

Innovation Programme “Live Water”

High quality drinking water constitutes an important component of the human life support system. It was estimated that minimum 10 billion tonnes of environmentally clean water is necessary to cover the total annual human requirements including manufacturing of food products, medicaments, beer and other drinks. However, water deficit is increasing annually in geometric progression.

Therefore, human demand for clean drinking water is 5 times higher, for instance, than that for oil (today about 2 billion tonnes of oil is extracted annually) or 3 times higher than for coal. Already today the cost of the high quality natural water is 6...8 times higher than the cost of oil (1 USD/liter against 0.15 USD/liter) and 20...30 times higher than the cost of coal. That is why the largest consumer market in the 21st century will be the market of ecologically clean drinking water.

According to the data of the World Health Organisation about 2 billion of the world population are suffering from the drinking water shortage. For some regions this problem became even more acute than food or fuel supply. People living in the countries of Persian Gulf use desalted sea water; population of Algeria, Hong Kong, Singapore cannot do without imported water.

Research of the recent years broadened our knowledge about the “water factor” and its impact on human morbidity and genofund and the results arouse a great concern. Up to 80% of diseases are associated with the use of polluted water. The quality of water we drink would affect the quality of health of many future generations.

Water makes up 65% of the total weight of an adult human being, it is found even in bones and tooth enamel. Nutriments and salts are absorbed in the blood only in dissolved form. Any chemical processes going on in a living cell are only possible in the presence of water. Brains activity is slowing down without liquid, however, four glasses of water taken with intervals during the day are capable to maintain and increase the vital energy. On the other hand, water is washing out from the human organism all which is not needed or is harmful to it. But it is important that water that we drink be clean and safe.

Water is a universal solvent. Even the most clean water contains more than 800 chemical substances. All of them are necessary for our organism provided that the whole complex of mineral substances is well-balanced and all of them are in the necessary concentrations. Otherwise, constant use of such water could make our life ten years shorter.

Today a fashionable idea is associated with the delivery of drinking water from icebergs which is not the best way to solve the water problem. Firstly, it is distilled ice and distilled water is equally hazardous as polluted water. Secondly, as a matter of fact, the ice is not clean. For example, one of the reasons why the strongest chemical poison DDT was prohibited was caused

by the fact that it was found in the liver of penguins. In nature evaporated water is migrating in the atmosphere clouds for months until it is precipitated in the form of snow in Arctic or Antarctic regions. Distilled water converted into ice already contains atmospheric dust, not always of man-induced nature. For example, in the pre-historic times it was the products of volcano eruption or dust storms and pathogenic micro-flora which, by the way, is still contained in frozen ice and in case of its melting could give rise to unknown diseases.

Homeopathy proves that water has a molecular memory. Million times diluted medicine is a cure. Thus, the question arises whether clean natural water can be replaced by filtered piped water initially contaminated with pesticides, herbicides, nitrates, phosphates, chlor-organic compounds (for example, dioxin, generated in the course of chlorinated water boiling is 68 times more poisonous than potassium cyanide), salts of heavy metals, etc. It is known that filters not only prevent water pollution (its efficiency is not more than 80...90%) but partially absorb the necessary mineral components thus deteriorating the natural mineral balance. In this case coming through a filter homeopathic memory of noxious substances increases to poison our organism. Toxic effect of water is much more hazardous than that of food because water and dissolved substances and salts of heavy metals are involved in all biochemical processes of a human organism.

There is no other country in the world that has high quality natural drinking water resources as large as Russia, for example, its Lake Baikal.

Baikal is unique in terms of its water resources that are greater than those of the Baltic Sea. In terms of its hydro-chemical qualities its water has no analogues in the world. The Lake is a giant natural water reservoir containing 1/5 of the total global fresh water resources and 1/2 of the world clean drinking water resources, the best ones. Vital activity of its organic life is still operating irreproachably thanks to the living (endemic) filters. Water in many zones of the Lake is clean. However, aborigine organisms are capable to survive only in such environment and they are ruined coming to Angara the only river flowing from Baikal though its water is very difficult to distinguish from that in the lake.

For million years the natural "Baikal factory" has been generating 60 billion tonnes (60 cub. km) of invaluable liquid mineral brought by 300 rivers flowing into Baikal every year and after its purification flowing through Angara to the Arctic Ocean.

In the course of its purification which takes many years water is losing its molecular memory of the previous pollution. In this case the whole complex of micro-elements brought with rain and spring water is balanced. More than 5,000 trillion USD will be necessary to cover the costs for desalting the sea water to get the fresh water in the amount equal to that of Baikal (fresh but not so amazing and rich with valuable micro-elements). For comparison: all gold extracted in the Earth is evaluated 5,000 times less.

In the southern-west part of Lake Baikal there are deposits of "renewable" ultra-fresh water, its resources are enormous and practically inexhaustible. Baikal water does not require additional

treatment, conservants or gassing because of its ecologically purity, slight mineralisation and oxygenation even at the bottom at the depth of about 1.5 km. Water at the depth of 500 m and lower was formed more than 100 years ago, i.e. during the “pre-industrial” period and it fully lacks any technogenic toxicants, salts of heavy metals, chlor-organic substances and pathogenic micro-flora.

Water in the other largest Russian reservoir - lake Taimyr located beyond the North Polar Circle - is even more clean.

