

On our travels from Raglan to Taupo, we stopped at a small park next to a hydropower dam on the Waikato River. There, I talked about the current state and future potential of hydropower. Emily then spoke about the process of cogeneration and combined heat and power uses in New Zealand. I talked to one of Dr. Elsworth's friends who owned an ice-cream truck and tea shop in the parking lot of the park. Before we entered Taupo, we stopped at an overlook sight that overlooked the town. There, we realized our location and talked about the details of the coming days in the Taupo area. From then on, we enjoyed our first night in the town and stayed at a hostel with Lord of the Rings murals on the walls. The hostel was probably the best one we stayed at because it had a pleasant atmosphere and was located right on the edge of town. The supermarket, shops, and restaurants were only a 5-10 minute walk away.

Aside from the recreational events and traveling, we explored the educational aspects of the trip. Hydropower plays a significant role in renewable electricity generation in New Zealand. I discussed the effectiveness of the dam and how it redirected the river to the actual hydropower plant. The total hydropower generation in New Zealand in 2014 was ~24 TWh, which was around 60 percent of electricity generation in the nation. There really is not much more potential to build more hydroelectric plants, because most of the potential has been tapped in the northern island. There is a greater potential for the southern island, but there is not a suitable means of transmission to the more-heavily-populated north island.

Then, the topic changed perspectives when Emily spoke about the basic description and process of the cogeneration and combined cycle plants. Cogeneration deals with the use of excess steam to be utilized elsewhere. No power plant that we visited utilized it on our travels. The process is not to improve the efficiency of the cycle, but it is to make sure no excess heat from the cycle is wasted. Combined cycle also provides multiple purposes for heating and steam utilization.