

UKRAINE



SUMMARY

Ukraine is situated on the South-West of Eastern-European plain. Ukraine is bordered on the West and South-West by Poland, Hungary and Romania, on the North by Belarus, on the East by Russia, on South-West by Moldova, on the South it surrounded by the Sea of Azov and Black Sea. The area of Ukraine is 603.7 sq. km, the population is about 53 million. The forests cover less than 20% of the land. More than 3/4 the territory are ploughed up, the greater half of the land territory is set aside for cereals, fodder crops and technical cultures. Most of Ukraine has a moderately continental climate, 2/3 of the territory is under conditions of unfavorable water regime and it gave rise to the development of reclamation on this territory. The major river, fed by numerous tributaries, is the Dnieper which bisects the country into two party - Right-bank and Left-bank parts. The rivers of Southern and Steppe zones are often dried up in summer. Thawed snow play the main role in the feeding of plaint rivers (50-80%). The reserves of water resources are about 95 billion cubic meters, including 3.2 billion of cubic meters of underground water. During the period transition economy Ukraine experienced great difficulties related to the agriculture. The lack of the laws for the land and ownership, financial difficulties in purchasing of materials, equipment and technologies led to the decay in agriculture as a whole and in irrigated agriculture in particular. At present the conditions are favorable in using the new advanced resource-saving and ecologically clean technologies for obtaining high yields of agricultural production, revival of agriculture and maintaining of ecologically safe environment.

Most urgent national problems, up to 2025 year, in the field of water and land resources use will be the following.

Natural :

- deficiency of fresh water availability;
- uneven distribution and availability of good quality surface and ground waters;
- uneven distribution of soils with potentially high fertility over different territories, their insufficient natural moisture storage.

Ecological :

- unsatisfactory quality of limited operational resources of surface and ground waters, pollution of rivers and water reservoirs with industrial,, domestic and farm wastes, high evaporation etc.;
- over-use of ground water for agricultural and rural settlements insufficient natural and artificial territory drainability;
- destructive action of floods and freshets on non-regulated mountain and foot-hills rivers;
- extensive agricultural development lowering in soil's fertility due to over use and lack of the necessary quantity of fertilizers;
- contamination of soils by the heavy metals radioactive strontium and caesium, weeds, pathogenic organisms and crop pests etc.

Economic :

- inadequate financial resources in state budget for the protection of water and land resources;
- absence of adequate payment for water and land use.

Technical :

- unjustified intense agricultural land development resulted in natural landscape exhaustion, considerable decrease of biodiversity and productivity, their self-regulated capability as well surface protecting and water regulating functions; ,* inadequate power for mechanization of agricultural

Administrative-organizational :

- absence of a unified state body for the sound management of natural resources of the country including water and soil, their protection and revival;
- absence of real mechanism of charges for their use resulting in their extensive use.

1. OVERVIEW OF NATIONAL POLICY AND DEVELOPMENT PLANS

As an independent state Ukraine appeared on the world map in 1991. With industry and agriculture accounting for 60% and 40% of GDP, Ukraine could be classified amongst the industrial-agricultural countries. The major branches of industry (60% GDP) are metal, machine-building, chemistry, energy industry. 40% of (GDP) are formed in agriculture. Ukraine possesses favorable climatic and lands conditions for the development of agrarian economic sectors. Official national policy in the field of rational water and land resources use in Ukraine is absent so far. Our government draws main attention to the problem of food provision of our population and solves it by the way of state investments and lowering taxes for agriculture.

2. WATER MANAGEMENT

2.1 WATER SYSTEMS

2.1.1 Surface water

Potentially available for use river waters of Ukraine are estimated at 209.8 cubic km., but only half of the volume can be considered as state water fund. River flow excluding Danube river in low water years runs to 55.9 cubic km. and in average water years it accounts for 87.1 cubic km., within Ukraine being formed 29.7 and 41.4 cubic km. respectively. The main river of Ukraine is Dnieper, it is followed by Dnester, Severskiy Donesch, Ugniy Bug and others. More than half of rivers flow over the lands where water consumption does not exceed 5% of national, that is why water provision of the rest territories is achieved through water storage in 1087 water reservoirs with total capacity of 55 cubic km. (up to 43.8 cubic km. is accumulated in the cascade of Dnieper water reservoirs). These waters are further redistributed by seven large channels.

2.1.2 Groundwater

Forecast resources of ground waters are estimated to be 22.5 cubic km. per year and they in general (820/o) belong to the basins of Dnieper, North Donetsk and Dnester. Operational storage of ground waters is equal to 5.7 cubic km. per year. More than 110 thousand wells are drilled for extraction of ground waters. Beside this, in rural areas these waters are used through 1.9 million wells.

2.1.3 Wastewater

2.1.4 Water systems used

Pattern of water consumption in main economy branches of Ukraine shows that as compared to 1990, total water intake from all sources has decreased by 45% that resulted in the same fall of non-returnable water consumption and offtake up to 43% and 45% respectively. This points at the fact that change of water consumption pattern is conditioned only by fall of production but not through its water saving technologies.

