Andritz Sprout	90 Euro/ton FCA Krasnoyaksk, 125 Euro/tonn FCA SPb. Domestic market is 2800 Rub/ton (75 Euro/ton)	The same consumers as Company A. Work with the same traders in SPb. They told that Western consumers want to buy not in SPb harbours but in Baltic states harbors, but the railway rate to Baltic states in twice higher than to domestic harbour of SPb. They negotiate with Korenian and Japanise consumers. They told that the pellet domestic market is developing at the moment, but coal is cheaper than pellets now.				
Company C (Moscow)	Big-bags as well as small bags for 5-7 kg. Diameter of pellets: 6-9 mm High quality pellets out of sawdust from their own sawmill Equipment: domestic	3000 Rub/ton- ExWorks (export) 3500 Rub/ton ExWorks (domestic market to private cottages) 7000 Rub/ton ExWorks (resale – supermarket Ashan). Prices went down on 15% compare to 2006.	Export to Europe, domestic market (supermarkets and private consumers – cottages)				
Company D (Tver region)	Diameter of pellets: 6 mm DIN plus, white pellets out of round wood Equipment: Amandus Kahl	Haven't answer about price	They sell throught their holding company. They deliver pellets with lumber by the same trucks, coaches and ships. Thus, the costs of delivery is low for them.				
Company E (Tver region)	Diameter of pellets: 8 mm Calorific value: 17,84 GJ/tons Ashes – 0,7 %. Equipment: Amandus Kahl	They told that price is a secret	100% to Sweden, Great Britain, Belgium, Denmark				
Company F (Leningrad region)	Diameter of pellets: 6-8 mm. Pellets out of birch and softwood sawdust, chips Ashes – 0,6% Humidity – 8% Calorific value: - 4700 Kcal Equipment: Sprout Matador	It is 90-95 Euro/ton on FOB SPb in 2008.	The same consumers as Rospolitechles's. Work with the same traders in SPb.				
Company G (Archangelsk region)	DIN-Plus pellets out of softwood sawdust and chips	In 2008 the price is 150-160 Euro/ton CIF in big-bags It was 160-180 Euro/ton in 2007 in Austria in big-bags. Price is 20% higher if pellets are packed in small bags.	The main constant consumer is Austria. They deliver buy trucks and railway through Latvia to Austia. They are not happy with prices and infrastructure in SPb harbor.				

