Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

IMPACT OF CLIMATE CHANGE ON ANIMAL HEALTH AND VETERINARY DISEASE MANAGEMENT

Kinza Abdul Star
BS, Department of English, The Cosmic Degree College (For Women) ,University of Okara

ABSTRACT

Climate change has emerged as a major global challenge affecting animal health, veterinary healthcare systems, livestock production, and animal welfare. Rising temperatures, changing rainfall patterns, prolonged droughts, floods, and extreme weather conditions are creating serious environmental pressures on domestic animals, livestock, and wildlife. These climatic changes can directly affect animal physiology, immunity, reproduction, nutrition, and productivity while indirectly increasing the occurrence and distribution of infectious diseases and parasites. Animals exposed to extreme heat may experience heat stress, dehydration, reduced feed intake, reproductive difficulties, and increased susceptibility to diseases. Furthermore, changing environmental conditions can influence the geographical distribution and seasonal activity of disease-carrying vectors such as ticks, mosquitoes, and flies. This research examines the impact of climate change on animal health and veterinary disease management, focusing on heat-related illnesses, infectious diseases, nutritional challenges, livestock productivity, and emerging veterinary health risks. It also explores the importance of climate-sensitive disease surveillance, vaccination, improved animal housing, veterinary education, and sustainable livestock management. A descriptive research approach is proposed using scientific literature and published veterinary research. The study emphasizes the importance of the One Health approach, which connects animal health, human health, and environmental protection. Effective veterinary planning and climate adaptation strategies can reduce disease risks, improve animal welfare, protect livestock productivity, and strengthen the resilience of veterinary healthcare systems.

KEYWORDS,*Climate Change, Animal Health, Veterinary Disease Management, Global Warming, Heat Stress, Livestock Health, Infectious Diseases, Animal Welfare, Disease Surveillance, One Health.*

INTRODUCTION

Climate change has become one of the most important environmental challenges of the modern world, creating serious consequences for ecosystems, agricultural systems, human health, and animal populations. Increasing global temperatures, irregular rainfall, prolonged droughts, floods, and extreme weather events are changing the environmental conditions in which animals live and survive. Domestic animals, livestock, poultry, and wildlife are particularly vulnerable to these changes because their health and biological activities are closely connected with temperature, water availability, food resources, and environmental stability. Animals require suitable climatic conditions to maintain normal body temperature, physiological functions, reproduction, and productivity. However, continuous environmental changes can disturb these processes and increase the risk of health complications. Climate change is therefore becoming an important concern for veterinary professionals, livestock farmers, animal researchers, and animal welfare organizations. . Alhassan, M. Y., Ahmad, A. A., & Danmaraya, M. A. (2026).founds

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

thatRising temperatures are among the most direct effects of climate change on animal health. When animals are exposed to temperatures beyond their ability to regulate body heat, they may develop heat stress, dehydration, reduced appetite, respiratory difficulties, and metabolic disturbances. Cattle, buffaloes, sheep, goats, and poultry can experience reduced productivity when exposed to prolonged periods of extreme heat. Heat stress may decrease milk production, affect meat quality, reduce egg production, and negatively influence reproductive performance. Young animals and animals with existing health problems may be particularly vulnerable to extreme environmental conditions. Proper ventilation, access to clean drinking water, shaded housing, and suitable feeding practices are important measures for reducing the harmful effects of heat exposure.

