IMPROVING ENERGY EFFICIENCY IN FOOD PRODUCTION

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ABSTRACT

The article presents a statistical analysis of the rational use of energy in the production and processing of food products. Analytical data on energy consumption are presented today, depending on the growth of the population worldwide and in Uzbekistan, as a result of the increase in the demand for food products. In addition, the minimum consumption standards and food consumption index in Uzbekistan are presented by year.

Keywords: food production, energy saving, energy saving in agricultural processing, production, processing, energy saving technology, energy consumption, economy, energy saving.

АННОТАЦИЯ

В статье представлен статистический анализ рационального использования энергии при производстве и переработке пищевых продуктов. Представлены аналитические данные по энергопотреблению на сегодняшний день в зависимости от роста численности населения во всем мире и в Узбекистане в результате увеличения спроса на продукты питания. Кроме того, минимальные нормы потребления и индекс потребления продуктов питания в Узбекистане представлены по годам.

Ключевые слова: производство продуктов питания, энергосбережение, энергосбережение при переработке сельскохозяйственной продукции, производство, переработка, энергосберегающие технологии, энергопотребление, экономика, энергосбережение

INTRODUCTION

The purpose of this report is to help mobilize the concrete and concerted actions required to realize these global agendas. It contributes to a common understanding of the major long-term trends and challenges that will determine the future of food security and nutrition, rural poverty, the efficiency of food systems, and the

sustainability and resilience of rural livelihoods, agricultural systems and their natural resource base

The trend of rational use of energy in food production and processing is on the agenda of global energy problems. Research shows that global food production systems consume 30% of all available energy, from farms to production through the food processing and marketing chain.

A whopping 70% of this energy use occurs after food leaves the farm, during transportation, processing, packaging, shipping, storage, marketing and preparation. About 40% of food is lost due to food loss and waste (a third of food, about 1.3 billion tons, is thrown away or spoiled every year worldwide). About 3 billion people have limited access to modern energy services for heating and cooking, and 1.4 billion have no or limited access to electricity. In addition, communities without access to electricity and sustainable energy sources have little chance of achieving food security and no opportunities to maintain productive livelihoods that lift them out of poverty.[1]

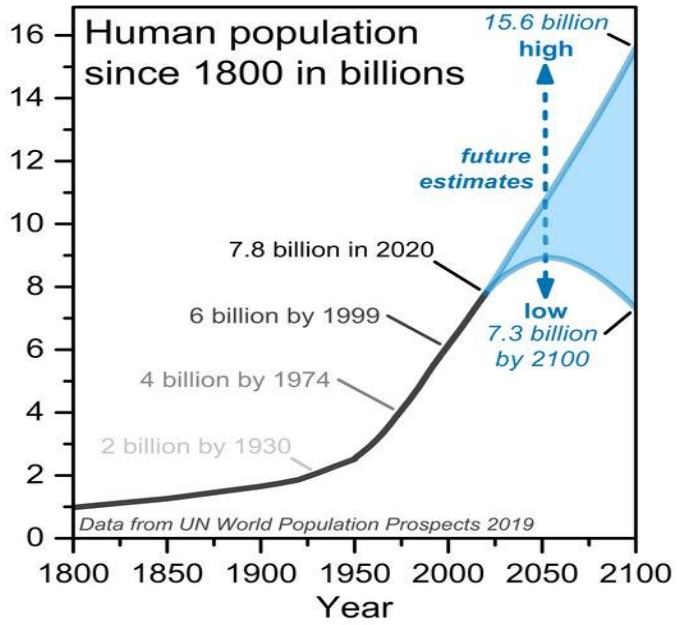

Figure 1. World population growth (forecasts until 2100)

Overall, the annual growth rate of world population has been declining for nearly five decades. In the late 1960s, global growth peaked at 2% per year, with the total fertility rate (TFR) falling to 2.5 in 2015, the fastest growing rate in the world pace. Annual world population will decrease by 1.2%. Although world population growth is slowing, the absolute annual growth rate continues to rise. Recently, they have started to decrease significantly. Absolute annual growth is now just under 80 million people.[1]

According to the European food and beverage industry, there are three main production regions in the world: the European Union - 44% of revenue, the United

States - 20% of revenue, China - 19% of revenue. The turnover of the European food and beverage processing industry alone is twice that of the US and China. However, this situation will change significantly in the coming decades. The United Nations is expected to call for the expansion of the Sustainable Energy for All Initiative. Efforts are underway to promote global energy and low-carbon development, ensure governments have universal access to basic energy services, improve energy efficiency and double the renewable energy.[2]

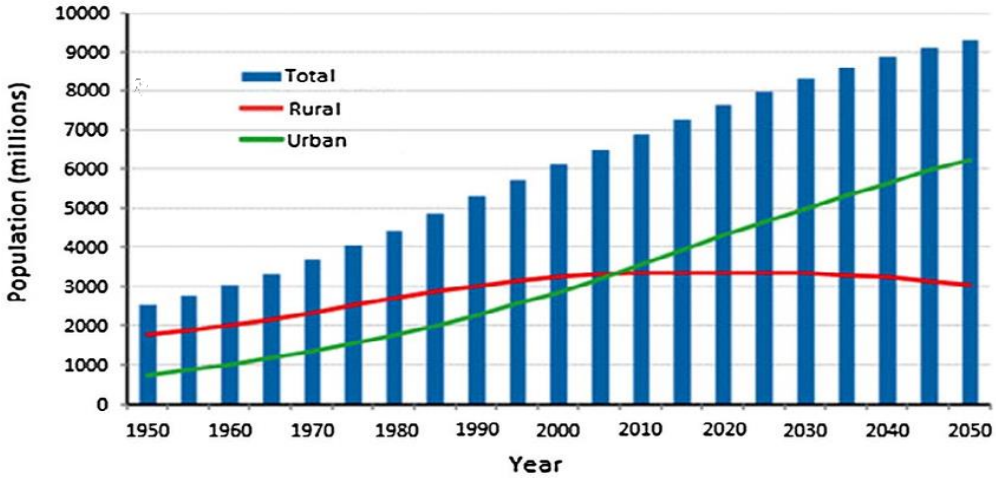

Figure 2. Global growth of urban and rural population until 2050 (forecast).

For decades, the world's population has been ruled by villagers. 35 years ago, more than 60% of the population lived in villages. The urban-rural balance has since shifted dramatically, and today just over half (54%) of the world's population is urban. By 2050, more than two-thirds of the world's population may be alive. Changes in agriculture, especially the development of technology, the introduction of labor-saving technologies contributed to this. Agriculture, food and nutrition are affected by increasing urbanization and may continue to be affected by these changes..[2]

New ideas on energy use in agriculture are needed. Cheap energy sources are dwindling and energy markets are increasingly volatile. Food production will need to increase by 60% by 2050 to feed a growing world population, but we cannot achieve this goal if we rely on fossil fuels.

In low-income countries, major food losses occur upstream. During harvest and post-harvest processing due to poor infrastructure; Low technological levels, limited knowledge base and lack of investment limited production. Food losses are generally due to management and technical reasons. There are restrictions on harvesting, storage, transportation, processing, packaging and sale. The biggest losses occur at small and medium scale. The agricultural and fishery production and processing sectors were also affected. In Africa, approximately 13 million tonnes of grain, or more than 15% of total grain production, is lost during post-harvest operations each year.

CONCLUSION

Based on new technology and scientific research, practices at every stage of the food supply chain can be energy efficient. Tillage is usually the single most energy-intensive operation during the growing season. Conservation agriculture, zero tillage and other sustainable intensive farming techniques can reduce the amount of energy used on farms.

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