Primarily total water intake is from rivers - 78-81%, followed by ground waters - 12%, sea waters - 3-4% and mine waters - 3-5%.

2.2 WATER MANAGEMENT ISSUES

2.2.1 Waters scarcity

Annual average water provision of Ukraine per inhabitant is 15 times lower of standard which is determined by Europe Economic Commission of UNO.

The shortage of fresh water strengthens due to the contamination of surface and underground water.

2.2.2 Causes of worse water quality

According to the data of State Committee of Water Economy in different years, from 22% to 58% of waters were taken. It accounts for less than marginal value of 70% which was set on the Water Resources Conference under the guidance of UNO. In 8 regions of Ukraine, however, in average water years the intake runs to more than 70% of available resources and in seven others it corresponds to 200-1600%. In the years of low water the situation sharply becomes worse.

On South and East territories of Ukraine with the area of 320 thousand km² annual amount of surface and underground flow, for the last two decades, was equal to 11 cubic km., and off take due to economy activities - 15.6 cubic km. Main source of sweet waters here is rainfalls - 168.2 cubic km, river and ground waters - 25.8 cubic km., 86% of which is evaporated. Thus, about half of the territory of Ukraine represents giant evaporator and as a result, steady deterioration of surface and ground waters quality is going on.

2.2.3 Radioactive contamination of water and bottom sedimentation

Radioactive contamination of considerable territory was occurred in 1986 year due to the accident on Chernobyl Atomic Station. with an area of 3189 km² have become totally unsuited to human settlement.

2.2.4 Technologies for Water treatment

Water destined for the drinking and technical needs as well as industrial and municipal sewage requires appropriate treatment.

2.2.5 Floods

Nearly every 10 years the disastrous over-flooding occurs on mountain rivers of Ukrainian Karpaty including frontiers. In recent years they became more frequent due to the increased precipitation and atmospheric sediments load caused by unreasonable economic activity in the catchments. As a result the breaching of protective embankments, occurs frequently resulting in the flooding of settlements and damages.

2.2.6 Total evaluation of ecological state of water resources

As per available data of the Ukrainian Institute of Water-Ecological Problems the level of pollution surface waters of Ukraine has exceed all reasonable limits and as such untreated waters can not be used for consumption.

Recently, the situation with chemical pollution of surface waters has worsened due to arises in economy and fall in production which led to decrease of water intake and offtake. Examination of Dnieper river from Kiev water reservoir up to mouth part of the river being conducted in 1997-1998 years, has shown, that hydrochemical water indexes in Dnieper reservoirs are much better than in rivers - inflows of Dnieper.

Effectiveness of water use in Ukraine is unsatisfactory. It is necessary to replace existing industrial technologies and promote recycling which have not yet been used because of their high cost. Due to insufficient electric power supply already built treatment works also stop functioning, resulting in increase of water wastes.

2.3 WATER MANAGEMENT

The management of water is partly done through water resources users committees and partly by canal Administration.

It is necessary to perfect the legal and economic mechanisms as to the payment for water use generates resources for the protection of water sources. The enlisting of public organizations for the object of water protection holds much promise. Water economy and water ecology situation in Ukraine may develop on two main scenarios.

The first is passive and envisions further fall in production that will lead to decrease of water intake as much as two times and this will not exceed of ecology permissible limit of 10%. Water offtake will lowered two times too and this does not significantly exceed surface and underground

flow. On the whole the effect will be favorable concerning to surface waters, first of all it relates to Dnieper river.

Second is active and it will lead to the same results with lower expenses but not so quickly, since it envisions basic changes in technology of production. It is most likely that the second scenario will gradually replace the first one.

3. CONTEMPORARY STATE OF WATER RESOURCES AND THEIR USE

The area of Ukraine is equal to 603.7 thousand km². About 434 thousand km² (72,2 %) is used in agriculture, 80% of the lands being plowed every year. Pastures and hayfields occupy 17% and perennial herbs -3% of all area. Ukrainian territories can be divided into four agro-climatic zones (Figure 1): humid, moderate wan-n (1), insufficient humid (2), arid, very warm (3), very arid and moderate hot (4). As usual, the lands in the first zone are overwetted and require artificial drainage application. That is why, draining and irrigating land reclamation systems are spread over an area of 2.9 million ha. Almost on all arable, lands one can meet the soil salinity (more than 8 million ha) or alkaline reaction and require liming or gypsum application. The area of alkaline lands makes up approximately 4 million ha. Mainly, they are spread over left side of forest-steppe and steppe. High degree agricultural development of lands in Ukraine has led to impoverishing of natural landscapes at the expense of plants and decrease of soil resistance to wind and water erosion. Total area of eroded lands has reached 12.2 million ha, that is it constitutes one third over the last 25 years. Every year about 20 million tones of humus are washed out and damage being estimated as 3 million dollars.

4. CURRENT STATE IN AGRICULTURAL DEVELOPMENT

More than one third of black soils reserves which are the natural basis for the efficient development in agriculture are concentrated in the Ukraine. The absence of the market is the main obstacle in such development.

The land reform are being started in the Ukraine and providing non-state forms for land property including private was completed as of November 1, 1997.

