Integrated assessment on the vulnerability of animal husbandry to snow disasters under climate change in the Qinghai-Tibetan Plateau

Yanqiang Wei, Shijin Wang, Yiping Fang, Zain Nawaz

PII: S0921-8181(17)30120-0
DOI: doi: 10.1016/j.gloplacha.2017.08.017
Reference: GLOBAL 2633

To appear in: *Global and Planetary Change*

Received date: 17 March 2017
Revised date: 12 August 2017
Accepted date: 25 August 2017

Please cite this article as: Yanqiang Wei, Shijin Wang, Yiping Fang, Zain Nawaz , Integrated assessment on the vulnerability of animal husbandry to snow disasters under climate change in the Qinghai-Tibetan Plateau, *Global and Planetary Change* (2017), doi: 10.1016/j.gloplacha.2017.08.017

Integrated assessment on the vulnerability of animal husbandry to snow disasters under climate change in the Qinghai-Tibetan Plateau

Yanqiang Wei[a,b,*], Shijin Wang[b], Yiping Fang[c], Zain Nawaz[a,d]

[a] Key Laboratory of Remote Sensing of Gansu Province, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences, Lanzhou 730000, PR China

[b] State Key Laboratory of Cryospheric Sciences, Northwest Institute of Eco-Environment and Resources, Chinese Academy Sciences, Lanzhou 730000, PR China

[c] Institute of Mountain Hazards and Environment, Chinese Academy of Sciences, Chengdu 610041, PR China

[d] University of Chinese Academy of Sciences, Beijing 100049, PR China

* Corresponding author at:
E-mail: weiyq@lzb.ac.cn; weiyq06@126.com Tel.: +86-931-496-7972

Abstract: Animal husbandry is a dominant and traditional source of livelihood and income in the Qinghai-Tibetan Plateau. The Qinghai-Tibetan Plateau is the third largest snow covered area in China and is one of the main snow disaster regions in the world. It is thus imperative to urgently address the issue of vulnerability of the animal husbandry sector to snow disasters for disaster mitigation and adaptation under growing risk of these disasters as a result of future climate change. However, there is very few literature reported on the vulnerability of animal husbandry in the Qinghai-Tibetan Plateau. This assessment aims at identifying vulnerability of animal husbandry at spatial scale and to identify the reasons for vulnerability for adaptive planning and disaster mitigation. First, historical snow disaster characteristics have been analyzed and used for the spatial weight for vulnerability assessment. Second, indicator-based vulnerability assessment model and indicator system have been established. We combined risk of snow hazard, sensitivity of livestock to disaster, physical exposure to disaster, and community capacity to adapt to snow disaster in an integrated vulnerability index. Lastly, vulnerability of animal husbandry to snow disaster on the Qinghai-Tibetan Plateau has been evaluated. Results indicate that high vulnerabilities are mainly concentrated in the eastern and central plateau and that vulnerability decreases gradually from the east to the west. Due to global warming, the vulnerability trend has eased to some extent during the last few decades. High livestock density exposure to blizzard-prone regions and shortages of livestock barn