ALPIQ

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Dear Reader,

The referendum on the Electricity Act on 9 June 2024 represents a very important popular decision for Switzerland. The Act aims to strengthen security of supply by setting out a number of decisive measures for the country's energy future. Central to these is the expansion of domestic renewable electricity production to prevent an electricity shortage in winter.

In view of June's referendum, we take a closer look in this issue of "Watt's the story" at the expansion of hydropower, a particularly important energy source for Switzerland. In our "Deep Dive", we talk to Professor Emmanuel Reynard from the University of Lausanne about the management of alpine water resources and the Gornerli multi-purpose reservoir. This project near Zermatt is the most important of the 16 national hydropower projects and would be prioritised for implementation if the Electricity Act is passed.

Before we focus on this topic, however, let's begin our newsletter as usual with an overview of developments on the energy markets over the past two months.

Market update

During the last two months, central-western European (CWE) power prices have moved continuously upwards, mainly driven by support from gas and CO2 markets. Indeed, the gas market has started to show nerves about the supply situation going forward. There are several reasons for this uncertainty, but the main culprits are increasing gas demand and competition from Asia; uncertainty regarding the continuation of Russian gas transits through Ukraine; delays to the additional LNG supply, in particular the Golden Pass project in Texas; and the depth and duration of the maintenance work to the Norwegian upstream gas field.

These developments, coupled with the highly unstable geopolitical situation, mean that market price movements are once again being driven by the headlines. While the above-mentioned factors may all be temporary, events in recent weeks clearly illustrate how exposed Europe has become to developments on the global gas market and, in particular, in China. With little Russian supply left in the supply stack, Europe needs to attract LNG to balance demand and supply. This necessity ties price developments in Europe to price developments in Asia, i.e., the profit margins for US LNG deliveries to Europe need to be higher than to their Asian counterparts in order to ensure enough gas for Europe.

The supply situation is expected to improve markedly from 2026 onwards, driven by a plethora of additional LNG supplies, mostly from the US.

CO2 prices have also staged an impressive comeback, although it could be argued that prices have mainly been tracking gas market prices. There has been little regulatory news in the meantime and all eyes are now on the upcoming EU parliamentary elections in early June. The elections are expected to be rather contentious, with polls suggesting a rise for several right-wing populist parties.

The power markets have otherwise been quite well supplied and spot prices continue to be moderate. Negative hourly prices over weekends and even on regular workdays during periods of high solar penetration have been a regular feature this spring. Besides strong growth in renewable generation capacities, very strong nuclear generation in France and heavy precipitation over south-western Europe have added to the abundant supply situation.

The demand for power has not offered support for prices either. It has only staged a very moderate recovery so far and remains significantly below pre-crisis levels. Not only have power-intensive industries failed to recover but the structural gains expected from factors such as the increased sales of electric cars, the replacement of oil and gas burners with heat pumps, and the installation of electrolysers have so far resulted only in moderate gains to overall demand.

Overall, present support for European power prices mainly stems from external factors such as increasing costs of burning gas for power generation.

Liquidity status

As per end of April, the Group liquidity balance stood at CHF 2.4 billion, and the headroom at roughly CHF 3.1 billion. This is a further increase compared to the values as per the end of

February, and despite the fact that external financing (CHF 0.1 billion) was paid back. The cash flow was negatively influenced by collateral outflows, but these were more than compensated for by the strong operational flows.

For the next two months, we foresee a slight increase in the headroom. Operational cash flow will remain strong but is likely to be partially offset by some forecast financing outflows.

Deep-dive

How the "Gornerli" project is boosting the production of winter electricity: an interview with Professor Emmanuel Reynard, University of Lausanne

Switzerland's Electricity Act, which will be put to a referendum on 9 June 2024, aims to strengthen security of supply, especially in winter, meet the country's decarbonisation targets and significantly expand the domestic supply of renewable energy. In the case of hydropower, the backbone of Switzerland's energy supply, a "yes" vote on the law would prioritise the implementation of the 16 Hydropower Round Table projects.

By far the most important of these is the Gornerli multi-purpose reservoir near Zermatt. The Gorner Glacier is located above the municipality of Valais and has long formed one of the largest contiguous glacier areas in the Alps. But this ice giant is shrinking: around 170 years ago, the glacier was still 16 kilometres long; today, it measures just under 12 kilometres. Many other glaciers are also melting. In fact, Switzerland's glaciers have lost as much of their ice since 2022 as they did between 1960 and 1990. In September 2023, the Swiss Commission for Cryosphere Observation of the Swiss Academy of Sciences reported that the glacier shrank by ten percent in 2022 and 2023. This dramatic acceleration was caused by very low snowfall in the winter of 2022/23 and the high summer temperatures. Some glacier tongues have disintegrated and smaller glaciers have disappeared. The melting of the glaciers makes water storage even more important in Switzerland, as reflected in the Hydropower Round Table projects.

