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**RUSSIAN NITROGEN:
CURRENT SITUATION AND PROSPECTS**

by

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1. Current Situation

1.1. Place of Russia in the world industry

More than 70 years passed since the USSR launched its first ammonia production. To late 80s of the last century the country became one of the largest ammonia and nitrogen fertilizer producer. Fertilizer application per hectare was practically the same as in the USA. Disintegration of the USSR caused disruption of the domestic fertilizer market in Russia and in other former socialistic republics. Today Russian nitrogen industry is mainly oriented on exports and its place in the world production is as follows. Russia is one of five leading ammonia producers. In 2002 Russia occupied the 4th place after China, India and the USA. These four countries produced altogether 55% of the world ammonia output (slide 1).

At present approximately 12% of ammonia produced in the world are delivered to the international market. It is worth to mention that the main ammonia producers are not always its main exporters. Thus, China and India deliver their whole output to their domestic market. The USA, in spite of being the second ammonia producer in 2002, is the largest importer of the product (slide 2). At the same time Trinidad delivers to the international market 90% of its ammonia produced, which makes it the largest ammonia exporter. As for Russia, it is the second in ammonia exports ranking after Trinidad with 18% of the total world exports.

The share of nitrogen fertilizers in the international fertilizer production and consumption is around 60%. As for the world fertilizer sales, their share is 41-44% (slide 3). Five countries (China, India, the USA, Russia and Canada) produce approximately 60% of the total world nitrogen fertilizer output. Russia is the 4th in this ranking. The largest nitrogen fertilizer producer is China with 25%. India produces around 13%. Share of Russia is 6% (slide 4).

30% of total nitrogen fertilizer produced is exported. Russia is the largest nitrogen fertilizer exporter with the share of 18%. It is followed by the USA with 10%. Other two large nitrogen fertilizer exporters are Benelux and Ukraine (slide 5).

1.2. Russian Ammonia and Nitrogen Fertilizer Production and Exports

Russian ammonia production for the last 3 years shows its stagnation (slide 6). While 2/3 of the produced ammonia are delivered to the domestic market (mainly for nitrogen fertilizer production), current ammonia situation appear to reflect nitrogen fertilizer production (slide 7).

Nitrogen fertilizer production in 2000-2002 was quite stable. These results demonstrate that positive effect of ruble devaluation in 1998, which caused rapid production increase in 1999-2000, is close to an end. The bulk of Russian nitrogen fertilizers are exported. In 2002 80% of total Russian nitrogen fertilizer production were delivered to the international market. This exports escalation was caused by the favorable situation in the world market and problems in the domestic one.

1.3. Product mix

In the list of fertilizers produced, the main place is occupied by single or straight fertilizers (urea and ammonium nitrate) with a share of 73% N. Some of fertilizers produced are all exported (slide 8). These are DAP, UAN solutions and NP (14:34).

Exports of MAP amount to 90% of production, urea – to 93.6% and all NPK-fertilizers – to 78%. The lowest level of exports is shown by ammonium nitrate. In 2002 only 62.3% of the product were delivered to the international market.

Ammonium nitrate is the most popular fertilizer in the domestic market. Its share in nitrogen fertilizer deliveries to agriculture amounts to 70% (slide 9). Considerable volumes are delivered to industrial consumers.

1.4. Nitrogen Fertilizer Deliveries to Agriculture

Nitrogen fertilizer deliveries to agriculture decreased from 5.8 million tonnes (Mt) N in 1988 to 0.91 Mt N in 2002. The lowest level of deliveries took place in 1998 and settled at 738,000 t N. As for deliveries in first half of 2003, these were 10% lower than in 2002 (slide 10).

Current demand on nitrogen fertilizers reflects the recent economical situation in Russian agriculture. Stagnation of deliveries to the domestic market at the level of 1.1-1.5 Mt nutrients is hardly sufficient for Russian agriculture. Even ruble devaluation in 1998 hardly influenced fertilizer deliveries to agriculture. In 2002 they increased approximately by 30% compared to 1998, but their level is still extremely low. Fertilizer deliveries to agriculture in 2003 were even lower than in 2002 (slide 11) due to the shortage of money, which was caused by the decreased cereal prices and debts.

2. Outlook

2.1. Domestic Market Prospects

Prospects of the domestic fertilizer market are tightly connected with the prospects and ways of agriculture development. Agriculture crisis used to be explained by the delay in passing a law concerning turnover of agricultural land. However, now, after the law was passed, there are so far no positive changes in agricultural situation.

