## Threat of Bio-Cultural diversity loss evaluated by international students; Case of traditional Japanese paper (washi) making in Futamata community of Kanazawa City

Aida Mammadova, Kanazawa University, Japan

The Asian Conference on Sustainability, Energy & the Environment 2017 Official Conference Proceedings

#### Abstract

Kanazawa City was designated as UNESCO Creative City in the field of crafts and folk, and the demand to the locally made traditional crafts still remains high in the city. However, after the rapid economical growth, the utilization of the local natural resource for traditional crafts making was reduced due to the introduction of the cheap materials from China. Traditional Japanese paper or Washi, remained one of the important bio-cultural elements that still use the local natural resources for its production and its production is managed in the sustainable manner with less negative impact to the environment.

We have conducted the educational field trips into the local Japanese community named Futamata in Mount Iozen region of Kanazawa City, Ishikawa Prefecture. The region is famous for making washi during the centuries, however due to the depopulation and aging problems now only three craftsmen have remained in the community. The culture faces the threat to be lost with no followers. 20 international students visited the fields and made their evaluations about the bio-cultural linkage, and gave some recommendations for the sustainable traditional crafts making. The outcomes of the field trips showed, that biological and cultural diversity were rich in the region, but, the sustainable practice of washi making cannot survive unless the bottom-up approach of the local authorities for its preservations.

Keywords: Bio-cultural conservation, Sustainable development, Regional education

# iafor

The International Academic Forum www.iafor.org

#### Introduction

Bio-cultural diversity is the term applied to the diverse network between the nature and human culture, that are "inextricably linked" to each other. Urbanized societies have very week perception of this link because of the weak direct dependence on nature. However, the awareness of the link remains strong in the rural communities, who plays key role in maintenance entire social identity (Maffi & Woodley, 2012). It is well known that most of the ecosystems of the cities are obtained from the rural areas, and it will be crucial to consider both areas, for the sustainable development. However, rural areas, are facing the major challenges of the environmental (natural and cultural) loss due to the aging and declining population, environmental changes, economic instability and others. Kanazawa City was chosen as the destination for our research, due to the rich culture of the city which is inextricably linked with the diverse ecosystems of the rural and suburb regions of the city. The population of the city is 450,000 people, and it is mid-size city with rich biological and cultural diversity. Due to its abundant culture, in 2009, the city was designated as a UNESCO Creative City in the field of crafts and folk. Currently city has designated 22 major crafts as representative traditional crafts of Kanazawa City. The city promotes the craft related industries in different angles and increases the craft-related budgets by implementing the cultural policies. Besides, the city develops its economy with preservation its environment (ecology) and ecosystem services, thereby stabilizing its economy with traditional and modern culture. Craftwork and handwork, do not requires the utilization of the fossil fuels, those this traditional culture strongly contributes for the sustainable environmental development of the city.

Futamata is a small town in mountainous area of Kanazawa City. The entire population is 377 people with 122 houses. The town is situated in the junction of two rivers with the small plateaus along the river sides. This natural environment is very suitable for making the paddy rice fields and for fishing, which is still practiced by the locals. Mainly the town is famous for the production of the traditional Japanese paper (*washi*), which is designated as one of the traditional crafts of Kanazawa City. Due to the abundant water flows and favorable natural conditions, the region for the centuries was practicing the paper making and it was named as *Futamata Washi*. Washi making was very demandable by local authorities and by the Buddhist monks for writing the Buddhist scriptures, and for their valuable qualities paper making practice was closely protected by the lord of Kaga feudal clan, Maeda Toshie since 1593. During those days, washi making was practiced in more than 100 houses, and only 10-15 people were making papers only for the lords. However, from the beginning of 20 century, due to the introduction of the western paper, the demand for the production of local Washi making started to decrease, and local people shifted into the agriculture and farming lifestyles (Nishimizu, 1993, in Japanese). After World War II, with the rapid economic growth, the utilization of the local natural resource for traditional crafts making was reduced due to the introduction of the cheap materials from China and many villagers started to leave to the city center for the stable income. Now in Futamata, there are only three washi making artists remained, two of whom are around their 70<sup>th</sup>. The annual production value of washi is 13 million yen. Kanazawa City has added the Futamata Washi to the list of the rare traditional craft, and its products are sold at the Kanazawa Crafts Hirosaka Shop, which is situated at the city center which is the main tourist destinations. Futamata Washi is used in many

traditional arts, calligraphy, woodblock printing, manufacture clothing and household goods.

