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Pathways to Net Zero 2050: A Trifold Vision Through Success

INTRODUCTION

Climate change is one of the most prominent issues persisting in our current world. Not only does it directly affect our daily lives, but it also poses a major threat to the future of our planet. As generations progress on, it is imperative that each of us provide some effort in combating the immediate and future threats presented by climate change. If our parents' generation fired a signal through the Paris Climate Agreement in 2016 as a joint response to climate change, it is our turn, as middle and high schoolers, to declare and support a healthy global ecosystem through the achievement of the Net Zero goal by 2050.

With a common goal of achieving net zero, respective governments, international organizations, environmental groups, politicians, and businessmen around the world are deriving plans to contribute in favor of achieving the 2050 Net Zero goal. But as a high school student, rather than exploring and analyzing the broad spectrum of international solutions, global environmental protection efforts, and individual government plans, I thought it would be more significant to introduce and explain the success stories of achieving Net Zero in the community in which I belong. I'm focused on specific solutions in my own communities, such as incorporating environmental education in schools and facilitating environmentally clean school facilities. My belief is that these solutions can instill hope and create a butterfly effect with other institutions, combining to reach the common goal of Net Zero 2050.

UNLOCKING THE POWER OF EDUCATION

Young environmental guard-Reflecting on my experience in China

Ironically, for me, the background of an ordinary American high school student calling himself an "environmental guard" stems from his childhood experience living in China. Living in Beijing, I was

acquainted with the yellow dust that covered the city every spring. Yellow dust, analogous to sandstorms, shrouded the city in an unhealthy veil of gray almost every day. These problems, exacerbated by the growing environmental hazards around the country, prompted my father to travel to Mongolia and Western China on behalf of his company, donating “solar power systems” to prevent desertification, as well as to sponsor a tree planting campaign. These activities were introduced as the world’s first corporate campaign utilizing solar energy to prevent desertification at the 2011 United Nations Convention to Combat Desertification (UNCCD) event. Because of these factors, even as an elementary school student I was familiar with words such as “yellow dust,” “desertification,” “solar power,” and “tree planting.” Even after departing China, I continued to pursue my interests in environmental issues throughout elementary, middle, and high school such as publishing articles on environmental issues in the school’s science magazine. Surprisingly, I’m not the only one to have such interests in environmental and climate changes. Many of my American friends also have similar concerns and interests in the field. However, it is quite unfortunate that even in the United States, a country known for its advanced efforts in environmental fields, there are not as many opportunities to systematically learn and discuss environmental issues at school.

The reality and challenges of environmental education in US

According to a 2020 survey, 39% of students believe that climate change is the most pressing issue facing the world today and 97% of students want to be taught about climate change and other global issues in School.¹ Another recent poll found 84% of parents in the U.S. support the teaching of climate change. But in practice, it's more complicated. More than half (55%) of teachers said they do not cover climate change in their own classrooms or even talk to their students about it.²

¹ Source: Cambridge International Global Perspectives survey of 11,000 students aged 13 to 19, released March 03, 2020

(<https://www.cambridgeinternational.org/news/news-details/view/new-survey-reveals-39-percent-of-us-students-beli-eve-climate-change-the-most-pressing-issue-facing-the-world-today-20200303/>)

² Source: NPR/Ipsos polls of 1,007 U.S. adults conducted March 21-22 and 505 teachers conducted March 21-29. 2019(<https://www.npr.org/2019/04/22/714262267/most-teachers-dont-teach-climate-change-4-in-5-parents-wish-the-y-did>)

The most common reason given? Nearly two-thirds (65%) said it's outside of their subject area. 17% say they don't have the materials, 17% also say they don't know enough about the subject to teach it. 4% say their school does not allow the subject to be taught.

Although the need for education on climate change is prominent, the reality is that the software and hardware infrastructure required to pursue this is extremely limited. This troubling reality not only exists in the United States, but also in Korea and China. Given this reality, in my view, the best way to mend the gap between reality and ideals to induce effective education is to actively expand the implementation of 'Making School Net Zero'³

Recently, I came across a successful case of this Net Zero achievement in my own community, one which I believe is valuable to share.

Success story of Net Zero School: Lady Bird Johnson Middle School

Recently, after hearing that a school only 10 minutes from my house had succeeded in achieving Net Zero, I visited it in person. As I approached the school, the first sight that caught my eye were the countless wind turbines spinning in the wind. The school, which looked futuristic and resembled a streamlined spaceship, was covered in solar panels all along the outside walls of the facility. This school was Lady Bird Johnson Middle School.

Lady Bird Johnson Middle School opened in 2011. At the time of its opening, many boasted the school as the nation's first net zero school. The middle school achieved net zero with a combination of technologies designed to produce the same amount of energy the school uses, such as photovoltaic panels (also known as solar panels), wind turbines, and geothermal HVAC technology.

Starting off with the photovoltaic panels, the school owns almost 3000 panels, installed on the roof of the school, producing a combined energy covering 99% of the school's total energy usage. The other 1% is covered by the school's dozen wind turbines located in line on the west side of campus.

³ Net Zero means that a building produces as much energy as it consumes from the power grid over a one-year period.

In addition to these many components, the middle school has continued to take initiative in including environmental education as part of its core curriculum, teaching students about the importance of renewable energy and reusable resources. Many in-school activities, such as laboratories, projects, and other involvements are based on environmental aspects that cultivate the students' insights on environmental challenges and solutions.

The facility has continued to set a national and global example with its net zero accomplishments that have not only helped the school save additional costs on operation and maintenance, but also promoted the interests of tackling environmental issues by building more facilities like it.



