

CLIMATE CHANGE'S EFFECTS ON RENEWABLE ENERGY IN ICELAND

INTRODUCTION

Iceland's energy comes almost completely from renewable resources, with 76% of it being hydroelectric energy, and the remainder being geothermal energy and wind power (Landsvirkjun, 2018). For several months we conducted secondary-source research on Iceland's renewable energy resources, and the effect climate change will have on them throughout the next century. Most importantly, we researched how the Icelandic Government plans on responding to these changes. The Earth's rising temperatures are causing a shrinkage of Iceland's glaciers, and changing the water runoff rates from these glaciers at an alarming rate. The rates are currently increasing, but over time, will decrease until the glaciers have completely melted. In order to discover more about the repercussions of climate change, we travelled to Iceland, and conducted in-person interviews with both industry professionals, and common Icelanders to examine their opinions on the issue.



Photo 1: Baldur Gylfason (Left) was our guide throughout our time in Iceland, and was instrumental in providing us with the understanding of the cultural tendencies of the Icelandic people.

METHODOLOGY

Using secondary-source research, combined and cross-referenced with primary source, in-person interviews we were able to extrapolate a multitude of conclusions from the current Icelandic predicament pertaining to power consumption and sustainment in the next century. We conducted interviews with professionals from Landsvirkjun, Icelandic Government's Power Company, and citizens from varying age groups about their outlook on the consequences of the near, and distant future of Iceland's energy production.

REFERENCES

- [1] Blöndal Sveinsson, Ó G., Dr. (2015, November 13). *Influence of Climate Change on Hydro power in Iceland* [Scholarly project]. In *Landsvirkjun*. Retrieved February 31, 2018, from <https://www.hydropower.org/sites/default/files/OliSveinssonLandsvirkjun.pdf>
- [2] Segreto, N. (2018, March 15). *Climate Change Effects on Renewable Energy in Iceland*. [Personal interview].

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Sólheimajökull Glacier Recession



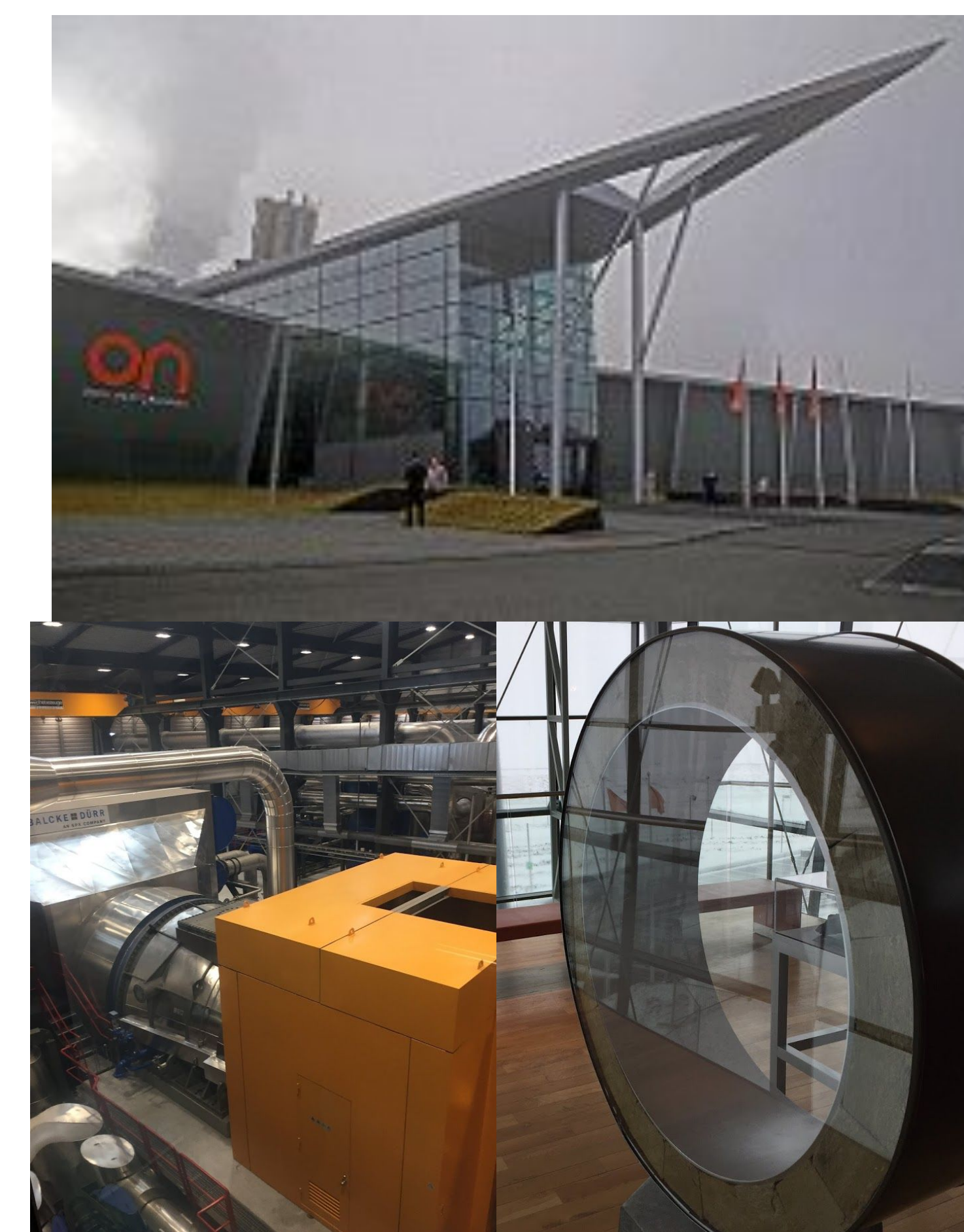
Photo 2 & 3: The photos above indicate the position of the Sólheimajökull glacier in Southern Iceland back in 2010, versus 2018.

