REPORT ON THE PROJECT OF COOPERATION IN EEA GRANTS

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Project: Comparison of energy potencial of Iceland and the Czech Republic

Date: 1/ 8/ 2021 – 31/ 8/ 2022

Schools: Technical College Reykjavík a Technical College Jihlava

Place: Iceland and the Czech Republic

Czech Republic

In the autumn of 2021, the first half of our exchange stay began. One evening, the Icelanders flew to the Czech Republic to Prague and then to Jihlava, where they moved home with their Czech family.

The whole project was focused mainly on energy in the Czech Republic and Iceland, so we had a lot of presentations, for example, about renewable energy sources or about comparing energy. One of the first presentations was a presentation focused on the overall energy potential of the Czech Republic and Iceland, where Mr. Jan Buršík from the Dukovany nuclear power plant told us about the Czech Republic that he has an electric plant for non-renewable fuels such as coal or gas. He also talked about the poor potential of renewable power plants in the Czech Republic. But he also said that Iceland has an excellent source of electricity generation.

Other presentations were about electromobility mainly in the Czech Republic, a presentation about the transition to low-emission energy sources by Martin Zágor and

Tomáš Šedivý , or a presentation by Dana Drábová, Director for Nuclear Safety in the Czech Republic.

We also went on many tours of both power plants and some large companies that are closely related to energyand emissions. One day we went for a whole day to the most modern coal-fired power plant in the Czech Republic, namely to the Power Planty Ledvice. From the power plant we could see the supply and from a distance the coal mining that drives this power plant. We also received a detailed explanation from a power plant worker who told us how the whole power plant works.

Next, we got to see the already closed ironworks in Dolní Vítkovice, which are connected to the coal mine and the coke plant.

The next days we visited the oldest nuclear power plant in the Czech Republic, namely Dukovany. We had arranged a tour of the nuclear unit, but dueto the registration measures, we could only go to the Dukovany information center, where we still learned a lot of things, such as how much Dukovany produces electricity in relation to other power plantsor that Dukovany can supply all households. Near Dukovany, we visited the Dalešice pumped-storage hydroelectric power plant, where we again visited only the information center.

Unfortunately, theIcelander had to leave early, due to the deteriorating situation with the covid. We had a planned excursion to the second pumped-storage power plant Dlouhé Stráně. The plan also included an Icelandic day and a nuclear surprise, which had to move all the way to Iceland, where the situation was supposed to improve.

Iceland

After a few months we went to Iceland. We went from Jihlava by bus to Munich to the airport and from Munich by plane to the airport in Keflavik.

During the first few days, we sawpoison from many small hydroelectric power plants. This small power plant was located in the town of Hafnarfjörður, where, by the way, we also had a tour of the historical part of Iceland. The guide wonderfully explained to us how Iceland was inhabited by the inhabitants of that time.

The next day we continued with a tour to the largest geothermal power plant in Iceland, which is the Hellisheiði Geothermal Power Plant. The guide during the time spent in the power plant described in detail not only the production of electricity, but also the extraction and pumping of hot water from power plants to cities several kilometers away. We saw pipes through which hot water flows and large cables through which electricity passes. We looked from above at the inside of the power plant, where we could see the

turbines. From the outside, we saw the chimneys emitting water vapor and the surroundings of the power plant in general.

In Iceland, of course, we were also given some presentations on the given topics related to icelandic energy and everything related to it.

The firstpresentation we had the opportunity to listen to was a presentation by Haukur Georgsson on the topic of CARBFIX, where he told us basic information about CARBFIX technology. This technology consists in taking carbon dioxide, which is combined with the groundwater and then releasing back into nature dissolved carbon dioxide in the water. This stabilizes carbon minerals in nature. Since 2014, it is about 80 thousand tons of carbon dioxide. He also talked in part about fossil fuels, their extraction and the bad impact on nature not only in Iceland but also around the world. The next part of this presentation includeda topic about basalt, which is a very common rock in Iceland and which is closely related to carbon dioxide. Next, he told us something about research to improve the quality of natural conditions. He added that theoretically it would be possible, but in practice we do not have enough material for it.