Company name	Answer about quality	Answer about price	Consumers
Company I – the	Diameter of pellets: 8 mm out of softwood sawdust and chips Calorific value: 17 GJ/tons Ashes – 1 %. Equipment: Andritz Sprout  Industrial pellets in big-bags.	It is 90-95 Euro/ton on FOB SPb in 2008.  The price which they buy is 70-80	The same consumers as Rospolitechles's. Work with the same traders in SPb. They collect the ship load with Rospolitechles, Gren-power and sell it to one customer (The Norwegian or Swedish traders which sell to Great Britain, Sweden and some other countries) The production and delivery costs to SPb harbor are about 110 Euro/ton. They buy from small-scale
Russian trader in SPb.	measural periods in org orago.	Euro/ton in SPb harbour.	producers. Each producer sells about 200-300 kg. RBA collect 5000 tons per month and deliver 2 ships to Europe. The competitive advantage is that they work with smll-scale producers and buy small batches.
Company J (Leningrad region)	Industrial pellets in big-bags (500 kg) as well as premium quality.  Calorific value – 17-19 GJ/tons Diameter of pellets: 6-8 mm Equipment in Lomonosov is Proletarsky zavod machinery (Russia) Equipment in Lodeynoy pole is CPM	100 Euro/ton for industrial pellets in bulk on FOB SPb in 2008. It is went down on 20% since 2006. 100 Euro/ton for premium quality pellets on the plant.  The domestic market offers the same prices as export market	Esport to Europe (Great Britain, Denmark, germany, Italy) – 90%.  Domestic market – 10%
Company K (Pskov region)	DINplus quality out of their wood sawdust and chips with ashes – 0,5% Industial pellets with ashes 1,5% out of outsider wood waste	70 Euro/ton from the plant, 150 Euro/tonn on consumer location for DINplus The export and domestic prices are the same	They deliver big-bags (1ton) by trucks, they deliver big-bags (700 kg) or in small bags (16-20 kg) on pallets by railway. 70% is delivered to SPb to other pellet producers which export pellets in big batches. 30% is domestic market in Moscow region for private cottages.
Company L (Komi Republik)	The ash content is high, but the volume was not indicated out of softwood waste.  Diameter is 6-7 mm.	60-70 Euro/ton in SPb.	They deliver pellet to SPb by trucks and railway in big-bags. They tried to work with private consumers in Germany but they were not successful in that. They buy to big consumers now.
Company M (Vologda)	17MJ, DIN 51731, 8 mm out of chips and sawdust. Equipment: Pelleta-Tec, Sprout-Matador	100-98 Euro/tonn on exwork	They sell to traders in SPb – 90%. 10% is for private boilers on domestic market.
Update March 2009			
Company N (Smolensk)	OGM presses, 200 t/month	4600-5400 Rub\ton on a plant in Central Russia	All produced volumes are sold on domestic market
Company O (Khanti-Mansyisk)	OGM, 1000 t\month, plan to buy CMP or Munch in 2009 to increase production volumes	2950 Rub/ton on a plant in Siberia	All produced volumes are sold on domestic market
Company P (Krasnodar)	They have 2 presses with capacity of 5 tons per hour each,. They have started at the end of 2008 and produce about 500 tons of pellets per month, but they are planning to reach the maximum capacity of 10tons per hour soon. They have Slovak and Check equipment.	They sell to Europe	All produced volumes are sold abroadm but they plan to push the switch boiler projects into pellets in their region.  "Albiot" is constructing another big plant in Vologda with the same big capacity.
Company Q (Pestovo)	The capacity is 2000 tons per hour, but they produce only 400 tons of pellets per month.  They take wood waste from 50 woodworking companies in Pestovo as well as from Pestovo-Nova (UPM-Kummene saw-mill in Pestovo).	Sell to Finland only by trucks. The distance to the customer is 800 km	The price is about 105 Euro per ton.

# 2.4 Final consumer markets

The following pellet flows (cases) exist in Russia:

- Domestic pellets for domestic heating
- Exported pellets via shipping of Russian harbors
- Exported pellets via transporting by trucks to Western Europe

#### 2.4.1 Domestic markets

About 5-10% of all produced pellets are used inside Russia. Almost all producers sell as least 3-5% on domestic market. Some small-scale producers can sell only on domestic market for householders mainly and for several central heating plants (there are only few such plants in Russia so far). We expect that more than 15-25% of pellets will be used on domestic market in 2009.

Figure 9 Russian internal pellet markets and prices – 2008 until 2009

Figure 9 Russian internat pettet ma	
Market segments	Characteristic
1. Households	March 2008
(small bags)	Prices may range from 3500 to 5000 rubles incl. delivery
	Delivery in big bags or small 15-25 kg bags.
	March 2009:
	3500-7000 Rub/ton including delivery
2. Offices, warehouses, production	March 2008
facilities, high class dwelling	Pellets price including delivery for such customers is
communities	normally ranging between 3000 – 4000 rubles including
(big bags)	delivery.
	Delivery in most cases is executed by trucks in big bags
	March 2009:
	Range between 3000-5500 Rubles
3. Municipal heating systems	March 2008
(big bags; bulk)	Pellets prices in these cases are a bit 'political'. In Vladimir
	Oblast they supply pellets below 2500 rubles per ton,
	because producers consider such project very important for
	further development of the internal market. Delivery in
	most cases is executed by trucks in big bags.
	March 2009:
	2500-3500 Rub/ton
4. Bigger heating and energy facilities	
(-)	March 2008
5. Autonomous CHP facilities (-)	There are no such facilities so far
	1

# 2.4.2 Export markets

The most pellets are delivered to Europe through St.Petersburg harbor (at least 60-70% of produced pellets). About 15% of produced pellets are delivered through the Baltic harbors in period 2008 to 2009. Another 15% of produced pellets are delivered by trucks to Europe in period 2008-2009.

# 3. Ukraine

If Russian pellet producers use wood waste for pellet production mostly, Ukrainian pellet producers use both wood and husk waste for pellet production.