- Glacier recession in Iceland is at an all-time high, and is showing only signs of increasing. In 2017 alone, Sólheimajökull lost 14 meters in height, and receded back 100 meters. (Segreto, 2018)
- It is predicted by 2080 that the runoff flow from the glaciers in Iceland will begin to decrease (Landsvirkjun, 2018).
- By the close of the century, glaciers in Iceland are predicted to be nearly completely melted (Landsvirkjun, 2018).

NOTABLE FINDINGS

Within the general population of Iceland there seems to be a lack of focus and urgency on this energy issue. As a direct result from their tolerance to natural disasters, and extreme environments, many Icelanders tend to hold the outlook that, as one of our interviewees stated, "We will deal with it when it comes." Industry professionals seem to think that geothermal and wind energy can cover the deficit created by hydropower, but are hesitant to admit that hydropower is declining. Einar Einarsson, a representative of the Hellisheiði Geothermal Power Plant, refused to comment on how Hydroelectric Power will decline in the future. However, he did say that wind and geothermal power are on the rise and could potentially cover any energy deficit created in the future. Though frustrating, this view is to be expected from individuals making their living from the energy sector. Sunna Olaudóttir from the Ljósafossvirkjun Hydroelectric Power Plant held a very similar view to Einar. She stated that wind has great potential for development, but did not want to say that Hydroelectric Energy is declining. This lack of urgency could negatively impact the future of Iceland's energy sector as their glaciers continue to decline.

Hellisheiði Geothermal Power Station



Photos 4-6: The technology within the Hellisheiði Geothermal Power Station was highly advanced, and open to the public eye. Around the station were diagrams of energy statistics in Iceland.

Ljósafossvirkjun Hydroelectric Power Station



Photos 7-9: The Ljósafossvirkjun Hydroelectric Power Station contained exhibits that were interactive, and promoted the history of clean energy throughout the world, and Iceland.

CONCLUSION

Iceland's response to energy reduction over the next century will be defined by the actions taken within the next decade. If Iceland responds now, they can profit greatly off of the innovation and production in technological advances currently at their disposal. For this to occur, however, Iceland would require a massive shift in culture, with a focus on pre-planned mitigation of environmental risk. What they face now is a choice to either adapt to the effect of climate change, or they suffer an energy crisis before the end of the 21st century.