

# Interpretations on ecological problems and their solution in the works of Abu Ali ibn Sino

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**Abstract.** The article describes the views of Abu Ali ibn Sino, a great thinker of the Middle Ages, on environmental problems. His scientific approaches to areas such as environmental hygiene, water and air pollution are analyzed. Nature is a place where all living things can live. According to him, nature is a single, whole, in which opposite aspects such as matter and form, movement and peace, cause and effect are interconnected and interact. A violation of such a relationship can have negative consequences on earth. We can see this in the example of the environmental problem, which is recognized as a global problem today. We know that a person has been wounded, that the environmental problem has been on his mind. We can see this in the works of our great compatriot, encyclopedist Abu Ali Ibn Sino. What we call environmental problems today, issues of protecting the environment, the impact of man on nature or man on the environment are often mentioned in Ibn Sino's works. Especially his thoughts that "Agar havoda chang va tutun bo'lmaganda edi inson ming yil yashagan bo'lur edi", "If the air is balanced and clean, without foreign additives, it will be a guarantee of health, otherwise it will cause various diseases" confirms the existence of environmental problems before.

## 1 Introduction

Today, atmospheric pollution and changes in weather quality are one of the most urgent problems on a global scale. In scientific research, as the main factor of the problem: a) emissions from production and vehicles, b) emissions from industrial enterprises, power stations, c) depletion of forests, d) climate change, e) depletion of the ozone layer.

It should be noted that although these problems are noted as problems of the 21st century, the conflict between nature and man has been tormenting and thinking about man since his creation. There is confusion over ways to preserve nature and pass it on to future generations. Our opinion is also confirmed by ecology and related scientific opinions in the works of Central Asian encyclopedists such as Beruni, Khorezmi, Farobi, Abu Ali Ibn Sino.

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## 2 Materials and methods

The medieval Eastern thinker Ibn Sino (980-1037) paid special attention to environmental problems in his scientific legacy. Al Husayn Ibn Abdullah ibn Al-Hasan ibn Ali Ibn Sino - a great scientist, physician, musician.

He was born in 980 in the village of Afshona, Bukhara, in the family of an official. In 986, Ibn Sino's family moved to Bukhara, and from that time young Husayn started to get basic education and study science. His youth and youth correspond to the last years of the Samanid rule, in particular, the reign of Nuh II ibn Mansur Samani (976-997).

Ibn Sino was talented, had a strong memory, and was quick to master the sciences known in his time. At the age of 10, he memorized the Holy Qur'an. From the age of 13, he started studying elementary mathematics, logic, jurisprudence, and philosophy. Despite his young age, Ibn Sino studied philosophy under the guidance of Abu Abdullah Natili, medicine from Hasan ibn Nuh Qumri, and gradually practiced medicine. He first studied the works of Eastern thinkers in depth, and diligently studied the natural scientific and philosophical heritage of ancient Greece, particularly the works of Aristotle, Euclid, Ptolemy, Galen, Hippocrates, Pythagoras, and Porphyry. Even at the age of 16-17, Ibn Sino became known as a famous doctor and judge.

In 1000, Ibn Sino left Bukhara and went to Khorezm, considered one of the centers of culture, where he was admitted to the academy in the palace of Ali ibn Ma'mun, governor of Khorezm, which brought together the leading scholars of his time. Ibn Sino became closely acquainted with mature scholars such as Beruni, Ibn Miskawayh, Abu Sahl Mashihi, Abu Khair Hammar, Abu Nasr ibn Iraq. Ibn Sino, who came to the city of Jurjan through the cities of Abivard, Tus, and Nishapur, lived as a famous physician in the palace of governor Qabus ibn Vashmgir, and met his future student Juzhoni.

He went to Isfahan in 1023 and devoted his whole life to writing scientific works. Ibn Sino's famous works such as "Kitob al-qonun fit-tibb", "Kitob un-najot", "Kitob ul-insof", treatises on geometry, astronomy, plant and animal world, logic, "Salomon va Ibsol", "Hayy Ibn Yaqzan" philosophical story was written in the last years of his life.

