

ラーニングクラスター2017年  
ハイスクール平和提言

**Sustainable Tourism to Combat Climate Change**  
気候変動を打開するための持続可能な観光のあり方

開発グループ

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「観光」は、旅行時の移動による温室効果ガスの排出などが気候変動を悪化させる原因であると同時に、貴重な観光資源やインフラが気候変動の影響によって大きくダメージを受けています。今こそ持続可能な未来のために私たちの観光の方法を環境に優しいものに変える時代であり、それは私たち高校生という若い世代の人々が率先して行動していくことが大切であると考えました。その上で私たちは2つのリサーチクエスチョンを立て、持続可能な観光を確立させるにはどのような方法を取っていくべきかという点について研究してきました。

1. 気候変動の影響を緩和するために観光業はどのような対策をしていくべきか？
2. それぞれの地域で観光を通して持続可能な開発を進めるために日本の高校生はどのように行動できるか？

このような疑問を解決するため、大きくわけて2つの調査を行いました。まず、関西創価高校の位置する交野市の市役所の方に、環境と観光の側面からお話を伺いました。実際に交野市でも、重要な観光資源である農作物の生育が近年の気候変動によって被害を受けているという報告があるなど、気候変動と観光の相互関係が伺えました。また、自然を生かした観光を進めており、広報に特化した企業と提携して様々なイベントを成功させている一方、鉄道会社や地元警察との協力体制の不足により、環境に優しい交通手段を通じた観光の促進が滞っていることなどを知りました。関西創価高校の2、3年への意識調査では、約8割の生徒が環境保全と観光の両立を目指す「エコツーリズム」について知らず、また、知っている生徒の中でもそれに興味を持っていると答えた生徒は半数を切っていることがわかりました。このことから、私たちは次の3つのことを提案します。まず観光業における各組織の協力体制不足を解消し、観光業から気候変動への影響を緩和するために①定期的に地域社会で観光に関する包括的な会議を開くことを提案します。次に人々の気候変動と観光の関連性に関する意識をあげるため、高校生が主体となって出来る行動として、②ビデオやポスターを作成しオープンキャンパスで来校者へ紹介すること、③シティーウィークを開催することを提案します。この提言の作成にあたり、より一般的な視点で提案を行うため、学校内の意識調査だけでなく一般の方の現状も考慮すべきだったと感じました。また意識調査で本当に回答者が正しい知識を持っているか否か考えることなく行ったため、正確性に欠けている可能性があります。加えて、未だ人々の意識をあげることが必ず行動につながるの確証を得られていないのでその点において更なる調査が必要だったと思います。私たちは行動を起こすことによってこそ世界に変革をもたらすことが可能になると考えています。この提言を読まれた方が少しでもこの問題を改善しようと身近なことから行動を開始されることを願います。

## **Sustainable Tourism to Combat Climate Change**

In today's society, climate change is one of the most highlighted issues because it exacerbates current problems. For instance, climate change leads to conflicts over water and food resources. Also, climate change affects all people wherever they live in. This means that solving this issue would give good effect to everyone. Actually, according to the World Bank, if we would be able to succeed to contribute to improving this issue, the countries and communities would save about 100 billion dollars every year. (The World Bank, 2016) In other words, there will be some big advantages as the results of improving the situation of climate change. Based on this, in our research, we would like to know and find the way to reduce the impact of the climate change.

### **Literature Review**

#### **Sustainable Development Goals (SDGs)**

Number 13 of SDGs or Climate Action is related to our research topic. The goal of this is to take urgent action to tackle climate change and its impacts. The reason why it matters is that climate change gives damages to people and our planet. Especially, the poor, vulnerable and marginalized groups are most affected by climate change. Taking actions towards solving climate change leads more jobs, prosperity, and better lives for all people. People can prevent rising temperature by transforming the resource of energy from current gases to more eco-friendly resource. Also, people need to anticipate, adapt, and become resilient to the current and future impacts of climate change. Now, the world takes the significant first step by adopting Paris agreement through the Climate Action Agenda. The 2014 Climate Summit in New York brought governments, businesses, and civil society together to embark on new initiatives. (UN, Why it Matters Climate Action, n.d.)