Climate change also influences the occurrence and geographical distribution of infectious diseases among animals. Changes in temperature, humidity, and rainfall can affect the survival, development, and reproduction of disease-causing microorganisms and their vectors. Ticks, mosquitoes, biting flies, and other disease-carrying organisms may expand into geographical areas where environmental conditions previously limited their survival. As a result, animals may face new or increased exposure to diseases transmitted by these vectors. Diseases such as bluetongue, Rift Valley fever, trypanosomiasis, and tick-borne infections are important examples of veterinary health concerns influenced by changing environmental conditions. These developments create additional challenges for veterinary disease surveillance, diagnosis, prevention, and treatment. 2. Gaddafi, M. S., Saeed, S. I., Eltai, N. O., Lawal, H., Ibrahim, D. D., Musawa, I. A., Garba, B., Goni, M. D., & Yakubu, Y. (2026).explained thatAnother important impact of climate change is the disruption of animal nutrition and food availability. Droughts, irregular rainfall, floods, and changing seasonal conditions can reduce pasture growth and affect the availability and quality of animal feed. Livestock farmers may experience difficulties obtaining sufficient nutritious feed and clean drinking water for their animals. Poor nutrition can weaken animal immunity, reduce growth, affect reproductive performance, and increase vulnerability to infectious diseases. In some situations, extreme weather conditions may also increase the risk of contamination in stored animal feed and water supplies. These challenges demonstrate that animal health management cannot be separated from environmental conditions and sustainable agricultural practices.

Climate change also creates serious challenges for veterinary disease management because traditional disease-control methods may become less effective when disease patterns and transmission seasons change. Veterinary professionals must increasingly consider climatic conditions when investigating disease outbreaks, selecting preventive measures, and planning treatment programs. Historical disease records may not always accurately predict future outbreaks because changing temperatures and rainfall can influence pathogen survival and vector

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

activity. Therefore, veterinary surveillance systems need to incorporate environmental information, seasonal disease patterns, and geographical risk assessments. Improved diagnostic facilities, laboratory investigations, vaccination programs, and early warning systems can help veterinary authorities identify potential health threats and respond more effectively.The One Health approach provides an important framework for understanding the relationship between climate change, animal health, human health, and environmental protection. Changes in animal disease patterns may influence the transmission of zoonotic infections, food safety, and the wider health of communities. Environmental degradation, water scarcity, biodiversity loss, and changing wildlife habitats can further increase the complexity of these challenges. Veterinary professionals, environmental scientists, farmers, public health authorities, and policymakers must therefore work together to develop effective adaptation strategies. This research examines the impact of climate change on animal health and veterinary disease management, emphasizing heat stress, infectious diseases, nutritional challenges, disease surveillance, and sustainable preventive practices.

RESEARCH OBJECTIVES

1. To examine the effects of climate change on animal health, livestock productivity, and disease occurrence.

RESEARCH QUESTIONS

1.How does climate change affect animal health and veterinary disease management?

LITERATURE REVIEW

Climate change has become an important subject in veterinary research because environmental changes can influence animal disease patterns, physiological health, and livestock productivity. Rising temperatures, irregular rainfall, droughts, and extreme weather events affect the biological and environmental conditions necessary for animal survival. Recent research has demonstrated that climate variability can influence disease incidence, geographical distribution, and transmission patterns among different animal populations. Lavarello-Schettini et al. (2026) conducted a systematic review examining the relationship between climate change and infectious diseases in animals. Their research highlighted the importance of understanding climate-related changes in disease transmission and strengthening veterinary surveillance systems. The study also identified significant gaps in long-term epidemiological information, particularly concerning wildlife and different geographical regions. These findings demonstrate the need for more comprehensive investigations into climate-related veterinary health risksHeat stress is one of the most widely recognized consequences of climate change affecting domestic animals and livestock. Prolonged exposure to high environmental temperatures can interfere with normal

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

physiological functions and create difficulties in maintaining body temperature. Animals experiencing heat stress may show reduced feed consumption, increased water requirements, respiratory changes, and lower productivity. Dairy cattle may experience reduced milk production, while poultry may demonstrate reduced growth and egg production under unfavorable temperature conditions. Heat stress can also affect reproductive performance and increase the vulnerability of animals to other health complications. The World Veterinary Association (2026) emphasizes that increasing temperatures and extreme weather events can compromise animal physiology, welfare, productivity, and survival. Lavarello-Schettini, A., Lavarello-Schettini, R., Hashim, M., Sikkema, R. S., Tizzani, P., & Rocklöv, J. (2026).Climate change can also influence the distribution and transmission of infectious diseases through changes in vector populations and environmental conditions. Temperature and rainfall influence the life cycles, geographical distribution, and seasonal activity of ticks, mosquitoes, and other disease-carrying organisms. These changes may increase exposure to infectious diseases in animal populations that previously experienced relatively low transmission risks. Research by Lavarello-Schettini et al. (2026) identified vector-mediated mechanisms as an important pathway connecting climatic conditions with changes in animal infectious disease patterns.