# 3.1 Pellet production and deliveries

Similar to Russia, the Ukranian markets is very specific and different form European pellet markets. Companies prefer to export pellets than to sell inside because the domestic pellet infrastracture is not developed. There is small number of pricate consumers and the number of boiler houses is very limited.

Totally we can say that production capacity of pellets plants in Ukraine is about  $140\,000$  ton/year, the real production is  $60\,00$  ton/year for 2008. We expect that about  $200\,000$  -  $250\,000$  ton/year will be produced in 2009 and production capacity will be more than  $350\,000-400\,000$  ton/year in 2009

Ukrainian companies export pellets as well as Russians mostly. The domestic market is about 15% for Ukraine and it is growing thanks to gas increase prices and the domestic market could be about 30% in 2009. New biofuel boilers are installed in Ukraine rapidly and under support of government and European Bank of Reconstruction which gives a credit for Ivano-Frankovsk (Ukraine) municipal boiler houses in 11,7 mln Euro in 2009. In the framework of this project, pellet boilers will be installed as well.

Figure 10 Overview of Ukraine pelletproducers

Name	Region	Source	Pell	Pellet characteristics	Capacity, (in tonnes /month)	Real product ion (in tonnes/ Month)	Consumers /share	Domestic market	Price/delivery	Packaging
Company I	Luganska ya area	sawdust	8 mm	0,8% is Ash content, Calorific value is 4146 KCal	1250	009	Sweden, Italy, Poland	there is no domestic	90 FOB in Baltic harbors, transfer by trucks through Poland to Baltic harbors, then deliver to Sweden by fairy.	big-bags
Company II	Volynsky region	sofwood sawdust and peat	8 mm - wood pellets, 14 mm - peat	- Ashes 2,5% - humidity 8,6% -heat 4200 KCal for wood pellets; ashes in peat pellets 62%, 70% of pellets are from peat	008	500	40%: Estonia, Polans. Denmark	domestic market is 60%. Consumers: shools, hospitals in Volynsky region	Price went up for 25% since 2006, export price is 85 Euro on the mill, domestic market: 490 griven/ton	Export: big-bags for 800 kg and small bags for 15 kg. Bulk for domestic market
Company III	Chernigov	sawdust, round wood	8mm	4200KCal/ash content out of sawdust- 1,5%, ash out of wood - less 1%	800	200	Denmark, Italy 90- 95%	pellets for cat's toilet 5- 10%	15kg bags on FCA 80 Euro/ 100\$ inside Ukraine	big-bags and small bags for 15 kg
Company IV	Cherkassy	oak sawdust	6mm	DIN	3000	1000	100%: Germany and Denmark	don't sell for domestik market	105 Euro on the location of consumer	by trucks in big-bags
Company V	Zaporozh ye	husk	7mm	ash 2,3%, 4464 kCal, Kharkovsky certificate	300	300		sell for private consumers for small boiler houses in Zaporozhye	130-190 \$ on the location of consumer	big-bags by trucks
Company VI		husk	14mm		400	400				
Company VII	Luganska ya area	husk			500	250		private consumers		
Company VIII	Poltava	husk	8 mm	3.9%ash, 5120 kCal	1000	1000	Poland, Hungary, Romania	they sell more for domestic market now	FCA 50-70 Euro in Central Ukraine	bulk pellets by railway, in big-bags by trucks
Company IX	Poltava	husk	8mm	3,6% ash, 4300 kCal	1500	400	Italy through export companies (traders)	domestic market is not very interesting fo them		bulk pellets by railway, in big-bags by trucks

		1				
Packaoino	big-bags by trucks	railway in special wagons (hoper)	railway in special wagons (hoper)	by trucks in big-bags		
Price/deliverv	haven't told prices	domestic prices are the same as export prices	80-100 Euro FCA	110-124 Euro FCA, prices haven\t changed since last year		
Domestic market		they sell a little for domestic market to private boilers and small companies	there is no domestic market			
Consumers share	Sell only to traders inside country	European Union	Western Europe	Western Europe (Germany)	Domestic	Domestic
Real product ion (in tonnes/	0				1500	Plan to start in 2009
Capacity, (in tonnes /month)	150		00/1		1500	3000
Pellet characteristics	Industrial	Industrial	pellets for power stations		2008 built	
Pel	8mm	8mm		еш		
Source	wood waste	husk	sofwood sawdust	peat	Wood pellets	Wood pellets
Region	Poltava	Zaporozh ye	Odessa	Marochno	Vinniza	Kosovo
Name	Company X	Company XI	Company XII	Company XIII	Company XIV	Company XV

