

RUSSIA



SUMMARY

The basins of the Caspian Sea and the Sea of Azov (the European part of Russia), where over 80% of the population of Russia and its main industrial and agricultural production enterprises are concentrated, have less than 8% of the annual volume of the country's river runoff. Water withdrawal in some of the river basins here amounts to 50% and more. Moreover, the irrigable capacity of rivers is rather limited and in some rivers it is on the verge of exhaustion. The intense use of water resources has led to deterioration of their quality and even to their depletion, especially small rivers, and to worsening of the water management situation in most regions of Russia.

According to the WATER CODE of the Russian Federation (1995) "Payment for water use is the basic principle of economic regulation of the use, rehabilitation and protection of water bodies". To realize this provision the Federal law on Payment for Use of Water Bodies (May 1998) established payment for all types of water withdrawal from water bodies, exempting from payment until January 2003 water withdrawal by agricultural enterprises and peasant farms for irrigation of lands and water supply of animal breeding farms.

In recent years efforts have been undertaken to improve the water management situation through elaboration of the Federal goal-oriented programmes such as "Potable water supply to the Population of Russia", "Regeneration of the Volga", "Improvement of ecological situation in the Basin of the Baltic Sea", "Flood control measures", etc. At present, the CONCEPTION of the State Policy on Use, Rehabilitation and Protection of Water Bodies as well as the Federal programme "WATER for RUSSIA" are under preparation.

The amount of arable land area in Russia (124,5 million ha in 1997) makes up 0.85 ha per capita. However, due to the low energy coefficient (0.19) depending on heat and moisture supply, the amount of arable land area will drop to 0.16 ha per capita. The agroecological zoning revealed that out of 206 million ha of agricultural land area 80% of these lands needed various reclamation improvements to reduce the impacts of adverse natural and antropogenic processes (erosion, waterlogging, salinization, etc.). The reduction of agricultural output by 1.5 times from 1991 to 1996 was, among other things, caused by aggravation of agricultural lands condition and soil fertility. In this situation, the Federal Law on Governmental Regulation for Providing Agricultural Lands Fertility was adopted in 1998. The CONCEPTION of the Federal Programme on Providing for Fertility Restoration of Agricultural Lands for 2001-2010 was elaborated in 1999.

In 1997 there were 28.8 thou. agricultural enterprises in Russia (11.2 thou old enterprises and 17.6 thou. new joint-stock companies, partnerships, etc.) with 50% of the share in the total crop output; 274 thou peasant (individual) farms with 2% of the share in the total crop output; and the numerous personal household plots of citizens with 48% of the share in the total crop output.

In 1996, the gross crop yields with regard to all categories of farms were characterized as follows: 69340 thou tons of grain crops and legumes, 49380 thou tons of potatoes and vegetables, 16170 thou tons of sugar beet, 2765 thou tons of sunflower (seeds), 3025 thou tons of fruits and berries. The consumption of the basic agricultural products per capita in 1997 was characterized as follows: 117kg of bread, 125kg of potatoes, 75kg of vegetables, 33kg of sugar, 7.9kg of vegetable oil, 31 kg of fruits and berries.

In Russia, the irrigated land area increased from 1.5 million ha in 1965 to 6.1 million ha in 1990 and drained land area increased from 3.1 million ha in 1970 to 5.1 million ha in 1990. By that time the entire volume of rice, 30% of maize, 80% of vegetables and 25% of forage were obtained on the irrigated lands (less than 5% of the total arable land area). During the transition period (1990s) the irrigated land area decreased by 1.4 million ha and that of drained lands by 0.4 million ha, and their contribution to agricultural production reduced.

Under that conditions, the most important task is to maintain the irrigation and drainage potential formed during the 1960s-1980s primarily through comprehensive optimal conditions for obtaining high crop yields. The Federal Law on Land Reclamation (1996) provides further development of irrigation and drainage in the country.