### **Definition of Climate Change**

According to the Australian Academy of Science, “climate change is the change in the pattern of weather, and related changes in oceans, land surfaces and ice sheets, occurring over time scales of decades or longer.” (Australian Academy of Science, n.d.) There are mainly two types of factors that cause climate change, which are the natural factors and the artificial factors. The instances of natural factors are changing solar activities and increasing specific microparticles by the volcanic eruption. The artificial factors which are human-related are such as the fossil fuel emissions produced by human activities and deforestation. (Japan Meteorological Agency, Ministry of the Environment and MEXT, March, 2013)

### **Definition of Sustainable Development**

According to the report of United Nations named "Our Common Future", sustainable development is the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (International Institution for Sustainable Development, n.d.) This is based on the idea that environment and development can be reconciled. Thus, it is important to proceed the development considering the environment conservation within reasonable bounds.

### **Categories of Development**

According to Japan International Cooperation Agency (JICA), there are many areas of living conditions that need proper attention. These areas have been affected by climate change. The areas are, among others, sanitation, industry, agriculture, and tourism. Sustainable principles refer to the environmental, economic, and socio-cultural aspects of tourism development, and a sustainable balance must be built among these three dimensions to guarantee their long-term sustainability. Therefore, tourism should make optimal decision on environmental resources that constitutes a key element in tourism development, maintaining essential ecological processes, and helping to conserve natural heritage and biodiversity. Also,

they should respect the socio-natural authenticity of host communities and ensure viable and long-term economic operations. (UNWTO Sustainable Development of Tourism)

### **How tourism contributes to Sustainable Development**

Tourism is in a special position in the contribution to make sustainable development because it is the major economic source of many countries. (UNEP, n.d.) According to 2016 Economic Impact Annual Update Summary, nearly 10% of global GDP in 2015 was from the tourism industry. Also, tourism is an activity which involves relationships among visitors, the industry, the environment, and local community. For instance, tourism has interaction such as selling products and keeping tourism sites. (UNEP, n.d.) In addition, this year is the International Year of Sustainable Tourism for Development decided by the U.N. conference. (UNWTO, n.d.) Thus, tourism is one key element to promote economy and sustainable development.

### **Effects of Climate Change on Tourism**

**Heat wave.** According to the World Meteorology Organization, the heat wave is the condition such as five or more consecutive days in which the average daily maximum temperature is exceeded by at least five degrees. (The wall street journal, 2015) Actually, South Asia, especially India has been affected by heat wave a lot. Mainichi news reported that over 440 people died because of the heat wave until last month. (Mainichi news, 2016) One of the reasons is said that the lack of knowledge. Also, Nature Climate Change reports that even if we can reduce the amount of greenhouse gas emission now, 50 percent of people would be forced to spend at least 20 days under the severe heat waves. (Nikkei National Geographic Japan, July 1, 2017) In addition, heat wave causes many environmental issues. It causes drought and forest fire which give damage to agricultural development. It also causes melting snow, and winter sports industry, which is the significant tourism resource of some region, like skiing, is being

damaged. In this way, not only from the perspective of direct threats but also the damage on related problems, people need to combat this situation urgently.

**Rising sea temperature.** Rising sea temperature is one of the severe effects of climate change on tourism industries. Storms often happen by absorbing heat which is fuel for them from the ocean. However, these are made powerful because of recent rising marine temperature. These stronger storms destroy infrastructures and also tourism resources in Caribbean countries. (McGill University, November, 2016) Also, beautiful coral reefs in Okinawa prefecture where has many tourist sights are being damaged by the warmer ocean and started to be dead called bleaching. (The Japan Times, January 11, 2017) The coral reef is an indicator of marine lives, so bleaching alerts that the marine ecosystem is in a bad situation in the area. The reason why this rising sea temperature happening is global warming, so the best solution is the dramatically rapid emission of greenhouse gas includes carbon dioxide. (NATIONAL GEOGRAPHIC, April 27, 2010) Therefore, rising sea temperature can be called one of the serious problems caused by climate change and it damages precious resources for tourism.

