Article in the Morgunblaðið newspaper
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Fjallapower 2 - Comparision of Dettifoss Waterfall and Niagara Falls

Fjalla Power Project is a very cost-effective choice for hydro power production in the upcoming Energy Transit in Iceland. The effects of power generation on Niagara Falls in North America and Dettifoss Waterfall in the Fjalla Glacial River in Iceland are discussed.

Table 1. River Flow of Niagara Falls and Fjalla Glacial River at Dettifoss Waterfall

River flow at Niagara Falls and Dettifoss Waterfall					
	Unit	Niagra		Dettifoss	
Average flow	m3/sec	6.000		183	3,1%
Minimum flow					
Sommerdays	m3/sec	2.832	47%	66	36%
Otherways	m3/sec	1.416	24%	66	36%

Mynd 1. The Niagara Falls in North America

Mynd 2. The Dettifoss Waterfall in the Fjalla Glacial River

Reference is made to an article published in Morgunblaðið newspaper on July 4 2021 with the name Fjalla Power Project, but it presents a new implementation of an old idea of harnessing Fjalla Glacial River (Jökulsá á Fjöllum) down to Flow Valley River (Fljótsdalur) in East Iceland.

The report can be accessed on the website www.veldi.is/reports and is marked '27.06.2023 Fjallavirkjun', hereinafter referred to as the 'Report'.

Nature conservation and harnessing of natural energy for energy transit

It has been difficult to get construction permits in this country for new hydroelectric power plants, and there are many problems: impact on the environment, water system, fish population, etc.

In view of the recent high and temporary profitability of electricity companies, mainly due to high electricity prices for heavy industry, local authorities have put themselves in positions and requested an increased share in that profitability. In order to create pressure, they have taken up delaying the issuance of power generation permits in favor of the cause.

Another thing has happened. The organization of ministries at the moment is such that the same minister holds the offices of minister of environment, minister of energy and minister of climate.

The Minister of Energy and the Minister of Climate should be able to agree on the activation of renewable natural energy in the interest of climate issues. Rigid goals have been implemented in the Icelandic law on carbon neutrality and with new power plants for the year 2040 up to 24.000 GWh/year, or more than doubling the energy capacity of the current electricity system.

On the other hand, the Minister of the Environment could be against all such nonsense and stand against any kind of natural disturbance that results from it, as many examples, both old and recent, testify to.

The same minister who handled these three areas simultaneously would then be on both sides of the table, and that could lead to a stalemate.

In the last government, nature conservation was in the hands of one minister and energy generation in the hands of another. But then it happened that the Minister of the Environment went too far in nature conservation and did not take into account the fact that it was necessary to use natural energy for the upcoming energy transit, e.g. in transport.

Proportion is problematic.

Dettifoss and Niagara Falls

Now let's return to The Fjalla Power Project in The Fjalla Glacial River, cf. said Report.

It is interesting to compare the power plants of Niagara Falls on the border between the USA and Canada and the Fjalla Power Project of the Fjalla Glacial River, where the effect on the waterfall and the appearance of Dettifoss is considered.

The difference in location is that the power stations in the Niagra River, which use water that would otherwise have passed through the falls, are located prominently just below them, while in the case of Dettifoss, the water withdrawal takes place 75 km further up the river, up in the high mountains by the proposed Fjalla Reservoir and far from any kind of salmon fishing. It can therefore be said that the gusses from Fjallalón were then sent from the trolls in the mountains and can be played on that theme for the entertainment of tourists at Dettifoss.

The question is, if it can be activated at Niagara Falls, why not also at Dettifoss?

Niagara Falls

According to Table 1, the average flow of the Niagara River is about 6,000 m3/sec.

Although Jökulsá á Fjöllum is the second largest river in Iceland, it does not stand up to the Niagara River in any way, as Iceland is only an island country and does not have large upland, which is necessary to collect water for hydroelectric power plants of the largest type.

Three power stations have been built on either side of the Niagara River and 4 km below the falls. On the Canadian side Adam Beck I and II total 1.914 MW, and on the US side Robert Moses 2.525 MW. The activations are prominent and visible to all.

Agreements on water use from 1950 are in force. It states that power plants must be operated in such a way that in the summer, or from April 1 to September 15 between 8:00 and 22:00 and from September 16 to October 31 between 8:00 and 20:00, the flow through the waterfalls must be at least 2.832 m3/sec, which is 47% of the average flow. Outside these periods, incl. at night and in winter, the minimum flow shall be half as much or 1.416 m3/sec, which is 24% of the average flow.

To my knowledge, these power plants have not been particularly complained about because of the disruption to the nature experience of the people, but they produce environmentally friendly electricity on a large scale.

Dettifoss

In the same way, the flow through the Dettifoss Waterfall could be examined, in accordance with the plans that appeared in the aforementioned Report on Fjalla Power Project.

The average flow at the Dettifoss Waterfall is 183 m3/sec, which is only 3,1% of the average flow of the Niagara River. It has been estimated that with 165 m3/sec, the waterfall will be able to show its giant power in a sufficient way.

In the Report, it is assumed that the base flow, which occurs between Fjalla Reservoir and Dettifoss Waterfall, will be 55 m3/sec, the same throughout the year and will appear at the Dettifoss Waterfall. From Fjallalón, generated water waves would also appear, equivalent to an average flow over the 24 hours of 11 m3/sec, but spread so that most of the flow would occur at the waterfall from midday and into the afternoon. Thus, the flow at Dettifoss would be 165 m3/sec for at least two hours from noon every day. It would then be guaranteed that the waterfall would always receive an average flow of at least 66 m3/sec, which is about 36% of the annual average flow, cf. table 1.

The remainder of the Fjalla Glacial River flow, or an average of 117 m3/sec, mostly glacial flow, will thus be allocated to the Fjalla Power Station.