However, it is worth mentioning that our agricultural scientists still believe demand on fertilizers will increase. According to them, coming years will bring escalation of fertilizer demand of agriculture at the level of 14-26 Mt nutrients annually, which is 10-20 times as high as now. However, such prospects, being favorable both for Russian fertilizer producers and their foreign competitors, have no real base. These volumes are based on so called “scientifically grounded” norms. When Soviet economy was centrally directed, agriculture got the planned volumes of fertilizers, and the volumes were recommended by the scientists. In the absence of competition this way was correct. But now, after the situation changed, the question arises: who will pay for these fertilizers? Farmers? They should compete with European and American farmers to survive. Thus, Russian farmers were forced to apply fertilizers 10 times as low as according to “the scientifically grounded” norms. They managed to keep agricultural productivity at the former level and to become more competitive.

However, even at such relatively high competitiveness, Russian farmers lost 40% of the domestic market, and the situation is getting worse every year. Are there any ways to solve the problem? This question is too difficult and slightly out of the agenda of this conference.

It is worth to mark that current financial situation in Russian agriculture does not allow hoping that demand on fertilizers would considerably rise in the nearest future. It is obvious that, in order to make former Soviet collective farms modern, highly effective and competitive in domestic and international markets, too many things are needed, including up-to-date equipment, warehouses, technologies etc.

According to some Western experts, Russian agriculture needs \$200-300 billion in order to become competitive. Neither Russian Government nor farmers have now such finances, and in coming 10 years it is impossible to get them from foreign investors. The Russian Government tries to help agriculture, but this is not enough to keep it effective. Taking this into consideration, we can hardly expect rapid increase of demand on fertilizers in coming years.

In 2000 FAO made a forecast for fertilizer demand in countries with transitional economies up to 2030.^{*)} Unfortunately, this forecast does not differ countries. However, while Russia is the largest representative of the countries analyzed, we can think that the prognosed growth rates of fertilizer demand of 0.8 Mt annually are calculated first of all for Russia. Forecast results are given on slide 12.

As we can see, demand on fertilizers will amount in Russia in 2008 to 1.54 Mt , in 2013 to 1.61 Mt. If nutrients ratio in deliveries to agriculture would stay at the level of the last 2 years (1:0.34:0.23), demand on nitrogen fertilizers will settle at 0.98 and 1.02 Mt per year respectively, which is practically the same as during the last 8 years. Present Russian nitrogen fertilizer capacities will be loaded by the Russian agriculture at around 13%. This forecast is not very optimistic, but we believe it to be quite realistic one.

At the same time we are convinced that Russian agriculture will be able to compete with foreign ones in future. Russia possesses not only oil and natural gas but also plenty of good agricultural land. Russia is able to provide with food many other countries. Some years ago we made a forecast for demand on fertilizers in Russia for the period when Russian farmers will be able to operate as effective as European or American ones. Forecast methodology and results were delivered to the UNIDO and at a meeting of the Production and International Trade Committee of the IFA^{**)}

The results were calculated for the following conditions:

- Population of the country is 150 millions;
- Arable land is reduced to 70 million hectares due to the intensification of agriculture.

The following results were received:

- The total demand will account for 7.0-9.2 Mt nutrients including 4.0-5.0 Mt of nitrogen;
- Fertilizer application will account for from 100 kg/hectare to 130 kg/hectare;
- In order to cover needs of the domestic agriculture, nitrogen fertilizer capacities will be used at 50% – 63%.

Our calculations, while taking into consideration possible domestic demand on nitrogen fertilizers given above, allowed defining potential Russian nitrogen fertilizer exports in the perspective analyzed (slide 13).

2.2 Exports Outlook

The Russian fertilizer industry was constructed first of all in order to cover the domestic market needs. It explains the fact that enterprises producing fertilizers are placed close to the main regions consuming these products and mostly far from the sea ports (slide 14).

^{*)} FAO, Agriculture: Towards 2015-30, Technical Interim Report, Chapter 4.6, April 2000.

^{**)} D.P. Aleinov, "Russia: current constraints and long term prospects for the production and exports of ammonia and nitrogen fertilizers", IFA Production & International Trade Committee, Tampa (USA), September 14-15, 1995

It was convenient while the bulk of fertilizers were delivered to the domestic market. But now, since domestic market is reduced, fertilizers are mainly exported. Thus, they have to be delivered to seaports. Transportation usually takes 35-60% of total expenses, which negatively affects price competitiveness of Russian fertilizers in the international market.

Present export competitiveness of Russian ammonia and nitrogen fertilizers is mainly backed up by low domestic natural gas price. However, since 2000 gas price increased 4 times: by 20% in 2000, by 18% in 2001, by 15% in 2002 and by 20% in early 2003.