### **Examples of High School Student Contributing to Sustainable Development**

In Bali, a campaign of “ Bye Bye Plastic Bag ” is achieved by Melati and Isabel, 15 years old and 13 years old. In this campaign, they collected one million signatures at the airport to attempt to get the government of Bali on board. As a result, they collected about ten million signatures and could get a statement of government that Bali would be plastic bag free by 2018. (Melati and Isabel Wijzen at TED talk at 2015 September) Also, “ The Ocean Cleanup Array”, collected garbage in the ocean by garbage patches, is suggested by a boy, 16 years old, Boyan Slat. This system is that it takes only ocean current and solar energy to work. Also, it will collect 7,500,000 tons garbage. (Boyan Slat at TED×□Delft at 2012)

## **Research Questions**

Based on the literature review, we created following research questions:

1. What kinds of approaches are needed for tourism industry to mitigate the effects of climate change?
2. How can Japanese high school students take initiative in their communities to promote sustainable development through tourism?

Climate change brings severe effects on tourism sites. For instance, in tourism places that are focusing on winter business, tourism conductor cannot run their ski programs because of lack of snow caused by global warming. In order to cut this negative chain, tourism itself also should take some actions in order to reduce the impact of climate change on tourism. At this point, travel industry would take a big part of helping to improve this issue. If there are some effective actions that they can take, it would be able to improve the climate change and the damage from the climate change.

Tourism is one of the greatest industries which maintains economics and have to be considered to combat climate change, but it has not been addressed by general people, especially young high school students. Tourism is related to characteristics of the community like nature so much. Thus, if high school students can take an initiative from their communities, they could spread the big wave that promotes sustainable development to the world. Based on the belief that the high school students are the most important generation for better future, in our research, concluding part would contain the creative ways that can be done only by high school students.

## **Methodology**

In order to find the necessary approach of the tourism industry to reduce the effects of climate change and the way for high school students to take initiative in their communities to

promote sustainable development through tourism, one survey and one interview were conducted from late October to November.

In late October, the online survey was conducted in Kansai Soka high school to know the awareness of students in our school and improve it by proposing the solutions eventually. The number of respondents is about two hundred and fifty-five students in total. There were mainly three questions. The survey was conducted for following three reasons. The first reason was to see how many people choose eco-friendly transportation such as trains. The second reason was to see how many people were interested in ecotourism which is defined as responsible travel to natural areas that conserves the environment, sustains the well-being of local people, and involves interpretation and education. The third reason was to examine if current ecotourism industry can attract high school students' attentions or not, this result will help to find a more effective strategy for tourism to stop climate change. Most of the students would answer the choice of car that is regarded as an environmentally unfriendly transportation and they would not know about ecotourism so much.

On November 6th, a direct interview was conducted with staff members of regional development faculty and environmental health faculty of Katano city at the city hall. The interviewee was asked about the situation of tourism and climate change around them in Katano city. This interview was conducted to find the ideal role of the tourism industry to promote sustainable development. This local-roots research results would suggest the practical way to contribute solving an issue in reality. The online survey and the interview were conducted in Japanese, and the questions are listed in Appendix.

### **Results**

The interview and the survey provided insightful answers to the research questions about the improvements of the tourism industry and the things high school students can do against the climate change.

### **Katano City Interview**

Three interviewees answered that they have felt the impact of climate change on their tourism recently. There are many visitors who enjoy visiting nature sight such as waterfall and climbing the mountain in Katano city. However, due to the sudden heavy rainfall which increases recently, nature has been damaged. For example, the trees and soil are not capable of bearing against the sudden heavy rain, whose incidence is boosting and cause fallen tree. This prevents visitors from enjoying nature. Also, the agriculture, which supports the tourism industry of Katano city by such as making local famous products, are being affected a lot as well. Recently, due to the increasing temperature, the amount of crop is decreasing. Lack of these fruits gives an effect on the fruit picking industry, which is one of the popular things that many visitors can experience and enjoy. In the worst case, some farmers give up and retire from engaging agriculture. In addition, some indigenous products which are recognized as a “Katano brand” are affected.

