

Impact of Climate Change on Occurrences and Distributions of Animal Diseases and Deaths in Small Holder Farming Systems: An Investigation of Farm-level Experiences

Executive Summary

The livestock sector plays an important role in the total agricultural GDP of Bangladesh. For being one of the most populous countries in the world, the demand for more production of livestock is continuously increasing and will be in the future. Productions of livestock are being affected due to changing of different climate parameters like temperature, rainfall, humidity etc. Climate change has significant effects on the production, disease occurrences and deaths of animals. Keeping those in consideration, this study was conducted to assess the occurrences and distributions of animal diseases and deaths in the changing climate. A mixed-method approach, with multistage sampling techniques were applied to obtain data from the respondents. Both qualitative and quantitative data were collected and analyzed for this study. Meteorological data from 30-year periods were analyzed to assess the trend of changes in temperature and rainfall over time. A total of 420 respondents were interviewed with structured questionnaires. Those who had experiences more than 10 years in dealing and managing animal farms were selected as respondents for this study. 30 key informants were interviewed with a semi-structured questionnaire and a total of 10 focus group discussions were conducted. The data gathered was based on the experiences and observations of the respondents, key informants and focus group members. The study found sharp trends for temperature increase in mean annual, pre-monsoon, monsoon, and post-monsoon season in most of the study locations. In the case of rainfall, there were declining trends for mean annual rainfall in most of the study locations except Patharghata and Dowarabazar, while mean monsoon rainfall was found on a declining trend in all the study locations. However, foot and mouth disease, lumpy skin disease, mastitis, ephemeral fever, bloat and repeat breeding were reported as more frequent in the changing climate compared to five to ten years earlier in cattle farms, while foot and mouth disease, bloat, ectoparasitic infection were reported as more frequent from buffalo farms. On the other hand, bloat, Peste des Petits Ruminants (PPR) and ectoparasitic infection were reported as more frequently occurring diseases compared to five to ten years earlier in goat and sheep farms. Some common symptoms and signs such as

anorexia, diarrhea and pneumonia were reported significantly as more frequent by respondents from cattle, buffalo, goat and sheep farms. It was also claimed by the key informants and respondents from focus group discussion that overall diseases occurrences in animals had increased in recent years. There were some mixed observations found regarding the sudden death of animals. Moreover, very few respondents claimed that the sudden death of animals was increased in their farms. It was also revealed from focus group discussions and key informant interviews that due to vaccination and awareness buildup among the animal farmers, sudden death of animals might have been prevented. However, animal disease occurrence in relation to climate change is a complex phenomenon and it would not be wise attempt to simply generalize the concept because there are many more factors related to this phenomenon. In addition, this study assesses the experiences and observations of the respondents which might have some selection and recall bias. More rigorous studies need to be conducted analyzing time series hospital visit data of animals with respect to the climatic parameters for 30-40 years period.