The important issues of future in the field of water and land resources management and development in the Russian Federation are as follows :

- elaboration and implementation of the Federal Programme on Rational Use of Water Bodies for the perspective 2010 ("WATER for RUSSIA").
- elaboration and realization of the Federal Programme on Providing for Fertility Restoration of Agricultural Lands for 2001-2010, that will allow to obtain annually additional crop output of 70 million ton in terms of grain, including 27-28 million ton of proper grain crops.
- implementation of measures on rehabilitation and reconstruction of irrigation and drainage system on the total area of 5 million ha for 2001-2010 as a part of the Federal programme "FERTILITY"
- elaboration and implementation of the CONCEPTION of new land reclamation development in the Russian Federation after 2010 for the further growth of crop production.

1. GEOGRAPHIC CONDITIONS.

The Russian Federation is located in the eastern part of Europe and in the northern part of Asia. Its area totals 17.07 million km² (45% of this area is covered by forests, 4% - by water, about 13% - by agricultural lands, 19% - by deer pastures, 19% by other lands).

Russia is surrounded by the seas of the Atlantic Ocean (the Baltic Sea, the Black Sea, the Sea of Azov), by the Caspian Sea, and of the Arctic Ocean and Pacific Ocean. In the west, Russia borders upon Baltic states, Belarus and the Ukraine; in the south, it borders upon Georgia, Azerbaijan, Kazakhstan, Mongolia, China. The boundary between the European and Asian parts of Russia runs along the Urals.

The flora and fauna of Russia have zonal distribution. The following zones are clearly defined from the north to the south: arctic, tundra, forest-tundra, forest, forest-steppe, steppe and semidesert, and the desert zone being in the Caspian Sea area.

The largest part of the territory of Russia is within the limits of the cold and the temperate agroclimatic belts. The warm belt covers an insignificant portion of the Black Sea area in the south of the European Part of the country.

The mean temperature of January in Russia varies from -1° to -50°C and that of July - from $+1^{\circ}$ to 25°C . The yearly precipitation varies from 100 to 1000mm. Many areas of Siberia and Far East Feature permafrost, which covers 11 million km^2 , or more than 60% of the total area of Russia.

The largest rivers of the European part of Russia are the rivers of Volga, Don (flowing to the south), Northern Dvina (flowing to the north). The largest rivers of the Asian part of Russia are the rivers of Ob, Irtysh, Yenisei, Lena (flowing to the north), Amur (flowing to the east).

By the beginning of 1998, the country's population numbered 146.7 millions, including 107.1 millions of urban population and 39.6 millions of rural population.

The Russian Federation incorporates 89 Subjects, including 21 republics, 6 territories (krajs), 49 provinces (oblasts), 1 autonomous province, 10 autonomous districts (okrugs) and 2 cities of the federal subordination (Moscow and Saint Petersburg).

2. WATER RESOURCES MANAGEMENT.

Water sector of Russia consists of a water resource complex and a water-consuming complex.

Water resource complex is based on the river runoff, which in normal years makes up 4262km^3 , 90% of this amount is accounted for the basins of the Arctic and Pacific Oceans. However, over 80% of the population of Russia and its main industrial and agricultural potential are concentrated in the basins of the Caspian Sea and the Sea of Azov, which are accounted for less than 8% of the annual volume of river runoff in the country. In addition to this, the present operational groundwater resources in proved deposits is equal to 28km^3 . The predicted potential groundwater resources of Russia exceed 300km^3 a year.

The role of water in the life of the people is formulated in the WATER CODE of Russian Federation adopted by the State Duma in October 1995: "Water is the most important component of natural environment, renewable, limited, and vulnerable natural resource, used and conserved in the Russian Federation as the basis of life and activity of peoples, living on its territory, securing economic, social, ecological welfare of population, existence of animal and vegetable kingdom".

The Ministry of Natural Resources and its Department of Water Resources Management are responsible for the water resource complex. The Ministry has 84 territorial committees in the Subjects (regions) of the Russian Federation and 12 interregional river basin arrangements (agreements) dealing with water resources management.