(Photo: Lady Bird Johnson Middle School, shot taken by myself on May 31, 2022)

MY CLIMATE ACTION PLAN

Through the case of Lady Bird Johnson Middle School that I personally encountered, my leadership can be explained three ways.

Net Zero School publicity and expansion campaign

In my campaign, I would like to propose specific strategic goals so that schools can contribute to sustainable development as a stage for interactive education as well as to realize the effects of cost reduction. The main contents of the campaign I want to develop in earnest are as follows. First, by 2050, all 120,000 school buildings in the United States will be converted to net zero buildings. This will save at least \$6 billion in energy costs every year and reduce carbon emissions by 37%.⁴ Second, about 480,000 school buses will also be replaced with electric vehicles by 2050, reducing greenhouse gas emissions by 5.3 million tons per year, and creating an effect saving \$170,000 in maintenance costs over the life of each bus. In particular, it emphasizes that the conversion to electric vehicles is not an option, but a necessity in the sense that the pollution caused by these buses diffuse out up to 10 times the surrounding areas, posing a critical threat to the health of students.⁵ Third, it is necessary to improve the school lunch operation method, which generates 530,000 tons of food waste every year.⁶ Measures such as operating food donation programs, using school garden compost, suspending the use of disposable plastic products should be fully implemented. Introducing these solutions in line with my campaign requires the steady incorporation of social media platforms, as social media itself is an effective platform for communicating climate change. Social media is powerful in uniting people based on ideals, and environmental activism is a prominent issue already bringing many people together. Using this as a basis, I can utilize different

⁴ Environmental and Energy Study Institute (EESI), “Building and Built Infrastructure,” <https://www.eesi.org/topics/built-infrastructure/description#:~:text=Any%20successful%20climate%20protection%20strategy,of%20U.S.%20carbon%20dioxide%20emissions>.

⁵ “A recent survey from the American Lung Association found that 68 percent of American support Congress’ investing bill in zero-emission school buses nationwide” (Source: Global Strategy Group (GSG)’ online survey of 1,005 registered voters nationwide between July 1st and July 8th, 2021, <https://www.lung.org/getmedia/88078daa-3fea-4f0a-a70d-f3650fad291f/ala-ze-school-buses-memo-f07-14-21-final.pdf>)

⁶ World Wildlife Fund, “Food Waste Warriors: A Deep Dive Into Food Waste in Schools,” 2019, https://c402277.ssl.cf1.rackcdn.com/publications/1271/files/original/FoodWasteWarriorR_CS_121819.pdf?1576689275

platforms such as Twitter, YouTube, or Instagram to help extend my campaign to the attention of policy makers, school administrators, and other environmental activists capable of advocating these changes.

Implementing environmental studies into the national school curriculum

There was a case in which the Korean language became an official curriculum in 2020 as an anthology in California was approved as an official subject. As in this case, the subject of environmental studies should be made an essential high school curriculum. Currently, the only Advanced Placement (AP) course related to the environment offered is AP Environmental Science course. Only interested students take it, but most students do not. A local effort to make the subject of environmental studies a required subject is addressing the necessities for the ISD (Independence School District). With over 1250 ISDs across Texas, it's well established with networking and exchanging opinions. I plan to discuss the request for required course selection with the ISD through email and letter. Also I plan to petition for the designation of environmental studies as a required subject. At first, I will start with www.change.org to see if it arouses interest, and if so, I would like to file a petition to the White House. If I get 100,000 signatures in 30 days, I can get an official update from the White House within 60 days. Even if it takes a long time, the most important and essential practice to achieve Net Zero 2050 after 30 years is to make an effort to have an accurate understanding of the environment change we are facing.

Young environmental ambassador

I currently attend a private high school—and last year, the association of private and international schools around the world started to discuss diversity through video calls. This opportunity led to the establishment of the first Inclusion and Diversity Leadership Council (IDLC) in our school, a heavily conservative institution with a history of more than 100 years. For the first year now, we have been helping understand each other by sharing opinions on ethnical, cultural, and racial diversity issues and organizing various events. One way to gather opinions about diversity in schools is to elect representatives and share opinions with students representing racial diversity. We need to know what the

environmental issues that schools in each country actually deal with, so that we can check each other's interests and determine the directions we will take for Net Zero 2050 in school. Like the UN General Assembly, student ambassadors on environmental changes from each country go out to present the real situation of each school and appeal to international interests. I think it would be good to propose the creation of a global environmental-based student ambassador forum through the student council of relatively well-organized schools, share opinions through video calls like Zoom, report cases, and make annual reports. If we get such an opportunity through an influential, international NGO such as the Ban Ki Moon Foundation, I think it will serve as a valuable connection to share these environmental issues and put them into practice.

CONCLUSION

As climate change continues to pose a threat to the global health scene, it is imperative that education also follows the growing concerns of the effects. As generations progress on, it is crucial that children and youth continue to thrive upon the knowledge and skills to combat these challenges, so that a better, more sustainable world can be created. However, these assets can only be obtained through the continued development and utilization of curriculum based on environmental challenges.

As schools start transitioning to better models and practices in regards to facilities, transportation, supplies, and food, they can create open opportunities for students to experience, first hand, the types of solutions that can lead to better sustainability. These activities can help students take on a more practical approach to dealing with climate challenges, leading to a better educated younger generation that can feed off of better school infrastructure and other improvements to prepare the future society for decarbonization.

In advocating for these models and expanding the scope of change, my leadership is imperative in its own ways. Through my social media campaign, efforts to improve the school curriculum, and ambition to create an international environmental ambassador forum, I hope to expand the possibility of climate

solutions to a broader audience of other interested 'environmental guards' willing to work hand in hand to make Net Zero 2050 a reality.