

# Lhasa Miyagawa

## Dust and Sand Storms in China, Japan and South Korea: A Transnational Environmental Threat to Human Security

### Topic and Research Question

Rapid industrialization and urbanization since the 1990s led to enormous economic growth in East Asia, but put great strains on the ecological conditions of the region. Due to the geographic proximity and climate contiguity of China, Japan, and South Korea, the East Asian region forms a single ecological community, which makes it especially vulnerable to transnational threats. This thesis focuses on one of the major environmental challenges in the area, on transnational air pollution due to yellow sand storms. The aim of this thesis is to explain why environmental issues are a growing concern to human security and analyze whether or not yellow sand storms are a threat to human security. The research questions are as follows:

**RQ1.** Are yellow sand storms a transnational threat to human security and which of the seven dimensions of the UN human security concept are affected by such yellow sand storms?

**RQ2.** How do the governments of China, Japan and South Korea aim to resolve the issue and are their environmental policies in accordance to human security as defined by the UN?

### State of the Art

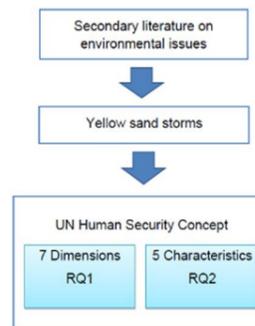
Referring to the East Asian environment and security nexus, a lot of research has been done by analyzing the major environmental challenges in the region (Hyun and Kim 2007; Haque 2001; Lee 2013; Tan 2013). According to R. Arimoto et al., “[...] the last few years of the 20<sup>th</sup> and early part of the 21<sup>st</sup> century may someday be regarded as the “golden age” of dust research” (Arimoto et al. 2006, p. 52).

Dust and sand storms (DSS) are major but still understudied actors in the world’s arid areas. The number of studies and programs has grown over the last decades as the impact of human action on climate, desertification and dust storm activity has become increasingly apparent (Goudie and Middleton 1992; 2006, 2014; Laity 2008; Takemi and Seino 2005, Pye 1987). Researchers have studied yellow sand events in China, Japan and South Korea using meteorological data from weather stations, satellite images and monitoring systems and identified that DSS events have drastically increased in their frequency and graveness over the last decades (Jia and Ku 2016; Jho and Lee 2009; Mori et al. 2003; Sun et al. 2001; Watanabe et al. 2014, Yamamoto 2007).

### Methodology and Approach

An initial analysis of the secondary literature concerning environmental challenges in East Asia identified yellow sand storms as a growing concern in the region.

The research questions are addressed by conducting a comparative analysis of the secondary literature, determining the impacts of yellow sand storms and further examining the reactions and actions taken by the governments involved on the basis of the UN human security concept. In order to examine what kind of insecurities have been created due to yellow sand storms, the seven dimensions of the human security concept are used. To analyze if the governments of the three involved countries are approaching this threat in accordance to the UN human security concept, the five characteristics of the concept are used as indicators.



### Main Facts

Cold air masses from Siberia whip desert sand and soil particles almost every year in spring from Mongolia and China to Northeast Asia, significantly reducing visibility, causing discomfort and in worst cases, forcing businesses, schools and government offices to shut down, damaging economy, tourism and human health (Asahi 2016; Hays 2013a; Shao and Dong 2006).

The potential effects of yellow sand storms have two major outcomes including serious damage to the local ecosystem and human society in the source areas as well as in the affected and surrounded areas, modifying the security threat to a transnational problem. Moreover, it is also an important factor in the global climate system, by effecting the biogeochemical cycle and climate change (Mikami et al. 2006, p. 143; MOE, 2008).

The composition of particulate pollutants change due to addition of local pollutants from urban or industrial emissions along the path of the storms and turn into a mixture of desert sand, arid topsoil and manmade pollutants. Particle size, surface area and chemical composition determine the health risk and these

characteristics vary depending on the geographical locations and the path of the storms (Hong et al. 2009, p. 754).

The political, economic and social diversity of East Asia is a major obstacle for regional approaches to cope with environmental degradation. Bilateral relations are burdened with issues of the past, territorial disputes and the becoming of political and economic rivals in the region. Moreover, economic issues also interfere in environmental politics. Weighing the priority between environmental protection and economic development is still a highly charged political issue worldwide (Drifte 2005).

Nevertheless, Japan and South Korea together with China and Mongolia have established monitoring and early warning networks. In addition, technical and educational steps are being tried, such as reforestation, replanting of degraded land and introducing water-saving and water-management techniques to rural areas. Other measures, such as enforcing laws in China and Mongolia, the two originating source areas in East Asia, to prohibit land reclamation reducing the numbers of smoke-belching factories in the regions require a combination of political and economic solutions that are much tougher to realize. However, long-term solutions to reduce the intensity of the storms are expensive, time-consuming and require a close cooperation among the countries that are affected (Johnston 2008).

### Results

The findings of the first analysis illustrate that the insecurities created by yellow sand storms are mutually linked in domino patterns, easily spread across a given country and thus form a major threat to human well-being. The airborne bacteria within yellow sand particles as well as chemical components picked up during its long-range transport have significant effects on human health, agricultural productivity, and on water and air quality. In addition, environmental impacts are highly discussed as desertification and climate change are the consequences as well as causes of frequent and severe yellow sand events. As the impacts are well interconnected and affect all seven dimensions, clearly, yellow dust is a serious transnational environmental threat to human security.

The concept of human security focuses on a cooperation between various governmental, non-governmental actors, public institutes, and international networks as well as on international organizations.

Despite various obstacles and difficulties, the three countries accomplished to create some cooperation mechanisms to deal with yellow sand on bilateral, trilateral and multilateral level. Nevertheless, the results have been limited, but successful in terms of information sharing, joint monitoring and early warnings systems. For the purpose to fight yellow sand storms and as a consequence, desertification in China and Mongolia, the countries involved need both, stronger unilateral and multilateral actions. Furthermore, to combat such threats transnational solidarity as well as active collaboration has to be more promoted and supported in the region.

The theoretical approach of human security is widely spread in all three countries, even with a slight difference in their interpretation. Different from the theoretical aspect, the practical approaches of human security in all three countries are still in the early stages of development. In practice, human security is mostly implemented in terms of ODA. This is especially the case in Japan and South Korea. Both governments provide financial funding and technical as well as personnel assistance to China and Mongolia, which are reliant upon their bilateral support to mitigate their local yellow sand issue (Drifte 2005).

### References

All references can be found in the full version of the MA thesis available at <http://othes.univie.ac.at>.

### About the Author

Lhasa Miyagawa holds a BA in Japanese Studies from the University of Vienna and spend one year abroad at Osaka University in Japan. Her research interests include transnational security studies, environmental issues and international relations in East Asia.

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