# 3.2 Price data

Because Ukraine is situated closer to the European Union as Russia pellets are delivered by trucks mostly. However, railway to Baltic countries as well for St.Petersburg harbor is used. Some companies deliver pellets to consumers to Europe directly by trucks, but some big-scale producers uses railway and ships to deliver pellets. The prices for pellets and briquettes went up on 15-20% in 2009 in general.

Figure 11. Ukraine Prices - 2007

Non industrial small bags (< 25 kg) Unit: € / ton including VAT.	15kg bags on FCA 80 Euro/ton 100\$/ton inside Ukraine (wood)
Non industrial bulk. Unit: € / ton including	490 griven <sup>5</sup> /ton (wood) or 105 Euro/ton on the location of consumer
VAT.	(wood in big-bags by trucks) inside Ukraine
	130-190 \$/ton on the location of consumer (husk in big-bags by
	trucks) in Europe
	110-124 Euro/ton FCA (peat in big-bags)
Industrial bulk, delivered volume of 5.000	80-90 Euro/ton FOB in Baltic harbors, transfer by trucks through
tons at international harbor, preferably in	Poland to Baltic harbors, then deliver to Sweden by fairy (wood)
CIF prices (import) but alternatively in	FCA 50-70 Euro/ton in Central Ukraine (husk)
FOB prices (export). Unit: € / ton	Industrial bulk from Ukraine: 80-100 Euro/ton FCA (wood)
excluding VAT.	

## 3.3 Final consumers markets

Almost are Ukrainian pellets are exported though Baltic ports (Klaipeda (Lithiania), Liepaya, Vetspils (Latvia), Paldiski (Estonia), Sillamae (Estonia), Tallinn (Estonia). Probably some pellets go via Black Sea ports, but not systematic as far as we know. Pellets are also transported to Europe by trucks and railway from Ukraine. A minor part of produced pellets stay within Ukraine for domestic use.

<sup>&</sup>lt;sup>5</sup> 1 €=6,7 griven

# 4. Belarus

Belarusian authorities claim to pursue a consequent policy aiming at the development of renewable energy. This has also a political meaning in terms of avoiding too much dependency on oil and gas import from Russia. However, this does not seem to contribute the actual pellets industry development in the country. All operating pellets producers are owned by SME's. Most of the private plants have been constructed without significant state support. And there is still little internal demand for pellets. Most pellets produced in Belarus are being exported via the Baltic States or via Poland.

# 4.1 Pellet production and deliveries

All pellets factories in Belarus were established with very tough budget limitations. As a result most or all of them are using domestic, second hand equipment and have very much down time. We do not know any state of the art pellets production facilities in Belarus - even compared to what has been built in Ukraine and Russia.

#### 4.2 Price data

Thus, there is no domestic market in Belarus. 100% produced pellets are exported to Europe through Baltic states mostly. The price for industrial pellets is 80-90 Euro/ton in DAF. Non-industrial pellets are sold by 100-115 Euro/ton on the border in big-bags.

Pellet production capacity is 5000 tons/month, the real production is 3500 tons/month. Thus the annual capacity was about 60 000 tons and real production was about 40 000 tons/year in 2008. We expect that the pellet plants capacity will be about 90 000 tons of pellets per year in 2009. The real production will be mote than 60 000 tons of pellets per year in 2009.

# 4.3 Final consumer markets

mostly through Baltic states. They use railway more than Ukraine. The number of pellet mills in Belarus is small. Belarus companies produce pellets out of wood mostly. If we come to the question of prices then Belarus companies told that prices went down by about 20-30 Euro/ton during 2007 to Belarus companies told that there is no domestic market at the moment. All of the questioned companies told that they export pellets to Europe and 2008. In 2009 prices went up again on the same 20-30 Euro. The more detailed information is presented in the table below.