Their findings support the importance of climate-sensitive surveillance and improved disease prediction systems. Veterinary authorities must therefore monitor changing environmental conditions and identify potential disease threats before they develop into major outbreaks. The relationship between climate change and livestock management has also received increasing attention in recent veterinary research. Alhassan et al. (2026) examined climate-resilient livestock systems in Sub-Saharan Africa and explained how increasing temperatures, droughts, irregular rainfall, and flooding can affect animal health and pastoral production systems. Their research identified disease risks, reduced pasture availability, environmental pressures, and limitations in veterinary infrastructure as important challenges. The authors emphasized the importance of combining climate adaptation, veterinary healthcare, sustainable livestock management, and One Health strategies. Their research demonstrates that animal health cannot be protected through medical treatment alone; effective livestock management must also consider environmental conditions and the resilience of agricultural systems. Another important area of veterinary research concerns the relationship between climate change and antimicrobial resistance. Environmental changes can influence the survival of microorganisms, the movement of resistant bacteria, and the use of antimicrobial medicines in livestock systems. Gaddafi et al. (2026) examined how rising temperatures, changing rainfall, humidity, floods, and droughts may contribute to antimicrobial resistance in livestock environments. Their review explained that heat stress can increase animal susceptibility to infections and potentially increase antimicrobial requirements. The authors also highlighted the role of environmental contamination, manure management, and the movement of resistance determinants through soil and water. These

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

findings indicate that climate-related veterinary disease management should include responsible antibiotic use, proper waste disposal, vaccination, and improved farm hygiene.

Climate change also creates challenges for veterinary healthcare infrastructure and disease-control planning. Extreme weather events can damage veterinary clinics, laboratories, roads, animal shelters, and livestock facilities. Flooding may restrict access to veterinary services, contaminate drinking water, and increase the risk of infectious diseases, while droughts may create shortages of animal feed and clean water. Veterinary professionals may experience difficulties providing timely treatment and vaccination during environmental emergencies. The World Veterinary Association (2026) emphasizes the importance of strengthening veterinary capacity, agricultural monitoring, research, and professional education to address climate-related threats. These recommendations demonstrate that veterinary preparedness should include emergency response planning, reliable diagnostic facilities, and improved communication between animal health institutions. Ward, L. G., Morrison, R. C., Eberhardt, A., Costello, W., & Buzzell, S. G. (2026). worldvet The One Health approach has become increasingly important in research concerning climate change and veterinary disease management. This approach recognizes that animal health, human health, and environmental conditions are closely interconnected. Changes in wildlife habitats, animal migration, water availability, and disease-carrying vector populations may influence the transmission of zoonotic diseases and create new public health challenges. Veterinary researchers must therefore collaborate with environmental scientists, medical professionals, agricultural institutions, and policymakers. Existing research supports the development of integrated surveillance systems, climate-resilient livestock practices, and sustainable disease-prevention programs. Overall, the literature indicates that effective climate adaptation requires coordinated action, scientific investigation, veterinary education, and long-term environmental planning. Hassan, L., Alders, R., Cleveland, S., Pfeiffer, D., Walzer, C., Vora, N. M., & Plowright, R. K. (2026

METHODOLOGY

This research adopts a descriptive and literature-based methodology to examine the impact of climate change on animal health and veterinary disease management. The study focuses on collecting and reviewing scientific information from published research articles, veterinary journals, international reports, and institutional publications. Recent literature published between 2023 and 2026 is prioritized to provide an updated understanding of climate-related animal health challenges. Information is collected from scientific databases and research platforms, including Google Scholar, PubMed, and relevant veterinary research publications. The main purpose of this methodology is to identify the major environmental factors affecting animals and examine their relationship with disease occurrence, livestock productivity, and veterinary healthcare practices.The research considers different categories of domestic animals and