The traditional paper making has lots of differences from the modern paper manufacturing. Modern companies that produce paper, plant enormous amount of trees which takes more than 10 years to grow (Ates et al., 2008). Moreover, the chemicals used in paper manufacturing also harm the environment when they are released into the water supplies and the land (Pokhrel, 2004). Besides, paper making industry have been changed over time due to technology and mass production. Paper making which was considered as hand-made craft, became automated over the time by using the machines. In contrast, to make Futamata Washi, there is no need to use big threes, but rather shrubs such as paper mulberry brush, kozo (Broussonetia papyrifera), oriental paper brush, mitsumata (Edgeworthia chrysantha) and Japanese shrub, ganpi (Wikstroemia sikokiana) are collected and the paper is crafted by hand (Figure 1). Kozo has long, strong fibers and is the most commonly used fibers for making washi in wide variety of applications, such as table paper, writing paper, shouji paper (Taylor, 2006). Kozo shrubs can be cultivated easily and can be harvested every year, with less time spend for their growth. Each process of washi making performed by hand, without using any chemical or artificial agents, and each parts of the fibers are used without waste (Figure 2 and Figure 3). This kind of paper making makes the process to be very sustainable in terms of time, cost and have less environmental impacts. However, in whole Japan the production of local vegetation's are decreasing rapidly, together with the decreased demand for washi, and no followers.





Figure 1. Kozo (on the left) and Mitsumata (rignt) shrubs growing in front of the house of paper making artist



Figure 2. Dried parts of Kozo



Figure 3. Futamata Washi

In this study we decided to evaluate how sustainable is the washi making process, and why there are so many obstacle for its continuation. International students were chosen to participate in our study, as for many local students the traditional crafts became a common sense, and their ability to evaluate the values and appreciation of it is less, compare to the international students. International students, when they are exposed into the unknown and new environmental conditions or culture, which differ from their own (Aida & Iida, 2016), have shown a big interest and high evaluation skills. International students were asked to find the linkage between biological and cultural diversity and evaluate how this linkage is important for the sustainable development.

## Methodology of the course

During the summer period of the academic year 2016, between the beginning of June and the end of August, intensive teaching activities were carried oud, including inclass and fieldtrips activates organized by Kanazawa University. In total four field trips were carried out, which lasted for one or a half days. The number of the participants were academic 20 students with different study backgrounds. All trips were issue-oriented and guided by the professional local instructors, who gave the descriptions about the Futamata town, crafts that are produced in the city, depopulation problems and environmental issues. Later, students visited the houses of two artist (Artist "S" and Artist "T"), and made the comparative analysis between their practice and lifestyle. At the end, they visited the Hirosaka Shop at the city center of Kanazawa city, where their art are put on sell, and attracted by tourist.

Students were asked to find the elements that make washi making sustainable and consider how paper making can support and sustain the bio-cultural diversity of the community. Students submitted the reports were they indicated more than five sustainable elements and the risk factors that halt the sustainable practice. After each fieldtrip students were given the time to think and analyze, and provide the recommendations for the preservation of the traditional culture. Also, before and after the trips we conducted the survey, to find the students' awareness and knowledge about the bio-cultural linkage. Awareness and knowledge were scored by 1=Very Bad, 2=Bad, 3= Good, 4=Very Good.

#### Results

Before the fieldtrips almost most of the students showed that they had very low level of awareness about the bio-cultural linkage (85%). However, after the fieldtrips 90% replied that they became more aware about the existence of the bio-cultural linkage. Sustainable elements and issues related to the washi making were evaluated by the students. The results of the evaluating are shown in the Table 1.

Sustainable Elements	Issues
- Utilization of local ingredients	- Less demandable
- Less environmental impact	- Low income
- Easily grown fibers	- Time consuming
- Less equipment cost	- No automatization in manufacturing
- No need for advanced technologies	- No followers
- No waste products	- Requires physical labor
- Seasonal Practice (mainly winter)	- Expensive than the usual paper
- Local appreciation and trust	- Less local customers
- Support the traditional culture	- Less opportunities in the foreign
- Utilization in multi purposes	market
- High quality paper	- No daily life utilization
- Sustain the nature	
- More local customers	
- Less utility cost	

Table 1. Student's evaluation of the sustainable practice of washi making and the issues faced with its manufacturing.

