

Summary for Overseas Travel WENDI 2018-2019

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School	GSAIS
Grade	1
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Travel period	2019/2/18-3/19
UN agencies / International organization visited	UN HABITAT、 UNDP and WMO
Theme of overseas travel	Development of a numerical prediction model of debris flow and sediment disaster - and their impact evaluation on civil structure

Outline of the activities (4 pages including photos, figures, etc.)

(1) Global leadership

In a world where globalization and technological advances are advancing, humankind is facing many problems in everyday life that are considered as complex issues, called global issues. Among the various global issues there are climate change, pollution, infectious diseases, lack of education, unemployment, corruption of government, terrorism, natural disasters in which the whole world must solve each of these issues. It is difficult to predict precisely the future risk of such problems, and another difficulty is the lack of precedents. As a result, it is difficult to solve global problems by being associated with several different uncertain results.

This time, visiting various Brazilian institutions, international organizations and universities, the image of global leadership became even clearer. To solve a global problem, it is not enough just to discover common points. Even if it is a common point problem, the point of view of the problem changes with the surrounding environment. In order to solve global problems, I felt that it is essential to learn the differences of thought between cultures and regions of different countries.

To solve complex problems, people usually need to acquire extensive knowledge and understanding of some systems related to the problem. For example, to conduct research on the maintenance and management of structures, the vulnerability of structures to various types of disasters must be considered. In addition, you should combining knowledge about water disasters, which happen in a different way in each country, with various others fields and expertise.

(2) Scientific significance

Brazil is the world's largest producer of sugarcane and a major exporter of its by-products. Bagasse produced during the production of sugar, ethanol, etc. is used in the firing in the boiler to produce energy (Picture 1). However, residues such as bagasse ash may cause environmental problems.

Bagasse ash can be used in concrete to reduce environmental impact. However, in order to use this ash, it is necessary to re-burn the bagasse ash. As a result, the efficiency of the ash manufacturing process to use the ash in structures as material may become non-ecological or sustainable.

In order to reduce costs and make the ash a possible alternative of traditional materials, in which may reduce the extraction from the environment, it is necessary to study the properties of ash and its uses.



Picture 1. Boiler

(3) Originality/Universality

Landslides have become a major issue in recent years. In Brazil, the precipitation has increased especially in urban areas, and the disaster of floods and landslides that occurred in the Serrana Region of Rio de Janeiro in 2011 killed approximately 1,000 people and affected more than 200,000 people. Although there have been no similar disasters since then, key measures to prevent new disasters have not been sufficiently taken, and there is the possibility of additional disaster risks. Also, in Japan, there were more than 200 deaths in July of 2018 due to heavy rainfall in western Japan, making it the worst heavy rainfall disaster since 1989.

During my visit to Brazil I was able to understand the situation of the frequent hydrological disasters in Brazil and South America. For prevention, predict areas of

sediment disaster risk is necessary to avoid loss of new lives. I want to examine the applicability of the low-cost sugarcane bagasse ash, which exists in Japan and Brazil and in many other countries, on disaster prevention structures. So it can be useful in areas of greatest need

(4) Reasons and motivations for visiting UN agencies / International organizations

I was able to visit two UN agencies (Picture 2), UN HABITAT and UNDP. Both institutions focus on sustainable societies. Among several projects, there were projects that linked to natural disasters, so it was possible to investigate these projects, measures and policies of prevention and mitigation of disasters in Brazil.



Picture 2. United Nations Building in Brazil

During the decade from 2005 to 2015, 50.51% of all disasters in Brazil were floods, 31.85% for landslides and slopes (hereinafter referred to as landslides), 4.42% were drought and 13.21% were other disasters. Among these disasters, the proportion of floods disasters is highest, however, in the case of the proportion of deaths from disasters these sequence changes, 62.82% for landslides, 13.48% for floods, 10.04% for drought and 13.66% for other disasters.

Landslide disaster was the deadliest disaster in the last 10 years, and it has been discovered that measures against land disasters have become a problem for Brazil. However, Brazil did not prioritized measures against natural disasters, so there are few projects related to disasters linked to the United Nations actually.