

ABOUT EFFICIENCY OF WATER USE IN AGRARIAN SECTOR (CASE STUDY OF TASHKENT PROVINCE, UZBEKISTAN)

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In Central Asian States (CASs) more than 90 % of water is spent for irrigation, agrarian production makes 27-30 % from general national product (GNP). Increase of water use's efficiency in agriculture of CASs is important from positions of maintenance of food security. In present paper, as object of analysis Tashkent province (Uzbekistan) is chosen, because the processes in agrarian sector having a place in Soviet and post-Soviet period are characteristic for many other provinces of Uzbekistan and other CASs. Tashkent province occupies area 15600 км², is characterized relatively high water availability and good soil quality owing its affinity to the flow formation zone, basic part of Tashkent province is located in a foothill zone, and its lands has good drainage. Present analysis is carried out for 1980-2006, on "large blocks" for vision of problem (efficiency of water use in agriculture) "as a whole". For the analysis the following parameters (source: Database of Scientific-Information Centre of Interstate Coordination Water Commission of Central Asia) are used:

- GNP in agriculture (A),
- Common water withdrawal for agriculture (B),
- Effectiveness ratio of common water withdrawal (K1), $K1 = A/B$
- Collector-drainage flow (C),
- Water consumption in agriculture (B-C),
- Effectiveness ratio of water consumption in agriculture (K2), $K2 = A/(B-C)$.

Basic results of analysis are given below:

- Considered period (1980-2006) is rather precisely divided into two periods: 1980-1992 and 1993-2006 on economic efficiency of water use in agrarian sector;
- For 1980-1992 K1 was equaled 0.34 \$/cub. m on average ($K1_{max} = 0.36$ \$/cub. m, $K1_{min} = 0.32$ \$/cub.), and for 1993-2006 $K1 = 0.19$ \$/cub. m ($K1_{max} = 0.25$ \$/cub. m, $K1_{min} = 0.14$ \$/cub. m), i.e. the efficiency of water withdrawal for agriculture has decreased in 1.8 times, common water withdrawal has decreased from 3742Mio up to 3289Mio cub. m (in 1.14 times);
- For 1980-1992 K2 was equaled 0.83 \$/cub. m on average ($K2_{max} = 1.42$ \$/cub. m, $K2_{min} = 0.53$ \$/cub. m), and for 1993-2006 K2 was equaled 0.51 \$/cub. m on average ($K2_{max} = 0.71$ \$/cub. m, $K2_{min} = 0.27$ \$/cub. m), i.e. the efficiency of water consumption has decreased in 1.63 times. Water consumption has decreased from 1.698Mio up to 1.391Mio cub. m (in 1.44 times), but reuse of collector-drainage water for irrigation was not accepted into account;
- For period 1980-1992 area of irrigated lands has increased on 21.2 thousand ha, and for 1993-2006 they has increased on 3.5 thousand ha.
- Decrease of water consumption has taken place as consequence of change of crops' structure. In 1990 grain cultures occupied 6 %, in 2003 their share has made 37 % from total sowing area, share under technical cultures has decreased from 46 % (1990) to 34 % (2003) as well as fodder - from 29 % (1990) up to 11 % (2003);
- As a whole, efficiency of water use in agrarian sector does not depend on water withdrawal, and that specifies rather low discipline of water use for irrigation.

Key words: Central Asia, Tashkent province, Agrarian sector, Efficiency of water use

Topic: 4.1. Food security, irrigation, food trade and markets

Preference of presentation: Oral

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