90% of students reported that the washi making process is sustainable, however 75% reported that the practice would not last for other several decades. By interweaving the washi making artists, students found that even the Kanazawa City is trying to increase awareness about the importance of washi making by organizing the annual paper making events in Futamata, the annual number of participants are decreasing every year.

Also, students found the big difference between the paper making practice of Artist S and Artist I, which is shown in Table 2.

Table 2.	Comparison	made by stud	dents between	two washi	making artists.
	1	2			U

Artist "S"	Artist "I"
- Age 73 years old, male	- Age 40 years old, female
- Local resident	- Renter of the atelier
- Farming is main income	- Income solely on Paper making
- Practice only in winter	- Produce the paper annually
- Uses natural cold water in winter	- Cold the water with the refrigerators
- Dries the paper naturally outdoor	- Uses the heater to dry the paper
- Produce standard paper	- Produces highly artistic, modern paper
- Supported by family	- Works alone
- Paper is less demandable	- Paper is more demandable
- Owes the land to grow the fiber plants	- Rents the land

For the sustainable continuation of the local craft, students provide the recommendations shown in the Table 3.

Table 3. Recommendations provide by students for the sustainable continuation of washi making

#### Recommendations

- Create the small business with paper making to attract more youth
- Start the international export with Futamata Washi
- Make washi available for the reasonable price to be used in the daily life
- Promote the local market and increase the local demand
- Improve the access for the area, so the volunteers, students can help with the paper making
- Government involvement for the economic support of the artist
- Create more modern innovations
- Increase more Creative and Craft tourism
- Youth education and awareness raising
- Create the Workshops to acquire the new knowledges for improvements of washi making with the collaboration with other prefectures
- Make international exchange

## **Conclusion and Discussions**

Paper making in Futamata have shown that even the practice is very sustainable in terms of production and environmental preservation, it cannot survive if there is no stable income and economic profits. All two artist confirmed that even thought that their paper are sold in the local shops, there is no stable customers and they cannot rely on the firm income. Second, as paper making by hand is highly time consuming process and requires hard labor, less youth are involved in its manufacturing. For the continuation of washi making, it was suggested by the students that the modern techniques must be used to increase the production amount, and reduce the labor work. Big differences of the paper making were found between two artists, which have shown that for the continuation of the practice the demand can be increased according to the modern requirements and innovations. Artist "I", is producing the washi annually and pays the high utility cost and land rent, however, her paper has more artistic qualities and is more demandable in the local market. Whereas the Artist "S", is the local farmer who doesn't rely only on paper making, but uses it as a second income after farming. He produces paper only during winter seasons, which cuts the utility cost, however the paper quality and type are standardized and the demand is less.

Most of the international students showed that Futamata washi making, would not survive during the next few decades, if there is no serious measurements from the side of the government, small local and international business sectors. The loss of Futama washi, will lead to the loss of the regional identity, which was famous for paper making for centuries. After the fieldworks, international students were able to find the linkage of biological and cultural diversity, and see how this linkage is fragile if there is no human interaction. Concrete measurements should be taken to educate and train the successor, by implementing the exchange activities between the other craftsmen and make international collaboration.

## References

Maffi, L., & Woodley, E. (2012). *Biocultural diversity conservation: a global sourcebook*. Routledge.

Kanazawa City, Creative City. (5 May 2017). Traditional Crafts (Online) Retrieved from http://www4.city.kanazawa.lg.jp/data/open/cnt/3/16481/1/Application-Eng.pdf

Nishimizu, A. (1993). 4. 二俣における企業精神. 金沢大学文化人類学研究室調査 実習報告書, 1993, 32-40. (In Japanese)

Ates, S., Ni, Y., Akgul, M., & Tozluoglu, A. (2008). Characterization and evaluation of Paulownia elongota as a raw material for paper production. *African journal of biotechnology*, 7(22).

Pokhrel, D., & Viraraghavan, T. (2004). Treatment of pulp and paper mill wastewater—a review. *Science of the total environment*, *333*(1), 37-58.

Taylor, T. (2006). Papers used in Japanese calligraphy. AICCM bulletin, 30(1), 51-58.

Aida, M., & Iida, Y. (2016). Development of educational fieldwork activities for the International Students: Case of awareness raising in biocultural diversity of Kanazawa City. *Research Bulletin, International Student Center Kanazawa University*, *19*, 88-106.

Contact email: mammadova@staff.kanazawa-u.ac.jp