The intense use of water resources, especially in the last 50 years, has led to deterioration of their quality and even to their depletion, especially small rivers, and to worsening of the water

management situation in most regions of Russia. The causes of such situation are follows: unsatisfactory realization of the measures for protection of surface and underground waters throughout the water catchment area, slow introduction of water-saving technologies and economic incentives ensuring the effective use of water resources, inadequate attention of the State to the water protection and use.

In recent years measures are taken to realize the WATER CODE of the Russian Federation through the Federal goal-oriented programmes such as "Portable Water Supply to the Population", "Regeneration of the Volga", "Flood Control Measures", and others. New Sanitary Standards and Rules have been developed and introduced for the portable water quality control. New methods of treatment of waste and natural water are developed. Technological production processes are gradually introduced with use of no or few water. The experience continues being accumulated and realized for prevention and elimination of emergency situations. The theoretical and methodological basis is perfected for the hydroenvironmental monitoring.

According to the WATER CODE of the Russian Federation "Payment for water use is the basic principle of economic regulation of the use, rehabilitation and protection of water bodies". To realize this provision the Federal Law on Payment for Use of Water Bodies was adopted in May 1998.

The Law covers such types of water use as water withdrawal from water bodies by industrial enterprises, housing facilities and public utilities; meeting the demand of power generation in water; use of water bodies as wastewater receivers; and some other types of water use. The Law exempts from payment until January 1, 2003 water withdrawal by agricultural enterprises and peasant (individual) farms for irrigation of lands and water supply of animal breeding farms.

The Law also exempts water users from payment for drainage wastewater discharge, provided the concentration of harmful substances in drainage water does not exceed the concentration of such substances in a water receiver. The share of payment for use of water bodies in the cost price of industrial production amounts to 0.5%; it amounts to 1% in the cost price of power generation and its supply, and up to 2% in the cost price of municipal services. It has been found that 50% of the payment amount transferred to the budget should be addressed to rehabilitation and protection of water bodies and streams.

To practically realize the sources of funding provided for by the Federal legislation and formed on the basis of water users' payments it is necessary to develop a series of By-laws. For example, the Subjects of the Russian Federation should on the base of the Federal Law adopt their own laws on payment for use of water bodies. By April 1999, 58 Subjects of the Russian Federation adopted such local laws.

The water-consuming complex is responsible for water withdrawal from water bodies and for water use in different branches of the national economy, among which agriculture is the most water-consuming branch except power generation. During 1991 - 1995, the annual water withdrawal averaged: 26km³ of water by agriculture, including irrigation and rural water supply; 36.5km³ of water by power generation plants; 2km³ of water by fuel industry; 3.1km³ of water by ferrous and non ferrous metallurgy; 2.8km³ of water by chemical industry; 4 km³ of water by machine building industry; 13.1 km³ of water by housing facilities and public utilities, etc. In 1996 total water withdrawal in Russia was 92.3km³, of this amount 79.4km³ of water were withdrawn from surface water sources and 12.9 km³ of water - from subsurface water sources.

If we take into consideration that water withdrawn by power generation industry is mainly used for cooling the technological equipment, it becomes evident that agriculture is not only the largest water-consuming sector, but also the largest water production sector, because the sector itself provides for the withdrawal of the whole water amount required (for irrigation, agriculture water supply, processing of agricultural products, etc.). Agencies for operation of irrigation canals and waterworks as well as the territorial agencies for land reclamation and rural water supply in the

regions of Russia are subordinated to the Ministry of Agriculture and Food, which has the Department of Land Reclamation and Rural Water Supply. There are 111 reservoirs each over 10 million m³ in storage capacity (32% of their total number in the country) and 1768 reservoirs from 1 to 10 million m³ in storage capacity (91% of their total number) under the jurisdiction of the Ministry of Agriculture and Food.

Out of the total withdrawn amount (92.3 km³) in 1996 73.2km³ of water were used, including 14km³ (19.1%) for domestic needs, 38.9km³ (53.1%) for industrial production needs, 10.5km³ (14.3%) for irrigation, 3.2km³ (4.5%) for rural water supply, 4.6km³ (6.3%) for agricultural production enterprises, and 2.0km³ (2.7%) for other needs.