The interviewees said that the eco-tourism, which defined as the “responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education,” according to the International Ecotourism Society, is necessary for them to development because the rich nature attracts visitors and encourage them to live in Katano city eventually.

They also answered that they had several tourism campaigns in Katano that collaborated with a travel agency. For example, Katano Noasobi Daisakusen [an outdoor event for citizens to enjoy nature in Katano], collaborating with T-travel, received a favorable reputation from participants, especially family. T-travel is excel at advertising, and they were able to choose the target and send information to particular generation appropriately.

They also said that their activities did not focus on “eco-tourism” at first, but it came to be “eco-tourism” as a result of their activities which make use of beautiful natures and develop

their town environmentally friendly in Katano city. However, young people such as high school students have not participated in the activities and only elderly people have sustained developments in Katano. They hoped high school students to join local activities which are related to eco-friendly development of tourism industries with thoughts and ideas unique to only high school students.

Interviewees also answered about transportation people use in travel. The interviewees were trying to increase people who use a bicycle. For example, Katano city was thinking to promote Ekirinkun [service to lend bicycle for many people near the station]. However, many problems such as difficult to coordinate with police from the legal perspective and residents and they have to consider about the way to involve tourists who come from far away occurred.

### **School Survey**

There were 255 responds to the online survey we conducted aiming to investigate the awareness regarding the eco-friendly way to travel and the relationship between climate change and tourism.

As for the question one, when respondents travel inside their geographical division that the Ministry of Land, Infrastructure, Transport, and Tourism divide Japan into 10, sixty percent of them answered that they often use car and thirty-two percent of them answered that they often use train. As a minority, two percent of them answered often use Shinkansen, other two percent chose bus and the remaining four percent answered that they often use other transportation.

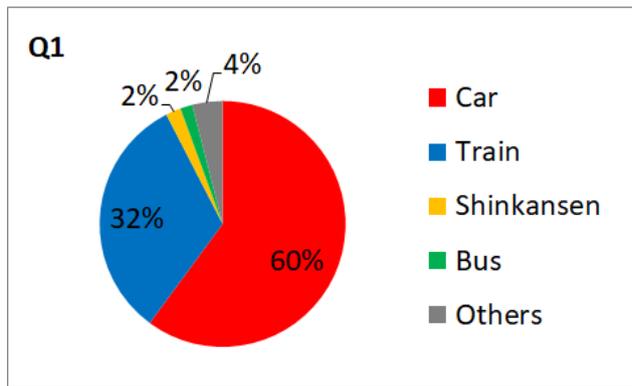


Figure 1. Responses to Question 1.

For the second question, forty-seven percent of respondents answered they use cars to travel outside their geographical division. Twenty-six percent of them answered they use Shinkansen most, and thirteen percent of them use plane. The rest of responders, fourteen percent, answered they use other transportation systems such as bus.

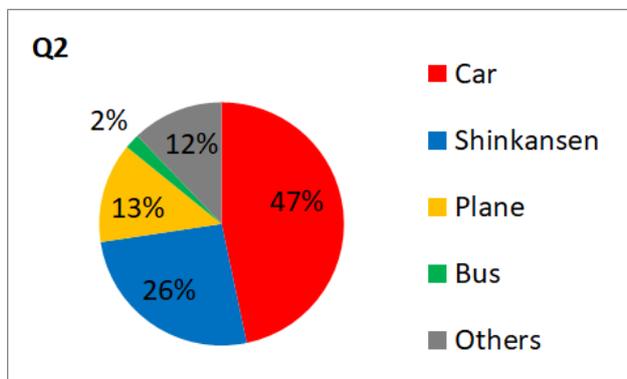


Figure 2. Responses to Question 2.

Regarding the “eco-tourism,” the responses of question three showed that only twenty percent of students know about the “eco-tourism”. Among those who knew the eco-tourism, the extra question three reveals that forty-seven percent were interested in it. In other words, as a whole, about nine percent of students knew the eco-tourism and were interested in it.

