Svalbard and Jan Mayen energy storage science and technology

Where are Svalbard and Jan Mayen located?
The islands are located north and northwest of Norway,within the southern limits of Arctic sea ice -- the northernmost point of Svalbard is within a 620 mi (1,000 km) of the North Pole. Svalbard is approximately 24,570 square mi (63,000 square km); Jan Mayen is approximately 145 square mi (373 square km).

Are Longyearbyen and Svalbard facing an energy transition?
Top image: Longyearbyen and Svalbard are facing an energy transition. This is the background for the cooperation agreement between UNIS,Store Norske and SINTEF. Photo: Graham Gilbert/UNIS. Longyearbyen and Svalbard are facing a huge energy transition.

Can nature provide a pumped hydro energy storage system?
Around 2005, materials scientist Igor Shvets of Trinity College Dublin realized that nature had provided the coast of western Ireland with exactly the right conditions to combine large-scale wind energy and pumped hydro energy storage.

Svalbard and Jan Mayen, with their unique geographical and environmental characteristics, offer promising opportunities for emerging industries and investment prospects. [...]

Longyearbyen and Svalbard are facing a huge energy transition. UNIS, Store Norske and SINTEF have therefore entered into an agreement on strategic cooperation within renewable energy systems adapted to Arctic conditions. The goal is to make Svalbard a showcase for renewable energy solutions in the Arctic. 15 March 2022

In this paper, we present the 2008 energy balance for Sørbreen (15 km 2, ~120-2200 m a.s.l.), a glacier in a polar maritime climate on the island of Jan Mayen (71?00"N, 8?30"W, 373 km 2; Fig. 1). The local energy balance is calculated and compared with ...

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4 ???· In a future where a large portion of power will be supplied by highly intermittent sources such as solar- and wind-power, energy storage will form a crucial part of the power mix ensuring that there is enough flexibility in the system to cope with the intermittency. With further development of pumped storage hydro constrained by the lack of remaining suitable ...

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We recommend that a solution based mainly on renewable power generation, but also including energy storage, import of hydrogen and adequate back-up capacity is taken into consideration when planning the future of remote Arctic settlements.

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The project, which could cost nearly $2 billion to construct, would create the largest water-powered energy-storage facility in the world, quadrupling Europe"s existing energy-storage capacity. It would generate three-quarters of the power of the Hoover Dam.

for creating knowledge to support energy and climate targets in the Nordics applies not just to the larger countries of the Nordic region, but also the more sparsely populated areas of the West Artic; Greenland, Iceland, Faroe Islands, Jan Mayen, Svalbard and Arctic Ocean areas nearby these lands. These areas present unique energy challenges,

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