As a mature natural scientist and philosopher of his time, Ibn Sino paid great attention to the study of nature and its laws. His views on natural philosophy had an important place in medieval Eastern and European science. Ibn Sino's scientific understanding of nature is also important for modern science.

Ibn Sino's works in any field of science reveal his views on the example of human-nature, human-society relations and interpret these two concepts as poles that cannot be separated from each other. Ibn Sino considers man as an integral part of nature, its unique element.

If the scientist describes the issue of nature and its laws in his scientific works, as a part of nature, he interprets the issues of man and his spiritual world, perfection, and outlook in his artistic works as both a healer and a creator.

Nature is a place where all living things can live. According to him, nature is a single, whole, in which opposite aspects such as matter and form, movement and peace, cause and effect are interconnected and interact. A violation of such a relationship can have negative consequences on earth. We can see this in the example of the environmental problem, which is recognized as a global problem today.

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guarantee of health, otherwise it will cause various diseases" confirms the existence of environmental problems before.

Among the environmental problems, air pollution is the factor that causes the greatest suffering to humanity and nature. According to Ibn Sino, the presence of dust and smoke in the air has a negative effect on human health. These factors damage the respiratory organs and cause various diseases. Secondly, air pollution has a negative effect on human immunity and makes the body susceptible to various diseases. Clean air helps the human body to function properly and increases life expectancy. According to him, the best air is the air without foreign substances such as steam and smoke.

In the works of Ibn Sino, we can see many examples that confirm that the problems investigated are studied on the basis of the connection between the nature and the human world. Because man, as a part of nature, cannot live without it. The scientist even absorbed it into the core of his philosophical views. In one place, the scientist writes: "Hamma borliq tabiatga bog'landi – aloqador bo'ldi, shu bilan Tangrining ajoyib hikmati takomillashdi [All beings were connected to nature - became connected, thus God's wonderful wisdom was perfected]. It is clear that in the created universe, something-phenomenon cannot exist alone or in isolation. The animate and inanimate universe continuously influence each other. So is nature and man.

It cannot be denied that Abu Ali ibn Sino's thoughts on the environment necessary for human existence and its influence on human mood and health are an important problem even today. In the book "Tib qonunlari" he writes about this: *"A person who chooses a place of residence should know the following: the soil of the land, height and lowness, open and closed, water, substance of water, flow and openness or its flow from height and lowness; whether the winds blow there, or whether the place is deep, what kind of winds - are they cold healthy winds, what seas, marshes, mountains and mines are near there. He should also know the health and illness conditions of the inhabitants of that place, which diseases are common to them."* The importance of the natural environment for human existence was noted in the scientist's opinion mentioned above. The scientist emphasizes the need to take into account the location of the place of residence in an area that is higher or lower than the standard, as well as climatic conditions and living needs, which are considered important factors for human survival in all periods.

The scientist explains it as follows: *We say that you know that the settlements have different effects on the human body depending on the following reasons: the height or lowness of those places, or the presence of heights, lowlands and mountains in the vicinity of them; the nature of the soil, i.e. whether it is clean soil, swampy, silty, or whether the soil has mineral potential. Such reasons also include the abundance or scarcity of water, the presence of trees, mines, cemeteries, dead animals, and the like in the vicinity of the place. You know how to identify the weather customers by latitude, soil, mountain and sea distribution, and also by winds."*

If the fertility of the soil is suitable for habitation, the possibilities of natural human habitation are limited in areas with a high content of clay or sand. In addition, the scientist pays special attention to the balance between the availability and quantity of water when choosing a place to live, and writes: *"Lighter water often means better water quality."*

Such views of Ibn Sino show that he had a deep understanding of the factors influencing the choice of a place for a person to live. Its analysis covers key aspects such as climate, soil, water, vegetation and surrounding infrastructure. This shows that he had extensive knowledge of geography, ecology, and urban planning, and that he studied the causes of health and disease thousands of years ago by linking them to environmental factors. These views of the scientist formed the basis of his scientific views in the field of environmental hygiene and ecology in the Middle Ages.