As a result of economic reform the collective and state agricultural enterprises have 33mln hectares of lands, farmers - 0.8mln hectares, 6.4mln of hectares are in the private people's property.

An inconsistent village's reforming have produced the following negative demographic phenomena: unemployment, social structure disintegration, drastic decrease of a real income of country-people.

The natural reduction in the number of countrymen has ranged up to 8.7 humans per 1000 of inhabitants, 2.6 more than of townsmen. As a consequence for each 1000 able-bodied humans in the village there are 1037 pensioners. Migration was intensified.. Countrymen searching for the work are moving to the cities. As a result the average number of inhabitants in settlements decreased on 17%.

Average monthly wages in countrymen constitute 25\$ and among economy branches occupies 20-th place. In so doing the payment of wages is performed irregularly.

Within 1990-1997 the level of capital investments into the social infrastructure of the village was reduced in 4.7. 22.5% of villages has the water-piping, 22%- natural gas, 3,1 %- sewerage system. The palaces of culture, kindergartens and even shops a-re closing in every place.

The power availability in agriculture is for more than 4 times lesser than in industry, though the share of energy-expenditures in the structure of general branches constitutes 37-41%. It can be

explained by the low efficiency of agricultural techniques. Nearly the half of available agricultural machines are inoperative through the lack adequate quantity of combustible-lubricant materials and spare parts.

Under conditions of transitive market economy the domestic agriculture is not in a condition to compete with industry, energetic and import. One ton of petroleum is twice/triple more expensive than the ton of milk or the ton of the top-quality wheat. The cost of domestic agricultural technique exceeds the real possibilities of rural commodity producer.

By the most conservative estimate the food market is formed on 60% from import products and it is assisted by the banks' policy as 80% of its' investments are directed towards import supporting. The investments to the industry were restricted in 2.3 times comparing to 1991 and to the agricultural complex - in 4 times.

The agriculture of the Ukraine is gradually transferring to the raw materials appendage for the Western Europe which readily invests plant growing, undermining the potential fertility of its own soils. Above all it is a sunflower and the other oil cultures.

The drop in agricultural production is determined as well by the lowering in food products consumption by the population because of its impoverishment and the loss of its purchasing power.

In 1996 the Institutes of the UAAS were grouped together into 22 Centers, which received financial support. It enabled to concentrate monetary and material resources for the decision of the most important problems.

5. THE PROSPECTS AND OBJECTIVES

The creation of the conditions for the provision of the population by the food products under established medical norms is the immediate task of the economic development in the Ukraine, namely: meat - 85, milk - 420, grain - 148kg, eggs - 304 per capita. With consideration for this it should be annually produced 5,6mln tons of meat in preslaughter weight, 25,2mln tons of milk ad 18,4 blrd eggs.

At the governmental level the scientists propose and find support to transfer 10mln of arable lands into forage lands which are at the most approached to natural to perform forestation of no less than of 1mln hectares of lands first and foremost eroded and scab lands, to create in river flood-lands the water-protective zones. Under transformation the area of arable lands would reduce from 32,3 to 22,3mln hectares and the area of natural forage lands would increase from 7,3 to 16 .3mln hectares. For the population needs it is quite enough to sew cereals over the area of 7,15- 8,1mln hectares. The general group of cereals must include wheat (6mln hectares), spring and winter barley (3,5), oats (0,8). maize (1, 1), pea (1,6), groats (0,6). Two main objectives are accomplished by reducing the areas of arable lands: The energy expenditures and material resources are reducing as well the natural landscapes are restoring having a beneficial effect on surroundings. In essence the all lands being in agricultural use must be constantly subjected to the complex reclamation.

Irrigated and drainage lands plays a leading role in the guaranteed provision by the food products. In recent years the level of these lands use was considerably reduced due to the energy deficiency, physical out-dating of reclamation systems. It is necessary to reconstruct 30-40 thousand hectares of irrigative and 10-15 thousand hectares of drainage-moistening systems for the restoration of the former technical state.

6. DISCUSSION ABOUT THE FUTURE PROSPECTS

The development of agriculture have to go on in the direction of arable area reduction on the account of re-naturalization of low-productive lands, raise of natural landscape diversity, universal spreading of the systems of reclamation agriculture.

The re-naturalization of the landscapes of Ukraine will have a beneficial effect on the ecology of the European states, above all through the cleaning of air basin, increasing of the total area's water content on the account of precipitation of connective origin, reducing of Black Sea aqua-territory contamination.

The Ukraine with its fund of fertile soils and not contaminated yet is able to be for the Europe the source of ecologically clean products. Taking into account an inevitable integration of European states, the fertile lands of the Ukraine will be in somewhat distant future the reserve for the extended reproduction of food products.

Water economy have to be developed in the direction of essential reducing of water-shed at simultaneous increasing the share of irretrievable water-consumption due to the introduction of water-saving technologies in, production.

The integration of efforts of the scientists and specialists from European countries is of great importance for problems connected with sustainable agricultural development.

It is very important for the Ukraine to participate in decision of general European problems and more fight cooperation with International organizations FAO, ICID etc.