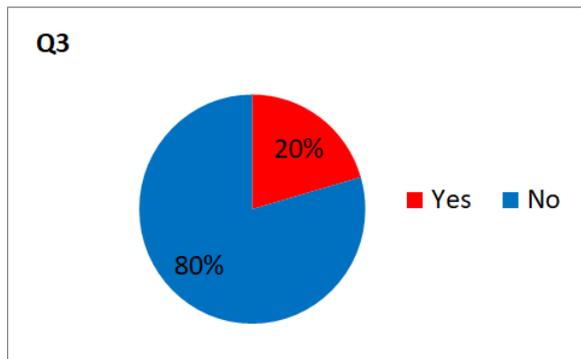


Figure 3. Responses to Question 3.

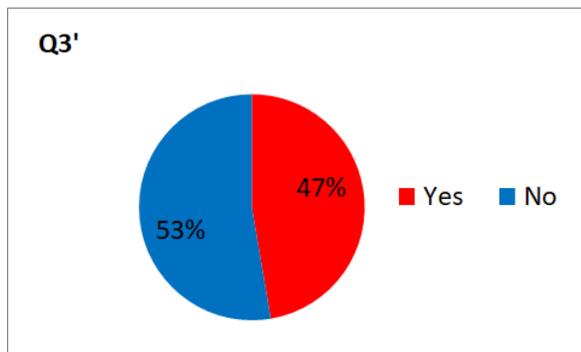


Figure 4. Responses to Question 3.

As for the last question, the fourth, twenty-four of respondents answered they knew a relationship between climate change and tourism and rest of them answered they did not know about that. Sixty-one respondents out of those who answered they knew the relationship showed some examples of what they know about it. Many of them knew effects of climate change on tourism such as heavy rain and acidic rain had caused destroying natural sightseeing places and the season people can enjoy seeing red and yellow leaves had been changed by dramatic change of air temperatures. In the other hand, only small number of people knew causes of climate change from tourism that the gases emit from private cars causes global warming.

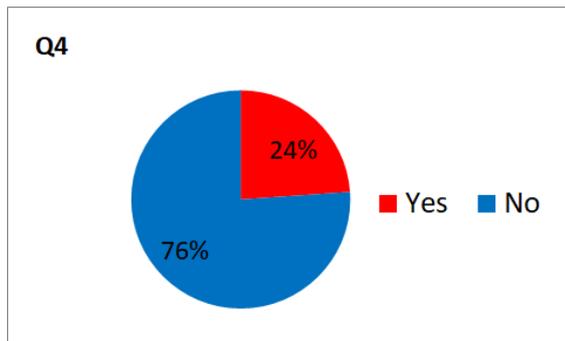


Figure 4. Responses to Question 4.

### Discussion

The literature review and research surveys results suggested the importance of creating a network among society and enhancing the awareness which is capable of stimulating people to take action.

According to the interview with Katano city, interviewees said that problems caused by lack of association with other local organization were triggered. For example, Katano city attempted to make a new road that is only for bicycle users and conduct a tour guide using bicycles for eco-tourism. However, it did not work well because of difficulty of getting permission from the police, company of administration of roads, much expenditure, and so on.

According to school survey, eighty percent of respondents do not know the eco-tourism, and fifty-three percent of those who know are not interested in it. This result implies that many people do not know the action to tackle the impact of climate change, and even worse, people who know are not interested in it so much. Therefore, it is important to raise awareness towards the effect of climate change and motivate people those who have the knowledge to take the actions to reduce the effect of climate change.

## **Proposal**

Based on this research and discussion, two proposals are made to combat climate change on tourism.

First, in order to promote sustainable development in terms of tourism, holding a forum in each local community was proposed. In this forum, representatives of each section which is related to developments of local tourism such as citizens, public offices, police stations and enterprises will be invited. The forum is held periodically and it starts with exchanging opinions among attendants. As a next step, they discuss what kinds of actions they can conduct in their local community, confirm requirements for the actions, and decide a project for sustainable tourism. After finishing the project, it is necessary for the next project to review conducted project. Holding this forum would establish an inclusive cooperation system which can forward a project more smoothly and support sustainable local tourism which can contribute to reducing causes of climate change.