According to the Ministry of Economic Development and Trade, 2004 will bring another tariff rise of 20% for gas, 16% of electricity and 12% of railway transportation. To 2008 gas price will move up to \$42/1000 cubic meters or \$1.34/MMBtu. Permanent increase of gas, electricity and railway transportation prices lower competitiveness of Russian nitrogen fertilizers in the international market. We have tried to take into consideration forecasted prices and to estimate export competitiveness of ammonia and main nitrogen fertilizers in middle-term perspective for different enterprises placed far away from seaports and close to them. Total expenses of exporters included production expenses, transportation to the nearest port and costs of port shipment. In order to figure out competitiveness of nitrogen fertilizers, we compared expenses to their minimum, medium and maximum international bids for the last 10 years.

As a result, all enterprises analyzed keep being competitive at the maximum price of the product for the last 10 years, which settled for ammonia at \$216/t in the port of Yuzhny, for urea and ammonium nitrate – at \$203/t and \$142/t in Baltic ports respectively. Ammonia minimum price of \$71/t makes operation of all producers ineffective, as well as price of urea below \$90/t and of ammonium nitrate below \$70/t.

Radical modernization of nitrogen fertilizer production (first of all at the expense of lowered energy consumption in ammonia production) will allow increasing profitability of exports by \$13/t for ammonia and \$6-10/t for main nitrogen fertilizers. However, reduced energy consumption will affect positively only enterprises located close to seaports. As for others, they will decrease their expenses, but not enough much, due to high transportation costs. This question was studied more thoroughly in the report of our company specially made for the unfortunate (cancelled) IFA meeting in Quebec in 2001^{*)}.

Russian Enterprises as a Subject to Anti-Dumping Duties. AN Problem

80% of fertilizers produced in Russia are exported. Thus, any exports decrease is sensible for Russian producers. Apart from tariff rise of natural monopolies, anti-dumping duties have recently become a serious problem for Russian exporters.

At the present there are anti-dumping duties operating on Russian urea deliveries to the European Union and import duties on ammonium nitrate and UAN solutions imports to the same region. In 2001 quotas on ammonium nitrate deliveries to the USA got in motion. In 2003 the quota amounts to 130,000 t, and in 2004 the USA plans to import 150,000 t of Russian products. There are also import duties on Russian urea deliveries to the USA. Only this year the USA terminated its anti-dumping investigation concerning Russia UAN imports, and all anti-dumping duties on the product were fortunately cancelled. In October 2003 Mexico moved up the minimum price on Russian urea imports by \$40/t.

^{*)} E. Khristianova “Competitiveness of the Russian Ammonia and Nitrogen Industry”, p.p. 43-59. Proceedings IFA: Production and International Trade Conference, Quebec City Canada 13-14 September 2001.

Another problem is ammonium nitrate exports. It started after 300-400 t of solid ammonium nitrate exploded in Toulouse in September 2001. As a result of this tragedy, which caused 32 deaths, restrictions on ammonium nitrate transportation and storage conditions were introduced in France and some other countries of West Europe. In 2002 this region almost stopped its imports of Russian ammonium nitrate. Acts of terrorism in Russia, Philippines and on Indonesian island Bali caused negative attitude in the world to ammonium nitrate, as the product was used for making explosives.

In December 2002 China stopped importing AN, as well as Columbia and Philippines. Some countries, such as Brazil, India and countries of East Europe, introduced anti-dumping duties on Russian AN. As per opinion of some experts, these actions can cause Spain, England and the USA to follow the example of China. In 2003 Great Britain plans to introduce new regulations implying obligatory detonation control of all imported nitrate fertilizer that have more than 28% of nitrogen. Such regulations can close this market for AN exporters.

Russia is now the largest ammonium nitrate exporter and delivers to the international market 62% of the product produced. 40% of Russian nitrogen fertilizer capacities produce ammonium nitrate. The above restrictions and anti-dumping measures can result in the bulk of Russian product being unclaimed. Since prognoses of Russian domestic market development are quite pessimistic, this problem is very serious. Russian share in the world AN exports in 2001 accounted for 46%. Thus, future of the international nitrogen fertilizer market greatly depends on how Russian AN capacities will be used.

Hastily stopped AN production would mean financial disaster for Russian nitrogen industry and cause closing production of nitric acid and unloading of ammonia units. Stopped production of nitric acid would lead to misbalance of steam at enterprises. One of possible ways to solve the problem would be the conversion of AN production to calcium ammonium nitrate (CAN) production. CAN is an appropriate fertilizer for Russian soils. On the other hand, price of nitrogen in CAN production will be higher than in production of ammonium nitrate, as well as cost of transportation of nitrogen to the farm. Moreover, such conversion in the short term is extremely difficult. The most appropriate way for Russia is likely to be conversion of some AN units to stabilized AN production. This product containing less nitrogen is less sensitive to detonation. Conversion of some AN units to UAN solutions production is also possible. However, UAN solutions are not very popular in the domestic market due to the absence of proper infrastructure.

What has been done in Russia to solve this problem?