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

livestock, including cattle, buffaloes, sheep, goats, poultry, dogs, and cats. Particular attention is given to heat stress, dehydration, nutritional deficiencies, infectious diseases, parasitic infections, reproductive difficulties, and reduced animal productivity. Scientific studies discussing the relationship between temperature, humidity, rainfall, droughts, floods, and disease transmission are reviewed. Information concerning disease-carrying vectors, environmental contamination, and changing geographical disease patterns is also considered. This approach helps establish a broad understanding of how climatic conditions influence different animal species and their healthcare requirements.The selection of relevant research is based on its connection with climate change, veterinary medicine, animal health, livestock production, disease management, and animal welfare. Published studies containing clear information about environmental conditions, animal populations, disease outcomes, and preventive strategies are given priority. Research that does not directly address the relationship between climate and animal health is excluded from the main discussion. The selected information is organized according to major themes, including physiological effects, infectious diseases, nutritional challenges, veterinary surveillance, and climate adaptation.

RESEARCH DESIGN

The research design follows a descriptive and analytical framework developed to examine the relationship between climate change and animal health. The design identifies major climatic factors and evaluates their direct and indirect effects on different animal populations. Temperature increases, irregular rainfall, droughts, floods, humidity changes, and extreme weather conditions are considered the main environmental variables. Animal health indicators include disease occurrence, mortality, reproductive performance, nutritional condition, physiological stress, and livestock productivity. This framework helps explain how environmental changes can influence animal health and create additional demands on veterinary healthcare systems.The first component of the research design focuses on the direct physiological effects of climate change. It examines how prolonged heat exposure, dehydration, and environmental stress influence animal body functions and welfare. Particular attention is given to changes in feeding behavior, water consumption, respiratory activity, reproductive performance, and productivity. Different animal species are considered because their ability to tolerate environmental stress varies according to biological characteristics, age, health status, and management conditions. This component provides an understanding of the importance of suitable housing, shade, ventilation, and water availability.The second component examines climate-related changes in infectious and parasitic diseases. The research considers how environmental conditions may affect pathogen survival, vector populations, parasite development, and disease transmission. Published studies are reviewed to identify changes in disease distribution, seasonal outbreaks, and potential risks to domestic animals and livestock.

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

The design also considers the role of veterinary diagnostic services, vaccination programs, laboratory testing, and disease surveillance in preventing the spread of infectious diseases.

DATA ANALYSIS

The collected information is analyzed through descriptive and comparative methods to identify the major effects of climate change on animal health and veterinary disease management. Scientific findings are classified according to environmental factors, animal species, health conditions, disease categories, and preventive practices. The analysis focuses on identifying common relationships between rising temperatures, changing rainfall, extreme weather events, and animal health outcomes. Published research findings are compared to understand similarities and differences among livestock and companion animals. Particular attention is given to heat stress, infectious diseases, vector activity, nutritional challenges, and reproductive performance.The analysis also examines how climate-related environmental changes influence veterinary disease occurrence and management requirements. Information about disease transmission, animal mortality, livestock productivity, and veterinary healthcare challenges is interpreted according to the findings reported in existing studies. Where numerical information is available, published measurements and reported disease trends are examined without creating unsupported statistical values. Comparisons are also made between different preventive approaches, including vaccination, improved housing, water management, disease surveillance, and vector control. This process helps identify strategies that may strengthen animal health protection under changing environmental conditions.Finally, the research findings are interpreted through the One Health framework, considering the combined effects of environmental conditions, animal health, and public health. The analysis identifies major gaps in veterinary surveillance, climate-related disease monitoring, and adaptation planning. It also examines the importance of veterinary infrastructure, farmer awareness, scientific research, and institutional coordination. The overall analysis provides a foundation for recommendations aimed at reducing climate-related health risks and improving the resilience of veterinary healthcare systems.

