

ECONOMIC-ECOLOGICAL ASPECTS OF INTENSIVE DEVELOPMENT OF ANIMAL HUSBANDRY

U.Sadullaev, Researcher of the International Center for Strategic Development and Research in Food and Agriculture
Abstract

The article discusses the actualization of greenhouse gas emissions in livestock farming in the context of climate change, their average indicators, and the current situation in our country.

Keywords: environmental problems, climate change, livestock intensification, agroclusters, fodder area, etc.

Introduction. Today, the world community recognizes climate change as one of the most serious problems facing humanity. In fact, by the 20th century, as a result of rapid industrial development of the countries of the world, as a result of not obeying the laws of nature, and not using its resources rationally, the release of countless greenhouse gases into the atmosphere led to climate change. This, in turn, causes sudden changes in temperature in all four seasons of the year in different parts of the world, disasters such as catastrophic rainfalls, floods, hurricanes and typhoons in some places, and on the other hand, droughts, desertification, land degradation, forest fires and other environmental problems in other places [1].

In the middle of the last century, special attention was paid to the issue of intensive development of animal husbandry, which became more urgent mainly due to limited resources, especially land resources. Especially as a result of population growth, the increase in the demand for meat and dairy products, as a result, the expansion of the scope of cutting forests for the purpose of growing food, created the need for growing more products on small areas in Western European countries and Latin American countries.

More than half a century later, views on the environmental risks of livestock intensification began to widen. This has become more relevant in the conditions of climate change, and scientific conclusions have been formed that a significant part of the gas emitted into the atmosphere is related to agriculture, including animal husbandry and infrastructure related to it.

Materials and analysis. If we pay attention to the statistical numbers, about 14.5% of the greenhouse gases released into the atmosphere are accounted for by livestock farming. By 2030, this figure will be 49% of all emissions needed to increase the temperature by 1.5 °C. Cows and sheep emit a lot of methane and carbon dioxide, and to increase pastures, farmers cut down forests that absorb carbon dioxide from the atmosphere. If we look at the distribution of greenhouse gas emission sources on a global scale, 31% of all emissions are generated by heat and electricity production, 15% by transport, 11% to 17% by agriculture, 6% by forestry, and 12% by industry. The remaining 35% is distributed among other types of fossil fuel burning, garbage, gas leaks and other industries.

According to general estimates, livestock is responsible for about 9% of global carbon dioxide emissions, 35-40% of global methane emissions, and 65% of nitrous oxide emissions [2].

Experts estimate that by 2050, if the world's population has become vegetarian, less arable land will be needed to provide food than in 2000. According to calculations, one cow produces 70 to 120 kilograms of methane per year [3].

The main problem in animal husbandry is related to the greenhouse gas released into the atmosphere as a result of cattle rumination, which is 28 times more powerful

than carbon dioxide. In other words, as a result of the consumption of feed, one head of cattle emits an average of 20 grams of methane gas from each kilogram of feed. If we convert this methane gas to carbon dioxide equivalent, it is equal to 560 grams of carbon dioxide. If we come to general figures based on the daily ration of cattle, it can be observed that one cattle consumes 12-15 kilograms of feed (dry matter, green mass) in a day, and when it is converted into carbon dioxide, it is 7 kilograms. Converting it to an annual volume, it emits an average of 2.5 tons of carbon dioxide gas into the air. Based on the fact that there are 1.5 billion cattle in the world as of 2022, it can be observed that the amount of carbon dioxide released into the atmosphere will be a considerable amount (about 4-5 giga tons).

Also, in the studies conducted by the UN experts, it is stated that one cow releases an average of 7 kilograms of carbon dioxide and that it emits 18% of the total greenhouse gas into the atmosphere [4].

If we pay attention to the sources of greenhouse gas emissions in animal husbandry, 44% are released from rumination, 41% from feed production, 10% from manure storage and use, and 5% from mechanization and equipment use (Figure 1).

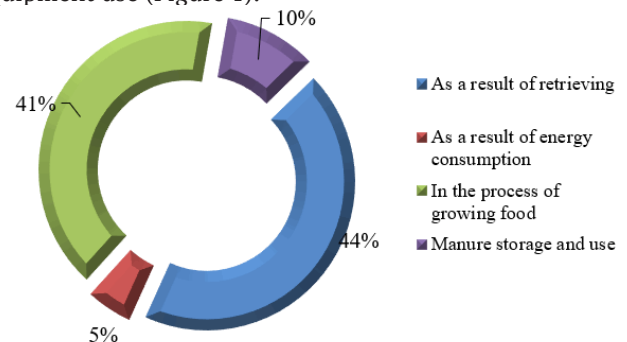


Figure 1. Sources of Greenhouse Gas Emissions in Livestock (FAO).