Although Russia is classified by UN as a country with low-level water stress, which uses less than 10% of the available water resources, water withdrawal in some of the river basins amounts 50% and more. Moreover, the irrigable capacity of rivers in southern and south-eastern regions of Russia is rather limited and in some rivers it is on the verge of exhaustion. Out of 5 million ha of irrigated lands in Russia up to 87% of these lands is located in European part of the country (southern and south-eastern regions) with scarce water resources.

In addition to payment for water withdrawal, there is payment for water delivery from a water bodies to a water user's off-take point. At present, there is no such payment in irrigation. Under the condition of free of charge water use, operating cost of interfarm irrigation and drainage systems should be covered from the State budget, namely, from the amount transferred as land tax.

In future under the condition of commercialization of economic relations between water management organizations and agricultural enterprises within the system of Ministry of Agriculture and Food, the payment for water delivery is necessary to compensate the cost of systems operation and running water management organizations. Numerous studies performed by Russian scientists have contributed to the establishment of the methodological and theoretical basis for commercialization of water use and introduction of water charges in irrigation farming. From the 1960 s to the 1980 s, experiments aimed at introduction of water use in some irrigation systems were carried out in Russia and in the former Soviet Union. The experiments produced positive results: reduction in water consumption, in the cost of water delivery, in the cost of allowances for operating personnel; yield growth.

3. LAND RESOURCES USE.

Condition of agricultural lands. The vast territory of Russia (1707.5 million ha) is responsible for the erroneous opinion about unlimited and inexhaustible land resources of the country.

The agricultural land area of Russia (206 million ha in 1997) involves: 124.5 million ha of arable lands, 18 million ha of hay lands, 55 million ha of lands under pastures.

The amount of arable land area in Russia makes up 0.85 ha per capita. However, arable lands of different countries do not have similar biological productivity, which is specified by the energy coefficient depending on heat and moisture supply. The energy coefficient for the Russian arable land area averages 0.19. If we take into account this coefficient, the amount of arable land area will drop to 0.16 ha per capita, that is much lower than in a series of countries.

During the transitional period, considerable reduction of agricultural production was observed. The volume of agricultural output dropped from 191.1 billion roubles in the year 1991 to 131.2 billion roubles in the year 1996 (in prices of the year 1991). The reduction of the volume of agricultural output was, among other things, caused by aggravation of agricultural lands condition and soil fertility.

The agroecological zoning of agricultural land area, which was carried out in 1996, revealed that 80% of these lands needed different types of reclamation improvements to reduce the impacts of adverse natural and antropogenic processes (water and wind erosion, overwetting and waterlogging, salinization, etc.).

For the last years, soil fertility has noticeably decreased. Considerable reduction (several times) of organic fertilizer application is accompanied by drastic decrease of humus reserves in soils that may cause the development of an irreversible process of soil fertility deterioration. The application of mineral fertilizers has also dropped to the critical level due to dramatic rise in their prices, that leads to the loss of soil productivity. The desertification process as a result of extremely intense antropogenic load is particularly evident in the areas adjoining the Caspian Sea, in the lower part of the Volga basin, and in areas of Northern Caucasia.

At the beginning of the transitional period the Federal Comprehensive Programme of Improving the Fertility of Russian Soil was adapted for 1992-2000, however, this Programme is not being carried out fully, due to inadequate state financing and lack of money the farms have. Though the implemented work has allowed to reduce to some extent the negative processes in crop production, the main tendencies of lowering the soil fertility continue.

In this connection, the Federal Law on Governmental Regulation for Providing Agricultural Lands Fertility was adopted in 1998. The Law envisages the complex of activities on agricultural land fertility restoration, including the implementation of agrotechnical, agrochemical, erosion-control, different land reclamation measures, improvement of chemical and physical soil properties, etc. The Law defines the responsibilities of the state administration of different levels, bodies of local self-government, as well as owners and users of land plots on the matters of soil fertility restoration. The federal and regional goal-oriented programmes are should be elaborated to provide for land fertility. The CONSEPTION of the Federal Programme on Providing for Fertility Restoration of Agricultural Lands was elaborated in 1999.