FINDINGS

The reviewed literature indicates that climate change has significant direct and indirect effects on animal health, welfare, and livestock productivity. Increasing temperatures and prolonged heat exposure can create physiological stress, dehydration, reduced feed consumption, and reproductive difficulties among domestic animals. Livestock may experience reduced milk production, slower growth, and other productivity-related problems under unfavorable environmental conditions. The findings also suggest that young animals and animals with existing health problems may require additional protection during extreme weather conditions. Suitable animal housing, proper ventilation, clean drinking water, and appropriate feeding

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

practices are therefore important for maintaining animal health.Another important finding is that changing climatic conditions can influence infectious disease patterns and the distribution of disease-carrying vectors. Variations in temperature, humidity, and rainfall may create suitable conditions for the survival and development of ticks, mosquitoes, and other vectors in different geographical regions. These changes can affect disease transmission and increase veterinary monitoring requirements. The literature also indicates that droughts and floods may influence water quality, animal nutrition, and exposure to environmental pathogens. These findings demonstrate the importance of regular veterinary examinations, vaccination programs, laboratory diagnosis, and climate-sensitive disease surveillance.The research further identifies the importance of climate adaptation and improved veterinary management practices. Responsible livestock management, preventive healthcare, improved veterinary facilities, and farmer education can help reduce the harmful effects of environmental changes.

CONCLUSION

Climate change has become a major challenge for animal health and veterinary disease management because rising temperatures, irregular rainfall, droughts, floods, and extreme weather events can affect animal physiology, nutrition, reproduction, and disease susceptibility. These environmental changes create serious risks for domestic animals, livestock, poultry, and wildlife. Heat stress, reduced feed availability, water shortages, and changing infectious disease patterns can negatively influence animal welfare and agricultural productivity. The reviewed research demonstrates that veterinary healthcare systems must increasingly consider environmental conditions when developing disease-prevention and treatment strategies.The research highlights the importance of strengthening veterinary disease surveillance, vaccination programs, diagnostic facilities, and preventive healthcare practices. Improved animal housing, adequate ventilation, access to clean water, appropriate nutrition, and effective vector control can help reduce climate-related health risks. Veterinary professionals and livestock farmers should also receive appropriate education about identifying environmental stress and managing animals during extreme weather conditions. These measures can improve animal welfare, reduce economic losses, and strengthen livestock production systems.In conclusion, effective management of climate-related animal health problems requires cooperation between veterinary professionals, researchers, farmers, environmental scientists, and policymakers. The One Health approach provides an important foundation for addressing the interconnected challenges of animal health, human health, and environmental sustainability. Greater investment in scientific research, climate-sensitive surveillance, veterinary infrastructure, and sustainable livestock management is necessary to prepare for future environmental changes.

Journal Of
Society, Technology
And Human Development
VOL 01 | No. 1 | 2026
P-I-SSN: XXXXXXXXXX | E-I-SSN: XXXXXXXXXX

REFERENCES

Arias, P. A., Bellouin, N., Coppola, E., Jones, R. G., Krinner, G., Marotzke, J., ... & Rogelj, J. (2023). Intergovernmental Panel on Climate Change.

Gaddafi, M. S., Saeed, S. I., Eltai, N. O., Lawal, H., Ibrahim, D. D., Musawa, I. A., ... & Yakubu, Y. (2026). Climate change and the global spread of antimicrobial resistance in livestock systems: a comprehensive review. One Health Outlook.

Hassan, L., Alders, R., Cleveland, S., Pfeiffer, D., Walzer, C., Vora, N. M., & Plowright, R. K. (2026). Equitable investment in the veterinary workforce is foundational to One Health and planetary wellbeing. The Lancet Planetary Health, 10(1).

Lavarello-Schettini, A., Lavarello-Schettini, R., Hashim, M., Sikkema, R. S., Tizzani, P., & Rocklöv, J. (2026). Climate change and animal infectious diseases: a systematic review of emerging evidence. The Lancet Planetary Health.

Ward, L. G., Morrison, R. C., Eberhardt, A., Costello, W., & Buzzell, S. G. (2026). New Hampshire Volunteer Beach Profile Monitoring Program (VBPMP) Data Report: Beach Profiles, Sediment Volume, and Mean Elevations (December 2016-2025).