Due to the special attention paid to the development of animal husbandry in the conditions of our country, the number of livestock and the volume of production are increasing today. However, it remains below the level of meeting the population's demand for meat and dairy products. As a result, the volume of meat imports is increasing year by year. In particular, in 2020, a total of 20,000 tons of meat was imported, and by 2022, this indicator was 31,000 tons [5]. At the same time, significant work is being done to intensify the network, build modern animal husbandry complexes, and increase the productivity of livestock. The number of animal husbandry clusters and animal husbandry complexes under other agroclusters in the field is increasing year by year.

As a result of these circumstances, greenhouse gas emissions in our country decreased from 63% to 51%

between 1990 and 2012, while the amount of methane gas emissions increased from 30% to 43% [6].

Agriculture accounts for 13.7% of methane emissions and 96.5% of nitrogen oxides in our republic. The main source of methane emissions from agriculture in our country is the livestock industry [7]. Animal husbandry is one of the main sectors of the economy, and about 50% of the gross agricultural products are accounted for by this sector. 45-67 percent of the rural population is engaged in animal husbandry, and 27 percent of the country's population is engaged in agriculture.

Discussion. All this has a negative impact on the environment. According to experts, since 1880, as a result of the high concentration of greenhouse gases, the average temperature in Tashkent has risen by 1.7 degrees, which is much higher than the world average. The main sources of atmospheric pollution and greenhouse gases in our country can be identified as energy, transport, animal husbandry and the island crisis [8].

In the context of climate change and environmental problems, Uzbekistan signed the Paris Agreement on April 19, 2017 at the UN Headquarters in New York, which entered into force in 2018. According to it, our country undertook to reduce greenhouse gas emissions per unit of gross domestic product by 35% compared to 2010 [9].

Based on these average indicators, if we calculate the total amount of greenhouse gases emitted in our country, as of 2022, the total number of cattle will be 13 million, and the number of small horned cattle will be 23 million. Based on the average figures, one head of cattle emits 2.5 tons of greenhouse gas per year, and one head of small horned cattle emits 0.4 tons of greenhouse gas. (Table 1).

Also, taking into account that livestock feed areas are 316,000 hectares as of 2022 and an average of 8 million tons of feed is collected from them, it can be observed that 0.16 million tons of greenhouse gases are released due to

feed. At the same time, taking into account that 10% of greenhouse gases are released from livestock manure, and one head of cattle produces an average of 7 tons of manure per year, it can be seen that 91 million tons of manure are produced from cattle in our country and 0.482 million tons of greenhouse gas are emitted from them.

Table 1.
The amount of greenhouse gas emissions in the livestock industry in Uzbekistan (calculated on the basis of average indicators) [10]

Cattle type	Indicator	Average annual gas output per head, tons	Annual gas output, million tons
Cattle, million heads	13	2.5	32,5
Sheep, million heads	23	0,4	9,2
Fodder area, thousand hectares	316 (8 million tons of feed)	0,00002	0,160
Livestock manure, million tons	91	0,0053	0,482

Conclusion. It can be seen from the analysis that the practice of calculating and monitoring greenhouse gas emissions in livestock breeding in our country through these 4 indicators, which are widely used in world practice, is not suitable due to the lack of numbers, the complexity of the determination, and the different methods of use. Therefore, in today's conditions, in which the intensification of animal husbandry and the development of the network on an industrial basis are becoming more urgent in our country, it is appropriate to develop special indicators for monitoring greenhouse gases, create calculation methods, and form methodological approaches taking into account their specific aspects.

References:

1. What will the Paris Agreement bring to our country? "People's word" 2018. <https://xs.uz/uzkr/post/parizh-bitimi-mamlakatimizga-nima-beradi>
2. Fewer cows, colder: how greenhouse gases depend on animal husbandry. <https://nangs.org/news/ecology/chem-menyshе-korov-tem-holodnee-kak-parnikovyе-gazy-zavisyat-ot-zhivotnovodstva>
3. <https://www.swissinfo.ch/rus/business>
4. <https://www.mk.ru/economics/2022/08/09/parnikovyе-vybrosy-so-mnogimi-neizvestnyimi-kak-burenka-spaset-ekologiyu-rossii.html>
5. <https://kun.uz/news/2022/01/10/ozbekiston-gosht-importini-oshirdi>
6. <https://www.gazeta.uz/ru/2019/06/13/global-warming/>
7. <https://podrobno.uz/cat/economic/mchr/>
8. <https://www.gazeta.uz/ru/2019/06/13/global-warming/>
9. <https://www.uzbekistonmet.uz/ru/lists/view/1589>
10. Author's calculations based on average values.