Agricultural production. As of January 1, 1998, there were 28.8 thou enterprises in Russia specialized in agricultural production, including 11.2 thou old collective and state-owned enterprises, and 17.6 thou joint-stock companies, partnerships and other enterprises with new organizational and legal forms of management. Having 89.5% of sown area in 1997 they produced 92% of cereals, 9.3% of potatoes, 23.1% of vegetables, 96.3% of sugar beet, 84.6% of sunflower seeds and 96.2% of fodder crops out of the total production of these crops in the country. Their share in the total crop output was 50%.

In 1997, there were also 274 thou peasant (individual) farms which having 5.7% of sown area produced 7.5% of cereals, 1.2% of potatoes, 2.8% of vegetables, 2.9% of sugar beet, 14.2% of sunflower seeds and 2% of fodder crops. Their share in the total crop output was 2%.

In addition to this, the numerous personal household plots of citizens having 4.8% of sown area produced 0.5% of cereals, 89.5% of potatoes, 74.1% of vegetables, 0.8% of sugar beet, 1.2% of sunflower seeds and 1.8% of fodder crops. They had 48% of the share in total crop in the country.

In 1996, the sown areas and gross crop yields with regard to all categories of farms were characterized as follow :

Crop	Sown area (thou ha)	Gross crop yield (thou tons)
Grain crops and legumes	53390	69340
Potatoes and Vegetables	4280	49380
Sugar beet	1060	16170
Sunflower (seeds)	3860	2765

Soybeans	480	280
Fruits and berries	35600	3025

In 1997, the consumption of the basic agricultural products per capita was characterized as follows: 117 kg of bread, 125 kg of potatoes, 75 kg of vegetables, 33 kg of sugar, 7.9 kg of vegetable oil, 31 kg of fruits and berries.

4. LAND RECLAMATION DEVELOPMENT.

In 1960s - 1980s the land reclamation was given the leading role in agricultural development in Russia for its guaranteed contribution to the food production of the country. The irrigated land area increased from 1.5 million ha in 1965 to 6.1 million in 1990. About 60% of lands out of the total irrigated area was irrigated by sprinkling with the use of subsurface on-farm irrigation networks. According to the data for the years of 1986-1990, the share of crop produce from irrigated lands in the total crop production amounted to: 18-20% in Povolzhie, 24-30% in Northern Caucasia, and 5-8.2% in the remaining dry regions. The costs of crop produce obtained from 1 ha of irrigated and nonirrigated land area are correlating as follows :

6.5 in Povolzhie, 3.9 in Northern Caucasia, 4.2 in the Ural Region, 1.7-2.1 in the Central Chernozem Region. In 1990, it became possible to obtain on the irrigated lands (less than 5% of total arable land) the entire volume of rice, 30% of maize, 80% of vegetables and 25% of forage.

In the overmoistened zone of Russia the most intensive agricultural drainage construction was conducted in 1970 s - 1980 s. The drained land area increased from 3.1 million ha in 1970 to 5.1 million ha in 1990, including 3.2 million ha with subsurface drainage.

The transition from a centrally planned to market economy has not prevented the noticeable reduction of reclaimed lands in 1990s. The irrigated land area decreased by 1.4 million ha and that of drained lands by 0.4 million ha. The volume of work on operation and maintenance of irrigation and drainage systems was negligible. Water users were unable to pay for electric power, fuel, repair of sprinkling machines. The sprinkler fleet decreased by more than 40%. As a consequence, considerable crop yield decrease was recorded on these lands. The losses of agricultural production on irrigated lands in 1996, as compared to the year of 1990, amounted to 5170 billion roubles (in prices of 1996).

However, in spite of these unfavorable circumstances, the existing irrigation systems and irrigated lands provide for sustainable crop production in the Povolzhie, Northern Caucasian and Central regions and for the productivity level 2-3 times higher than in rainfed arable areas.

In 1996, the profit from crop production on irrigated lands as compared to rainfed lands was 3-4.5 times higher for cereals, 1.5-3.3 times higher for maize, 5.5 times higher for vegetables, 1.5 times higher for sugar beet, 1.4 times higher for perennial grasses for hay.

