Study Abroad: Sustainability in New Zealand
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Introduction
I attended a three-week winter study abroad program to New Zealand that focused on the study of environmental sustainable programs that are being implemented. We traveled throughout New Zealand's diverse ecosystems and learned about New Zealand's unique forms of energy and conservation programs. We traveled to:

- Auckland
- Rangitoto Island
- Taupo
- Blue Duck Lodge
- Kapiti Island
- Te Apiti Wind Farm
- Wellington
- Abel Tasman National Park
- Franz Josef
- Te Anau
- Milford Sound
- Queenstown

Reflection
This course has inspired me to seek a career that incorporates sustainability. After visiting the Te Apiti Wind Farm and the Viaduct Harbor I became inspired to seek a future career in renewable energy or green infrastructure design. New Zealand's environment was so different from anything I had ever seen before. The experience opened my eyes to be more conscious of the environment around me. I also have become more aware of what I can do to help the environment and live more sustainably. Since returning from New Zealand I have begun to minor in Sustainability Studies and have also become the sustainability chair of my industry. I hope to travel to more parts of the world and to explore each of their unique environments. Traveling to New Zealand helped me to discover more about what I am interested in studying and I hope to return in the future.

Sustainable Design
In New Zealand we learned about the various sustainable technology and design implemented around the country. We visited:

- Te Apiti Wind Farm- Learned about the types of wind turbines located in the wind farm. The wind turbines convert the energy of wind into mechanical energy that can be used as power. This is a renewable energy source that makes up about 5% of New Zealand's electricity. The energy from the wind turbines gets combined with other forms of energy in a main grid.
- Wairakei Geothermal Power Plant – This is the first geothermal power station to generate from both steam and water. Wairakei provides New Zealand with renewable and reliable energy. We visited the Huka Falls to see an example of the extent of the power provided by one of New Zealand's powerful waterfalls in the region.
- Viaduct Harbor, Auckland- We explored the storm water management and the urban planning of this port. We learned about the newly installed rain gardens with native trees, swamps to naturally treat the run-off, Hasley street design with a low impact storm water design strategy that treats storm water run-off, and streets designed for pedestrian priority to promote walking instead of driving.

Conservation
One of New Zealand's most difficult problems is conservation of their native plants and animals. New Zealand is unique in that it is one of the only countries where its nature still highly resembles that of its past. The New Zealand government is working with environmental groups to conserve the native species of the land. We were fortunate to visit Kapiti Island where we got to hike, explore, and bird watch. Kapiti Island is a sanctuary for native New Zealand birds, wildlife, and forest. A restricted number of people are allowed to tour Kapiti Island in accordance with conservation. The Island became “pest free” in 1997 and has stayed that way ever since. We also went to Blue Duck Lodge where we learned about their conservation efforts to trap pests in order to save the native Blue Duck. We had a group discussion with the owner of Blue Duck Lodge to learn his mission and its importance. New Zealand is very different from other countries because in order to conserve their native species, they must hunt predator animals like stouts, rabbits, and hogs. We learned how to set traps and how to hunt predators.

Education
An important part of improving sustainability in a region is education. Citizens have to be informed of environmental problems, the importance of solving the problems, and the solutions in place already. In Auckland, we visited the Botanical Gardens and there was an entire garden titled “Kids Garden” that is dedicated to educate children on New Zealand's native plants and sustainability. There are signs everywhere explaining sustainable designs like green roofs, infiltration trenches, sediment forebays, and much more. This garden is an interactive way to get children interested and excited about sustainability. Also, at the Viaduct Harbor in Auckland we saw a playground that had been newly built in the theme of the sea. This playground is a way to connect children with their surrounding environment and to learn about the importance of sustainability.

History of New Zealand’s Unique Environment
The country’s unique isolation from the rest of the world can be understood by studying plate tectonic theory and synthesis of the earth sciences. New Zealand was originally a part of the southern super continent Gondwana, which included all the current continents except for North America, Europe, Asia, and part of Africa. A series of earth movements caused the land to alter and break off from the southern continent. After this separation, plants and animals began to evolve and become native to New Zealand. The first human settlers to arrive in New Zealand were from Polynesia. They discovered the unique flora and fauna of New Zealand and the mass amount of forest and endemic plants occupying the land. There were few reptiles, mammals, and amphibians on the land. However, there were many birds of a specific species discovered. The birds had evolved for millions of years in a predator free environment so they never needed to fly. The Rattes developed to be the tallest bird to ever exist and they could not fly. As more people moved into New Zealand, they brought with them non-native pests and rodents. These predators have led many of the native plants and animals of New Zealand to become extinct or near to extinction. Today, conservationists are working hard to save the native unique native plants and animals.

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