In addition, based on this discussion, we would like to approach the current situation from two aspects. First, we propose utilizing the opportunity of open campus aiming to provide the knowledge about the situation of tourism related to the climate change to people those who do not know such information. Students will learn the problems at first, and create and show short movie and poster to tell how climate change has given the impact on tourism so that we can raise the awareness of visitors including those who have less knowledge. Secondly, in order to stimulate people to take action, we would like to propose high school students to host a city week festival and conduct some campaigns. There are four campaigns we propose. The first one is that, in order to deepen the knowledge about the situation, students can hold workshops inviting some experts who are specialized in tourism and climate change. The second idea is that students can cooperate with local farmers and sell some meals which use local products to visitors in order to convey that those products are being affected by climate

change. The third campaign is the photo contest. During the week, students can call participants to take pictures of the local community and upload them on the SNS with the message towards the preservation of precious nature. Then, they can call for SNS users to vote the best photo they think. Through this activity, students and participants involve other people in thinking the problem. Lastly, we suggest conducting tour led by high school students. Students who learn the history of the nature from local professional guide will conduct it. They can learn and enables visitors to feel the situation for real.

### **Limitations**

First, more research is needed relating to the tourism situation in Katano city. Katano city staffs taught us the another organization named Katano Tourist Association which promotes tourism in the city. However, due to the time limitation, we could not make an opportunity to interview them. As the contributive tourism organization, this association should have be researched more by us.

Secondly, more research is needed on the online survey we did. We initially planned to conduct the survey targeting not only this high school students but the visitors of open campus of this school including people from other school students to adults. However, we could not do so because open campus was canceled. To get more generalize data regarding the awareness towards the climate change and sustainable tourism, more research is needed targeting other people.

In addition, the contents of school survey should have been more considered on transportation choice that answers could select and have been added explanation on tourism before students answered our survey. We had to take into account of the people who utilize several transportation system for once travel such as those who use trains and cars. Also, we might have got inaccurate data. Even if students did have incorrect knowledge on tourism

indeed and answered as if they know correct information, we did not enough research to confirm if their understanding is appropriate.

Besides, the proposals especially the second one should be considered more on their reality. It is still unclear whether raising awareness of participants really contributes to the involvement of other people. Further research is needed to judge if these ways are effective to motivate people to take action for real against climate change. In addition,

### **Conclusion**

The climate change is one of the biggest modern problems which has given many kinds of impacts on people around the world. As our research shows, tourism industry also being affected by climate change. This research assumes that we can reduce the impact of climate change on tourism by creating networks and raising awareness which is capable of stimulating people to take actions. Specifically, holding a forum in the local community will help people to have better opportunity to share the situation with the community and cooperate to reduce the damage of climate change in terms of tourism effectively. Also, to prevail the knowledge utilizing the opportunity of open campus and to hold the city week festival by high school students will promote sustainable tourism for the coming future. We believe that the accumulation of these local actions will lead larger cooperation, and compel reducing the damage of climate change on tourism.

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## COMBAT CLIMATE CHANGE

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Appendix A

**Interview to Katano City Staff**

1. How do you involve your local community / local high school students in environmental tourism? When you do so, are there any thing you consider?
2. What do you want high school students to do for promoting eco-tourism through volunteer activity?
3. Nowadays, many people use cars for travel. Do you have ideas how people change transportation car to eco-friendly transportation?
4. Have you felt the effect of climate change on tourist sights? If so, how have you tackled with that situation? and are there any thing that high school students can contribute for moderating it?
5. How are you promoting eco-friendly tourism? and why do you think such types of tourism is important?
6. Have you ever conducted some tourism campaigns that collaborated with travel agency in Katano? Was it effective? What do you think is the effective way to advertise the eco-tourism to be recognized by more people?

Appendix B

**Questionnaire to Kansai Soka High School Students**

1. Which transportation system do you use to travel inside your geographical division?
  - a. Choices are car, train, shinkansen, bus, bicycle, plane, and ship
2. Which transportation system do you use to travel outside your geographical division?
  - a. Choices are car, train, shinkansen, bus, bicycle, plane, and ship
3. Do you know what is “ecotourism”?
  - a. If so, are you interested in it?
2. Did you know that there is a relationship between climate change and tourism?
  - a. If so, could you give some example?