In 1996, the Federal Law on Land Reclamation was adopted. The Law has differentiated the types of property in irrigation and drainage systems and structures into: the state-owned property (federal and regional) and the property of water users, that serves as a basis for differentiation of responsibilities among the property owners in the development of land reclamation. According to the Law the Ministry of Agriculture and Food should pursue the governmental policy in the field of land reclamation through territorial agencies in the Subjects of the Federation, exploit irrigation and drainage systems and related structures referred to the federal property, work out Federal programs on land reclamation development, and make provisions for their implementation. Land reclamation is financed from the federal budget, from the funds of the Subjects of the Federation and funds of owners and users of reclaimed lands.

5. ISSUES OF FUTURE WATER AND LAND RESOURCES DEVELOPMENT.

5.1 WATER FOR RUSSIA

Social and economic transformations taking place in Russia, change of organizational and legal forms of the water users, introduction of the WATER CODE require the preparation of the relevant CONCEPTION of the State Policy on the Use, Rehabilitation and Protection of Water Bodies. The following principles should be taken into account when preparing the CONCEPTION: basin and eco-systematic approach to management of water use and protection of water bodies; ensurance of environmental and sanitary safety; sustainable and safe functioning of water systems; planned character and careful substantiation of the transformations; transfer of water management to self-financing; public's broad participation in the decision-making process. Solving the above-mentioned problems should be based on the federal and regional water management programmes based on the schemes of integrated use and protection of water resources which are worked out at the level of the country, a region or a river basin.

The Federal programme "Rational use of water bodies for the perspective 2010." ("WATER for RUSSIA") is now under preparation. The improvement of water situation in the country;

guaranteed water supply to the population and for economic production; safety operation of hydrotechnical structures; reproduction, protection and rational use of water resources; and transformation of water relations into the market conditions are among the cardinal measures to be envisaged in the Federal programme "WATER for RUSSIA".

5.2 RESTORATION OF SOIL FERTILITY.

The Federal Laws on Land Reclamation (1996) and Governmental Regulation for Providing Agricultural Lands Fertility (1998) envisage the necessity to have federal goal-oriented programmes for providing the fertility of agricultural lands, formulated by the Government of the Russian Federation.

At present the CONCEPTION of the Federal Programme on Providing for Fertility Restoration of Agricultural Lands for 2001-2010 is elaborated by the Ministry of Agriculture and Food. According to the CONCEPTION there are necessity to undertake the complex of agrochemical, hydrotechnical, land clearing, erosion-control, forest improvement and other measures to stop the further soil fertility deterioration, ensure its stabilization and gradual improvement for increasing crop production.

The CONCEPTION envisages the main measures, terms and mechanism of their realization. Among the agrochemical measures there are liming of acid soils on the area of 58 million ha, rock phosphatization on the area of 29 million ha, gypsuming on the area 3 million ha, as well as the increase in application of organic and mineral fertilizer application. Land clearing is contemplated to implement on the area of 2.2 million ha. Provision is made for the execution of soil erosion control measure and recultivation of land affected by human activities with allocation accordingly 2.7 billion roubles and 5.5 billion roubles. Forest improvement measures (the main of them are the making of forest strips to protect the agricultural lands) are planned to implement on the area of 1.5 million ha. Hydrotechnical (land reclamation) measures should be carried out on the total area of 5.4 million ha, mainly reconstruction and rehabilitation of existing irrigation and drainage systems.

5.3 RECONSTRUCTION AND REHABILITATION OF IRRIGATION AND DRAINAGE SYSTEMS.

According to the CONCEPTION of the Federal Programme on Providing for the Fertility Restoration of Agricultural Lands for 2001-2010 hydrotechnical measures including reconstruction of the land reclamation systems will be a part of this Federal Programme.

CONCEPTION envisages to put into operation in 2001-2010 only 200 thou ha of new irrigated and 180 thou ha of new drained lands, and main attention is giving to reconstruction and rehabilitation of existing irrigation systems on the area of 3.1 million ha and drainage systems in overwetted zone on the area of 1.9 million ha.