Another presentation we had the honour to hear was a presentation from the Minister for the Environment of Iceland himself. Mr Guðlaugur Þór Þórðarsson told us about environmental protection in Iceland, electricity generation in Iceland or electromobility. He told us about how electromobility is very advantageous in Iceland, because in Iceland electricity is almost free, and therefore it is disadvantageous to produce cars with an internal combustion engine. Despite the fact that electric cars are more advantageous and economical in terms of fuel, cars with internal combustion engines still prevail in Iceland. It was a great honor for us to meet such an important person in Iceland and at the same time to learn something new and interesting.

In addition to these presentations, we had many others, such as a presentation from a professor of environmental education at the University of Iceland. Thispresentation focused mainly on hydropower and wind energy used in Iceland. Fromthe beginning of the presentation, he told us about the overall comparison of energy in Iceland and in the Czech Republic. Ptold us that wind turbines are not advantageous enough because wind turbines can only convert wind into electricity at lowerwind speeds. As is known in Iceland, strong winds are very common and therefore wind farms have to stop temporarily after. Theyknow what a wind farm looks like. It's a large turbine located high above the ground, but that might not always be the case in the future. Humans invented wind turbines that could produce energy even at higher wind speeds, using vibrations. He also showed us how wind farms are built, where they are built and their performance and environmental friendliness.

One day from ourstay in Iceland we took a ferry, powered only by flashlights, to the Vestman Islands. We visited these islands about fifty years after the eruption of the volcano there. First, the guide told us about the origin of the islands, about tectonic activities and about the time before and during the eruption. Subsequently, we were supposed to visit the lava museum, but a small group of about fifteen people decided to go and see the crater of the volcano. At the top there were holes in the ground, from which hot air from the volcano rose. Then the group went to the museum and joined the whole group. In the museum we learned something about the time of the volcano eruption (how people moved from the island to Iceland and how the geological layer of the island changed after that). At the end of the day we boarded the ferry again and sailed back to Iceland.

Another, very interesting, presentation we listened to from a lady from the Icelandich Enviromen Association, she told us about what their association does for nature. For example, they are researching and trying to prevent global warming and melting glaciers around the world. She showed us some shots of glaciers from the fjords of Iceland and how they quickly get lost in the sea and thus contribute to the rise of water in the oceans.

One of the days spent in Iceland, we looked at the so-called The Golden Circle, which is the natural boundary between two tectonicand plateaus (between the North American and Eurasian plates). On this day we also looked into a geothermal bath called Fontana.

Duringtheweek we also visited the Perlan and the Wonders of Iceland Planetarium. Arriving at the planetarium, we settled into a small cinema where we watched a short film about the northern lights. We flew to Iceland ata time when the Northern Lights are not very common, so we were very happy to see this film. In this film, the aurora borealis was shown, or how some nationalities think the aurora is formed. We also looked into the ice cave and learned something new in terms of fauna and flóry in Iceland. Next, we went to the deCODE genetic laboratory. Here they showed us and explained what they were actually doing, what they were researching, and they also showed us servers with a large capacity, exactly 200 petabytes.

In addition to all this, we have done a lot of other things, such as hikes at the natural hot springs. The way up took about 2 hours. Upstairs,E and I bathed in hot springs. After a few hours of swimming and relaxing , we had to go back home again.

We went to the National Museum of Iceland, where we learned something about the history of Iceland, about the first inhabitants , and we saw various instruments, statuettes, things related to religion, and finally we could play chess here.

Another of the beautiful places in Iceland we visited was a wonderful church in the centre of Reykjavik. The organist played a magnificent and huge organ for us, and even a Czech student could play this organ too.

The project was very successful. We met a lot of new friends in another part of the world. We learned something from their culture, nature, and especially from their energy. We tasted something new, such as a typical Icelandic shark and more. I am glad that I was able to look at Iceland and improve my English language or learn new and interesting information regarding the acquisition of electricity using geothermal energy in Iceland. We had a lot of fun with our Icelandic friends.

This project was implemented with the financial support of the EEA Grants.