First of all, the ministry of industry and science has ordered to GIAP (the research and design institute for nitrogen industry) to work out more rigid regulations as regards storage and transportation of AN and a new AN standard. The enterprises in cooperation with GIAP and some other institutions are developing a number of technologies to produce AN with lower content of nitrogen. Some of these technologies, like the production of so-called stabilized AN, have been tried on commercial scale. A certification centre has been set up to test and certify new species of AN based fertilizers. Unfortunately, the problem is not easy and cannot be solved radically in a short time.

Is Russian Nitrogen Industry Ready to Join the WTO?

What are the advantages for Russia of a rush for joining the WTO? It will obviously put on Russia new liabilities, which have not been defined yet. But they are likely to destroy fertilizer industry we inherited from socialism. First of all it concerns prices and tariffs, which now are being controlled by the Government.

To stop controlling prices and tariffs means coming back to the situation in Russia before August 1998, when natural gas price exceeded the level of \$50/1000 m³. Accordingly it caused increased tariffs of electricity and railway transportation. Domestic market was full of foreign industrial and agricultural products. In 1998, 53.2% of Russian industrial enterprises and 84.4% of agricultural farms were actually bankrupt, and it could have led to a total bankruptcy, if it were not for the default in August 1998.

In exchange for refusal of tariff and price controlling, we shall get some privileges on deliveries of Russian products to the members of the WTO. However, these privileges will be limited in the EU (the most important for Russian fertilizers region) by discriminating for Russia trade regulations of the Union. Besides, they can be anytime unilaterally changed or cancelled by the EU, and this rule will remain in effect even after Russian joining the WTO.

Thus, a question arises: whether we really need such privileges on fertilizer exports or not, while our products would not be able to compete in the international market at market tariffs. Domestic market will be also cut down, while bankrupted farmers would not be able to purchase fertilizers.

Joining the WTO is obviously necessary, but not so soon. Russia should be prepared for it. Before releasing prices and tariffs we should modernize our economy and revive domestic fertilizer market. Russia is to create highly effective industry and agriculture, which would be ready for competition in the international market.

Today one of the most important points of increasing competitiveness of the industry is its restructuring. It means not only business enlarging and foundation of holdings, but also liquidation of unprofitable enterprises. We are convinced that the most difficult trials for Russian fertilizer industry are still ahead and imply bringing the capacities into accord with their real competitiveness in the international market and practical demand on fertilizers in the domestic one.

Closing unprofitable plants and enterprises is quite usual practice in the international market. During last 20 years West Europe and North America closed lots of production units of nitrogen and other fertilizers. The problem is the labor force being released in result of such actions. The most popular way to solve this problem is retraining labor for working in other industries. However, this way is unsuitable for Russia due to the coming non-competitiveness of almost all processing industries. In a long-term perspective, new export-oriented enterprises of nitrogen industry are to be constructed close to seaports and be equipped by the up-to-date technology.

Conclusions

1. The future of the Russian nitrogen industry is to be defined by the following factors:
 - demand on fertilizers in the domestic market;
 - competitiveness of Russian fertilizers in the international market.
2. Current situation in Russian agriculture and measures being taken by the Government for its improvement do not allow to revive domestic fertilizer market in the nearest future. In coming 5-10 years demand on fertilizers is very likely to stay at the very low level of the last 8 years (1.5 Mt annually). In long-term perspective Russian agriculture can become prior for Russian economy development. In this case fertilizer demand is to increase to 7-9.2 Mt annually, including 4-5 Mt of nitrogen fertilizers.
3. While tariffs of natural monopolies are getting up, price competitiveness of Russian nitrogen fertilizers in the international market decreases. At the stable low domestic demand on fertilizers it will lead to a problem of chronic underloading of the capacities and closing some of them.

4. Joining the WTO by Russia is an objective necessity. However, in case of being made too hasty, this can destroy Russian nitrogen industry. The Russian nitrogen industry is interested in joining the WTO only after the domestic market is able to accept the bulk of its products.
5. The pessimistic middle-term perspective of Russian nitrogen industry is getting more complicated by the problem of ammonium nitrate. Russia is one of the largest AN world producers and the largest exporter. Anti-dumping duties on the product and restrictions on its transportation and storage introduced recently almost all over the world will negatively affect Russian nitrogen industry. The Ministry of Industry and Science as well as Russian enterprises are already looking for solution of this problem. However, taking into consideration large-scale production of ammonium nitrate in Russia, it is not possible to solve this problem radically in a short time. No universal remedy that would be suitable for every enterprise has been worked out so far.
6. The long-range outlook, on the contrary, seems very optimistic. Russia disposes of huge reserves of natural gas, which is the main raw material for production of nitrogen and compound fertilizers. This is its natural advantage. And this advantage will undoubtedly be used by the future Russian export-oriented fertilizer industry that is still to be constructed. Of course, the most active and lucky existing enterprises will also enjoy this advantage.