At present the volume of work on reconstruction and rehabilitation of land reclamation systems are determined according to regions of Russia for inclusion of them in the Federal Programme. The farms, which efficiently use reclaimed lands are selected for priority implementation of reconstruction and rehabilitation of irrigation and drainage networks and irrigation equipment. The most important requirement for such selection is the interest of farms in the reconstruction and rehabilitation of land reclamation systems, and their ability to contribute in financing of the reconstruction work.

The rehabilitation, reconstruction and modernization of irrigation and drainage systems should solve the following problems :

- preservation of the created irrigation and drainage potential of the country, maintaining the contribution of irrigation and drainage into stabilization and development of crop production and animal husbandry;
- improvement of soil and hydrogeological condition of reclaimed lands and maintaining them at the environmentally safe level; utilization of saline drainage, wastewaters;
- reduction of unproductive irrigation water losses, use of water-saving technologies in irrigation;
- substitution of worn out equipment by new one, modernization of sprinkling machines with a view to reduce their weight and power consumption;
- adjustment of the disposition of sown area and the system of crop rotation on irrigated lands taking into account the availability of the agricultural enterprises having different organizational and legal forms of management and types of property, including individual peasant farms.

5.4 ECONOMIC, SOCIAL AND ENVIRONMENTAL EFFICIENCY OF MEASURES PROPOSED IN THE CONCEPTION OF THE FEDERAL PROGRAMME "FERTILITI" FOR 2001-2010.

Implementation of proposed in the CONCEPTION measures will provide for substantial growth of agricultural production, create the basis for food independence of Russia, secure the increase in consumption of home-produced food products and the income of agricultural producers. Together with the growth of the yield of grain and other crops the stability of agricultural production will increase, its dependence from unfavorable meteorological conditions will decrease.

Annual additional crop output in terms of grain will amount to 70 million ton including 27-28 million ton of proper grain-crops. The cost of additional output (1040 billion roubles in prices of the year 1999) will be 1.9 times higher as compared to the expenditures for the implementation of the proposed measures (555 billion roubles). More than 1 million places to work in agriculture and agro-processing sector will be preserved.

The realization of the Federal Programme "FERTILITY" for 2001-2010 will ensure the restoration of soil fertility, preservation and expansion of agricultural lands, the creation of conditions for social and economic development of rural areas.

The total area of the preserved agricultural lands will reach more than 5.8 million ha as a result of erosion-control, land clearing, land recultivation, forest plantings for land protection and other measures. Environmental impact of planned measures will be essential, the ecological equilibrium of landscapes will increase.

5.5 RECLAMATION OF NEW LANDS AFTER THE YEAR 2010.

According to the Master plan of integrated development of water and land resources of Russia the area of agricultural lands requiring irrigation amounts to 71.5 million ha including more than 50 million ha in the European part of Russia.

However, water resources (39.4 km³ of surface water and 10.7 km³ of groundwater), which can be used for irrigation, will make it possible to irrigate in Russia the total of 20 million ha, including 5 million ha of existing irrigated lands. Out of 15 million ha of lands, which can be irrigated after 2010, there are 4.3 million ha located in the European part of Russia, including 1.6 million ha in Povolzhie, 0.1 million ha in Northern Caucasia, 1.0 million ha in the Central and Central Chernozem Regions, 0.3 million ha in the Volgo-Vyatsky region, 1.1 million ha in the Urals Region and 0.2 million ha in the Northern Region.

The most effective regions for irrigation are Northern Caucasia, Povolzhie, the Central Chernozem, the Central and Volgo-Vyatsky Regions. The yield of irrigated crops here is near the upper possible level of biological productivity of the arable lands.

The area of new drained lands in overwetted zone of Russia may be increased by 7-8 million ha after the year 2010.

To determine the country's need in reclamation of new lands and their possible contribution to agricultural production the CONCEPTION of land reclamation development in Russian Federation after the year 2010 should be elaborated taking into account the scientific and technological achievements and principles of establishing improved landscapes and environmentally sound use of water and land resources.