Figure 12. Overview of Belarus pellet market actors and capacities - 2007

Name	Region	Source	Pellet characteristics	ristics	Capacity, ton/month	Real producti on ton/mont h	Consumers/share	Price/delivery	Packaging
Company 1	Minsk	sawdust, peat,legnin	10-12mm	17-19MJ		80	Poland, Germany, Denmark, Italy- 100%	70Euro/tonn	big-bags and small bags for 30 kg
Company 2	Gomel	Sawdust	8mm	17MJ	800	008	Baltic states 100%	90 Euro/ton	bulk in special wagons (hoper)
Company 3	Pinsk	chips out of plywood production (birch, alder)	6mm	DIN-51 industrial pellets	1100	1000	100% Scandinavia	85 Euro/ton by bulk in harbor (border)	big-bags
Compnay 4	Bodruysk	wood waste, sawdust,chips	industrial pelletsDIN- 51731	ashes 1,5%	800	500	100%: for trader in Baltic states	DAF: 85-87 Euro/ton, bulk and wagons	Bulk
Company 5	Vitebsk	Sawdust, chips 80% softwood 20% hardwood	8mm	4787kCal/kg	700	400	baltic states 100%	80 Euro/ ton DAF	bulk in special wagons (hoper)
Company 6	Minsk	chips, sawdust	8mm	*	1600	008	Latvia, Lithuania, Sweden, Holland- 100%	havn't told /DAF	bulk in special wagons (hoper)
				near Din+, but ash is a little			Doland Germany	100 115 Euro/ton on	
Company 7	Minsk	sawdust	6mm	0,01%			Denmark, Holland- 100%	the border	big-bags
Company 8	Minsk	Softwood sawdust	6mm and 8mm	*			Europe 100%	*	big-bags and special wagons (hoper)

# 5. Conclusions

#### **Production volumes and capacities**

More than 650 000 tons per of pellets were produced in Russian in 2008. We expect that more than 850 000 (and even up to 1 000 000 tons) tons of pellets could be produced per year by the end of 2009. The production capacity of pellet plants was more than 1 290 000 tons per year in 2008. We expect that the capacity will be more than 1 700 000 (and even up to 2 000 000 tons) tons per year in 2009. Belarusian pellet production is the smallest among 3 countries. They produce about 60 000 tons of pellets per year. Ukrainians could produce about 200 000 tons of pellets in 2009. The pellet plant capacities are increasing in all three countries.

#### **Internal pellet market**

Pellet domestic market is increasing in all 3 countries. We expect that it could be about 30% in Russia by the end of 2009. It could be the same in Ukraine. Belarus can organize it and reach at least 5-10% level. Domestic market for fuel pellets keeps growing in Russia as well as in Ukraine and Belarus.

Main growth contributors are:

- private boiler-house owners production enterprises, warehouses and logistics centres switching to pellets to decrease fuel costs and improve heat supply reliability
- municipal boiler houses
- private house owners

Boiler suppliers claim to have supplied over 1000 pellets boilers (below 200 kWth) in 2008 + several dozens professional pellets boilers (over 200 kWth) have been installed in different regions of Russia by the end of 2008. It is important to know, that while in 2006-07 there were no more than 10 companies offering pellets heating systems, by the beginning of 2009, the number of pellet boiler suppliers is over 50 companies. And they are covering most regions of Russia – at least the regions where pellet are being produced. Internal market in Russia is growing. But it hardly gets any consequent support or even serious attention from the state – but for rare exceptions on local level. As a result the market is developing voluntarily - without any plan.

#### **Export markets**

The pellet export still dominates in all three countries. The prices are going up in 2009. Pellet price is up to 120 Euro per ton on FOB St.Petersburg for bulk industrial pellets in April 2009. Pellet producers were positively influenced by the world financial crises. The devaluation of Ruble increased the profits of companies which export pellets. The European prices for pellets went up again thanks to real winter and pellet producers receive double profits at the moment. The prime costs in Rubles are the same as before devaluation of Ruble which was observed in 2009. The pellet production is developing in all 3 countries and we expect the organization of serious pellet industry in Russia soon.