Ibn Sino is an encyclopedic scientist who wrote works on various fields of science. He tried to spread his scientific views among the people with his artistic creations. Ibn Sino's epics on medicine testify to this. Ibn Sino wrote these epics in the rajaz weight of Aruz.

That's why sometimes these works were called urjuza. At this time, he wrote a number of poetic works on medicine, so far there are nine of them. Eight of these epics written by Ibn Sino are related to medicine and one to logic. The largest of these epics was known as the "Medical epic". Ibn Sino's epic on medicine was his first work in this field. In the chapter "About space and weather" of "Medical epic", the issue of the environment and its influence on humans is explained in a simple way.

We can see that opinions on environmental problems are also expressed in the works of famous Central Asian encyclopedists al-Khorazmi, Beruni, and Farabi. For example, al-Khorazmi writes in one of his treatises: "Know that if the eyes of the river tear, it will be sad and sad." People, don't take your love away from the river!" With these thoughts, the scientist calls not to waste the water of the river too much, Abu Rayhan Beruni's words, "If people do violence to nature and violate its laws rudely, one day nature may impose such burdens on their heads that no force can reverse" - today's global indicates a prediction of environmental problems 1000 years ago.

Farabi, who made a unique contribution to world culture with his scientific-philosophical heritage, was involved in various branches of natural science, his "Kitob al-hajm va al-miqdor", "Kitob al-mabodi al-insonia" ("Book about the beginning of mankind"), the works entitled "Kitob al-a'zo al-hayvon" ("The book about the organs of animals") can be a proof of this. Farabi's book "Indian Medicines and Medicinal Plants" is a collection of achievements in the field of science at that time, which indicates that he was a mature scientist.

We know that environmental factors are divided into biotic and abiotic factors. Biotic factors are living organisms and their interactions. They include such processes as growth, development, reproduction, nutrition, mutual competition, and mutual assistance. Biotic factors include: plants (flora), animals (fauna), microorganisms, human activities, Abiotic factors: climate (temperature, light, humidity), water (ocean, sea, lake, river), soil (composition, structure, salinity), geological factors (relief, geological processes), atmosphere (air composition, air movement) are included.

From the above analysis, it can be seen that Abu Ali ibn Ibn Sino studied the causes of health and illness a thousand years ago by linking environmental factors and environmental problems. We can classify advanced views of scientists on environmental problems as follows.

1. The idea of natural balance:

*Nature has balance and harmony within itself. Earth, water, air, fire are compatible and complement each other. When this balance is disturbed, disasters and destruction occur in nature.*

2. Adaptation of living organisms to the environment:

Every living thing is formed according to its natural environment and continues its life there. If this balance is disturbed, living things will also be harmed or destroyed.

3. Environmental impact of human activity:

Man uses nature to satisfy his needs. But this use should not disturb the natural balance, should not harm the environment. Otherwise, the person himself will be negatively affected by it.

It can be seen from the above analysis that Ibn Sino's foresight into environmental problems and his comprehensive ideas about nature-human relations have been expressed.

It should be noted that at the present time, humanity is facing serious environmental problems on a global scale as a result of its unreasonable and unreasonable activities. It is no secret that these problems pose a serious threat to human life and health.

Therefore, studying environmental problems and solving them is one of the most urgent tasks of today. Global environmental problems pose a serious threat to humanity. Problems such as air pollution, climate change, depletion of water resources, deforestation and loss of biodiversity are waiting to be solved on a global scale. Various measures are being taken by the international community to solve these problems. But in order to completely solve these problems, humanity needs to change its irrational activities and fundamentally change its attitude towards nature.

### 3 Conclusion

In short, in the age of science and technology, environmental problems are on the agenda as a first-class problem. It is our human duty to preserve the natural environment for our future generations. For this, we need to pay attention to nature, think not only of today, but of the near and distant future.

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