Research Paper

Analyzing the Social Acceptance of Supplying Water to Achieve Wheat Self-sufficiency up to 2025

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ABSTRACT

Food security and water security are the fundamental components of community policy making. Through increasing safety and health as well as taking care of future generations and marginal groups, food security serves as one of the key issues related to sustainable rural and agriculture development. However, for the future of the world food, supplying the necessary water is a serious global challenge. With regard to the importance of the social acceptance of cost-benefit issues about water supplying for wheat self-sufficiency in the country, this paper seeks to respond to the question 'how socially acceptable are the water supply programs for wheat self-sufficiency?'. Agriculture census (2012-13) and NETWAT data were used to compare the water consumption for wheat and other crops. A virtual workshop design was implemented for a social discourse about the reasons of water supply for wheat self-sufficiency. This was according to the integral future studies approach (2014-15). The data collection tool was a questionnaire (α = 0.05, chronbakh = 0.73) taken by a sample of 47 experts. As the results of the t-test (α = 0.05) showed, the experts would accept the pursuit of water supply programs for wheat self-sufficiency provided that water productivity is promoted and the following conditions are fulfilled: a) maintenance of the unique position of wheat in the food basket of the society, b) less water requirement for wheat than for most crops, c) insured access to wheat through its domestic production, d) improvement of national economic capacity, e) maintenance of agricultural employment capacity especially in rural areas, and f) maintenance and enhancement of national security.

Extended Abstract

1. Introduction

Food security and water security are the fundamental components in national policy making. Through increasing safety and health and taking care of future generations and marginal groups, food security serves as one of the key issues related to sustainable rural and agriculture development.

The amount of renewable water per capita in Iran decreased from 5500 m3/person in 1961 to 2100 m3/person in 1997 and to 1769 m3/person in 2013. The shrinkage of underground water resources in Iran, similar to other parts of the world, is caused by social factors rather than natural conditions. While some stakeholders and social groups emphasize the importance of virtual water, there

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is no attention paid to the main factors which affect water scarcity. In addition, some stakeholders emphasize self-sufficiency in food production.

The geographical boundaries and the natural resources involved in providing food self-sufficiency in a country are the important dimensions of national power and national security. The food sovereignty approach was introduced in 1993 to recognize the right of humans for defining and controlling local and national food systems. Also, water security, which means safe access to a satisfactory, quantitative and qualitative level of water for production, life and health, is a major component of national security and civilization. Based on the existing global experiences in water exploitation for agriculture, there has been a shift from the merely production-based approach (productionism) to an environmental approach in the field of agricultural production. To achieve this goal, policies about water and agricultural production should be formulated and implemented in such a way as to achieve comprehensive agricultural water productivity. Also, the quality of management and the capacity of social institutions have an important role to play in the achievement of this goal. Comprehensive agricultural water productivity is related to the proportioning of the resources and consumption of agricultural water. In this respect, the 'good governance' approach defines a necessary social capacity with a few components including transparency, consensus, participation, and legitimacy and acceptance of policies by stakeholders. Acceptance is a kind of behavior in the form of an action and reaction to a particular goal, and the degree of acceptance is an attitude confirming a particular goal. The integrated future studies (IFS) approach, unlike previous positivism and critical future studies approach, relies neither on linear, quantitative, generalizable procedures nor on purely local, qualitative, contemporary, actor-based procedures. In IFS, future research is considered as a combination of the two mentioned approaches. The purpose of this paper is to answer the question 'what is the rate of the social acceptance of supplying water for wheat self-sufficiency until 2025?".

2. Methodology

The agriculture census taken in 2012-13 and the NETWAT data were used to compare the water consumption for wheat and other crops. A virtual workshop design was implemented in 2014-15 to run a social discourse on the reasons for wheat self-sufficiency and the possibility of suppling water through the integral future studies approach. Following that a questionnaire (Cronbach's alpha = 0.73, $\alpha = 0.05$) was distributed to 47 national experts selected by goal sampling.

3. Results

As it is the case, the net water requirement for the irrigation of wheat is lower than that for other crops except barley. However, due to the greater wheat cultivation area, in comparison with other crops, the gross consumption of water in wheat irrigation is more than that for other products. As the results of the t-test ($\alpha = 0.05$) indicated, experts accepted water supplying for wheat self-sufficiency provided that the following conditions were fulfilled: a) comprehensive water productivity, b) maintenance of the unique position of wheat in the food basket of the society, c) less water requirement for wheat than for most crops, d) ensurance of physical access to wheat through its domestic production, e) improvement of national capacity improving, f) maintenance of agricultural employment capacity especially in rural areas, and g) maintenance and enhancement of national security.

4. Discussion

The large water consumption in the country is due to the irrigation of extensive land area under wheat cultivation. But, unlike most crops, wheat has maximum compatibility with the general climate of the country. Cultivation of wheat in autumn and winter is due to the low air temperature and an increase in the area of rainfall, while crops have the lowest evapotranspiration. In these conditions, agricultural land has the least evaporation due to rainfall and low air temperature. It is, thus, possible to maintain water resources for wheat farming by improving the cultivation patterns and water use efficiency. The most urgent issue is saving water for environmental or other economic priorities. To attain this purpose, farmers should be involved in the benefits of water saving. One of the important requirements in this regard is the serious and effective supervision of the farmers' right of water resources.

The main differences between the findings of this study and those of previous studies are a) use of major stakeholders' opinions through the research management and research statistical sampling, b) application of IFS capacity, c) emphasis on specific concepts such as the proportion of water consumption in national wheat production, comprehensive agricultural water productivity and social acceptance in providing agricultural water for self-sufficiency, and d) as a main privilege, publicizing the research results and continuously expanding social learning through a dedicated webpage.

5. Conclusion

As it seems, from social, economic and environmental viewpoints, in wheat production, supplying water for wheat self-sufficiency is not rejected under comprehensive agricultural programs for water productivity until 1404. In this connection, the issues that emerged to be of significance in this study are– the unique status of wheat in the food basket of the society, less water requirement for wheat than for most other crops, effect of domestic wheat production on food security in terms of physical access,– improvement of national economic capacity, maintenance of agricultural employment capacity especially In rural areas, and preservation of national security.

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Conflict of Interest

The authors declared no conflicts of interest