

Carbon Neutrality and Society

1. Motivation behind Research Paper

Do you want to experience the end of the world? When we did research about the arctic ocean, I realised one thing. The melting of arctic ice is due to our environmental emissions. Consequently, not only animals in the arctic, but many lives on earth are affected. Therefore, we shouldn't think those problems are not our business, we have to put in effort to decrease the environmental emissions as much as we can. In addition we also wondered about the goals that were set by the government, which aims to have a 46% decrease in the emission of greenhouse gases by 2030. In addition, by 2035, all of the new cars should be electric vehicles. Is it a really good idea to change to the latest technology like electric vehicles to decrease carbon dioxide emissions? What can we do to prevent our planet from greenhouse gases as senior high school students? In this research paper, we are focusing on answering these two questions from the perspective of high school students.

2. Introduction

To answer these questions, we collected data through research papers which were published on the Internet. According to the investigation of the Electricity Statistics Survey in Japan which was done by The Institute for Sustainable Energy Policies (ISEP), 78.1% of Japanese electricity comes from non-renewable sources.

In addition, the Volvo company found that electric cars emitted about double the amount of carbon dioxide as conventional vehicles during the production process. We believed that shifting to electric vehicles was not the best way to solve the problems. Therefore, we researched alternative sources of energy, specifically hydrogen, which is claimed to be an efficient and good way to make a carbon neutral society. Specifically, we focused on the Japanese government's formulation of the world's first "Basic Hydrogen Strategy" in 2017. According to the agency of "The New Energy Foundation", there are three types of hydrogen. The first one is blue hydrogen which is produced using fossil fuels and captures and uses emitted carbon dioxide underground. The second one is grey hydrogen which is produced by fossil fuels and collects the emitted carbon dioxide and stores them underground. The third one is green hydrogen which is produced by water electrolysis and they don't emit carbon dioxide, however it costs a lot. Electric vehicles and hydrogen energy are problems that are too big to approach as high school students, consequently we decided to approach this problem from different perspectives.

3. Results and Analysis

As highschool students, we decided to take a different approach in spreading the benefits of park and ride, one of the ways to change interaction between vehicles and humans. Specifically, it is a system where you park your car at a bus or train station along the way to your destination and take public transport the rest of the way.

Therefore, we gave presentations about the benefits of park and ride to the parents in our community, and we asked them to fill in the survey about what we can

improve. In addition, we ask public transportation companies to display the posters that we made to spread the benefits of the use of public transportation.

Firstly, a presentation for parents in the community. We presented why we are doing this exploration, what are the benefits of using public transportation. In our presentation, we shared the current situation of park and ride in Nara city. There are three parking areas in Nara city, however, there is still heavy traffic in the central area of Nara park during Golden Week. Therefore, I suggested the idea of a proposal of the circumstances in Nara and asked them whether they did know about the park and ride or not, what can we improve. The survey was conducted in Google Forms anonymously, and 47 parents answered.

Next, we are going to focus on the results of the survey. The first question, "Did you know about park-and-ride before?" 59.6% of the participants responded yes. and the rest of 40.4% answered they didn't know about it. In other words, more than half of the participants did know about the park-and-ride. The second question was "Have you ever used park-and-ride before?" 12 out of 31 people have used it before. Therefore, the percentage of the people who used the system before was less than 40%.

Then, the third question was "Do you want to use park-and-ride after our presentation?" and 40 people responded to it. 31 out of 40, 77.5% of people answered they wanted to use park-and-ride. Especially people who respond they don't want to use it, we asked why they didn't want to use it. Here are some of their responses; "Because it feels like a hassle to use a car and public transportation" "If we think about our luggages and costs, It is way more convenient and cheaper to commute by cars than public transportation" These are against the park-and-ride system itself. On the other hand, there is an opinion about prefectural

administration's advertising. "Information dissemination by the Nara Prefecture administration is not at all widespread." Also, 38% of them answered the question: "If you were to use a park-and-ride, what services or systems would you be willing to use?" Here are some examples: "I would like to have a system that shows the parking availability information and a system for reserving parking spaces." "I want to be able to park my car without paying any fees." "It would be great if there are some attractions in the parking area like souvenir shops or foot-baths' ' ; those three indicate that there are some improvements for users' experience in park-and-ride. Also, some of them replied like this: "I would like to have coupons that can be used in the shops in Nara." "I would like to have access to a phone application that can provide information about touring in Japan." "The number of buses in Nara is not enough to use public transportation comfortably." Those three show the problems in tourist experience in Nara, not only systems of the park-and-ride. Consequently, we could realise that information dissemination by Nara prefecture is not enough to spread the idea and benefits of park-and-ride and even some people do not know what park-and-ride is. Therefore, park-and-ride is not considered as a practical means of transportation.

Secondly, we contacted Nara prefecture and Kintetsu railway. We asked Nara prefecture, "What can we do to make park and ride more active and create a carbon neutralised society in Nara?" They replied that it is a very important thing to spread the idea and benefits of park and ride through services like social media. Therefore, we decided to create posters and ask transportation companies to display them. After we made posters about the benefits of using the transportation system, we asked Kintetsu railway to display them. However, they answered that even though

posters are about benefits of using public transportation, they cannot display them without any fees.

4. Conclusion and Future Problems

In this exploration and writing, we focused on answering two questions: Is it a really good idea to change to the latest technology like electric vehicles to decrease carbon dioxide emissions? What can we do to prevent our planet from greenhouse gases as senior high school students? We actively took actions to solve these problems.

The first question is, is it really a good idea to change to the latest technology like electric vehicles to decrease carbon dioxide emissions? As I mentioned before, we realized that electric vehicles and hydrogen energy have several problems about environmental influences, therefore we think those technologies should not be considered as solutions for environmental problems. As an answer for the second question, what can we do to prevent our planet from greenhouse gases as senior high school students? Considering the results from the presentation and emails from Nara prefecture, as high school students, it is effective to take actions to change people's awareness.

5. Reflection

Through this exploration, my group and I learned the importance of thinking critically about solutions that are believed to be good solutions for environmental issues. Also, not only problems about carbon neutrality, we have become more aware of the issues that are happening in the world. From now on, I want to live more environmentally friendly and actively take actions to solve many environmental and social problems around the world.

6. Work Cited

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