Minor population is living in the northern zones and here people are in need of warm, whereas the majority living in the tropic or sub-tropic areas are in need of cold. People equally need cold and heat that is why they invented refrigerators and conditioners. It is much more difficult to get cold than heat. For example, the efficiency of a heat engine “energy - heat” can be close to 100% whereas that of the reverse process: “energy - cold” is much lower - 2...5% (the efficiency of a heat power plant is 30...40%, electric transmission line - 80...90%, refrigerator generating cold - 10...15%).

Today the cost of a high quality food natural ice at the world market is 3,000 USD, i.e. higher than that of copper and aluminium. At the same time melted water is more useful as its liquid crystal structure and curative properties are preserved for a long time.

Russia is rich in the natural resources which could become its major export potential in the 21st century, in particular, a high quality ultra-fresh water and Siberian frost.

It is reasonable to deliver the Russian drinking water to the European and Asian (India, China, etc.) market in the form of ice to be stored in special terminals - refrigerators. Baikal water brought from the depth of 500 m will be frozen in winter with the use of natural frost at the special plants.

To realise this programme it is necessary to have a principally new transportation of the 21st century which is to be characterised by the following qualities: low cost - as the main consumer is located at the distance of 5,000...8,000 km from Lake Baikal and 6,000...10,000 km - from Taimyr; high-speed - as water will be spoilt during its long transportation and ice will be melted; ecological purity - as it goes to the densely-populated regions of Europe and Asia; high carrying capacity - as water supplies are estimated at hundreds of million and billion tonnes per year; feasible for the difficult geographic and climatic conditions - as the routes will pass through the zone of permafrost, marshlands, taiga and mountains.

For this purpose it would be appropriate to use the string transportation proposed by Yunitsky (STU).

STU consists of the two special current-carrying rail-strings, isolated from each other and from supports along which four-wheel high-speed electric cars are moving (see Fig.). In case of electric cars with autonomous power supply the road STS structure can be cut off current. The

travel speed is 200...300 kmph and 400...500 kmph for the future. Carrying capacity of a dual-way route is 1 million tonnes of freight and 1 million of passengers per day.



Picture 1. One-way route of the STU

To realise the Programme “Live Water of Russia” it will be necessary to build about 25,000 km of STU routes “Lisbon - Paris (London) - Moscow - Lake Baikal (lake Taimyr) - Ulan Bator - Peking (Seoul -Tokyo) - Delhi - El Kuwait” with the total cost of about 40 billion USD (including infrastructure).

Construction is to be implemented on a stage-by-stage basis to pay back the costs at the expense of freight and passenger traffic.

In the engineering terms the task is simpler than, for example, construction of railways during their flourishing period. Thus, during ten years from 1850 to 1860 USA built 35,000 km of railways using picks and spades as no bulldozers, excavators, cranes or automobiles were available. It is much easier to build STU routes, moreover, at the beginning of the 21st century having the most advanced technical devices, powerful and under-loaded industry and construction sector not only in Russia but in other interested countries of Europe and Asia.

The Programme is also attractive in the economic terms. The cost of delivery of more than 100,000 tonnes of drinking water per day using a STU system will be 3 USD/1,000 km or 20 USD/t for a medium distance of 6,500 km. Taking into account the selling price of water, costs for water preparation and other costs (including freezing) its actual cost for consumers (for example in Delhi) will be 50 USD/t (5 cents/liter). At the wholesale price of food ice of 250 USD/t (25 cents/kg) its delivery in the amount of as little as 100 million tonnes per year or 0.1 kg/day per 1 potential consumer will be enough to pay back the costs for the whole STU network.

As far as we are interested not only in the economic profit but rather in the health of billions of people in the 21st century it would be reasonable to arrange the marketing and management of the programme in such a way that each potential consumer of a high quality natural drinking water from Russia be its stock-holder. Thus, it will be possible to realise the whole programme at the expense of the joint-stock capital. In this case the programme expenditures will be approximately the same as for the European tunnel programme (a high-speed railway “London - Paris” with a tunnel under La Manche and infrastructure which was built predominantly at the expense of the shareholders’ resources), however, in terms of its efficiency, acuteness and usefulness our system is much better.

A wide assortment of the Russian bottled natural water will be delivered to the world market including: artesian, lake, mineralised, ultra-fresh, curative-medical water, food ice, including relict one, etc. About 1 million of new highly paid jobs will be created in Russia and abroad. In a few years after STU construction it will be possible to increase the delivery of water to 1 billion tonnes per year to give the annual profit of about 200 billion USD. Delivery of water in the form of food

ice would save the costs for the generation of the equal amount of artificial cold requiring burning of not less than 5 billion tonnes of coal at the electric power plants with the total capacity of 1 billion kWt and appropriate refrigerator capacity. Imagine how hazardous it would be for the planetary environment. As to the programme “Live Water of Russia” it is environmentally sound both in terms of its thermodynamics and its impact on the total thermal balance of the planet.

Under the appropriate support of the Government of the Russian Federation and success of a joint-stock activity it will be possible to finalise the programme to the year 2010. The first STU sections, for example, “Moscow - Minsk”, “Moscow - Nizhny Novgorod”, “Paris - Madrid”, “Peking - Delhi”, etc. can be built in 2004-2005 and they will be self-repaying in 3-4 years at the expense of passenger and freight traffic, thus, when the STU construction is finalised most of its costs will be paid back.

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