The Gornerli storage facility would cover a third of the total potential offered by these projects. It would provide 650 GWh of storage capacity for the winter months and could supply around 140,000 households with electricity for a year. As well as supporting security of supply, this multi-purpose reservoir could also use the run-off water from the Gorner Glacier in a number of ways.

The project is being implemented by Grande Dixence AG, of which Alpiq is the majority shareholder. The municipality of Zermatt, the municipalities of the Matter Valley, all other concession municipalities of the Grande Dixence and other partners are all in favour of the project and closely involved in it.

Here, we get the expert insights of Professor Emmanuel Reynard from the University of Lausanne.

Professor Reynard, you and your team at the University of Lausanne are researching the

multifunctionality of alpine hydropower infrastructure. What exactly does this mean?

Most dams in Switzerland were built for a single purpose: to generate power. When the concessions were granted, some longstanding uses of water were protected, such as irrigating meadows in the Valais. Over time, the reservoirs have been granted additional uses, such as supplying drinking water or producing artificial snow. The dams have also been incorporated into flood protection concepts. Some uses, such as climbing the dam wall, use the infrastructure rather than the water. We're studying the multifunctionality of the alpine dams from different angles: the history of the multiple uses of water, when the new uses emerged, the perceptions of the role of water and energy by different stakeholder groups, as well as institutional aspects of multifunctional water management, in particular the role of concessions.

The Gornerli project is considered the largest and most important of Switzerland's 16 Hydropower Round Table projects. How would you assess the project's multifunctionality and what value would it add?

This project clearly has great potential for energy production due to the vast volume of water in the catchment area. It also plays an important role in managing hydrological risks in the Matter Valley. It serves as a drinking water and irrigation reserve for the municipalities of Zermatt, Täsch and Randa. As the structure is incorporated into the Grande Dixence storage power plant, it could supply Lac des Dix with water and also be used in the Val d'Hérens.

What role does the Gornerli project play in generating hydropower?

The water from the new lake will be pumped into the main Grande Dixence collector, so there's no need to build a new power station. Currently, 146 million cubic metres of water flows in from the Gornera, 115 million cubic metres of which is taken from the Z'Mutt plant. Thanks to the new dam, all the water will be able to flow into the Grande Dixence. This will make a significant contribution to winter energy production, which is one of the key objectives of the new Electricity Act. The Gornerli dam alone would produce a third of the additional winter electricity envisaged by the Hydropower Round Table projects.

The Gornerli project is also considered crucial for flood protection in Zermatt and the Matter Valley. To what extent will it reduce the risk?

Zermatt is a highly urbanised area, with residential buildings very close to the river, making them extremely vulnerable. Peak flooding during thunderstorms, intense snowmelt or the sudden, uncontrolled discharge from an underground glacial lake, as happened with the Triftbach in July 2019 , pose a major risk to the town. The construction of a reservoir upstream would act as a retention structure, thus reducing the risk.

The glaciers represent an important water reservoir. As they continue to melt, it will become increasingly important in the future to ensure a secure supply of drinking and process water in the region. What contribution can Gornerli make to this?

The construction and networking of water reservoirs is one of the keys to adapting water management to climate change. Due to their large capacities, alpine reservoirs constitute important infrastructure for the integrated management of water resources. With this in mind, the construction of a new reservoir near Zermatt can only have a positive impact on integrated water management. But we must not forget that true integrated management not only needs to

ensure a long-term water supply, but also optimise the demand for water, in particular through organisational measures and water savings.

About

Emmanuel Reynard is Full Professor of Physical Geography at the University of Lausanne. One of his main areas of research is alpine water resource management. He and his team are currently working on a project on the “Multifunctionality of alpine hydropower infrastructures”. Alpiq is co-financing the project but is not involved in the actual research.

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An overall increase in electricity production is essential for Switzerland’s security of supply and the achievement of climate targets. The aim is that renewable energies, excluding hydropower, should supply 35 TWh/a of electricity by 2035 and 45 TWh/a by 2050. Hydropower production, on the other hand, should be increased to 37.9 TWh/a by 2035 and to 39.2 TWh/a by 2050.

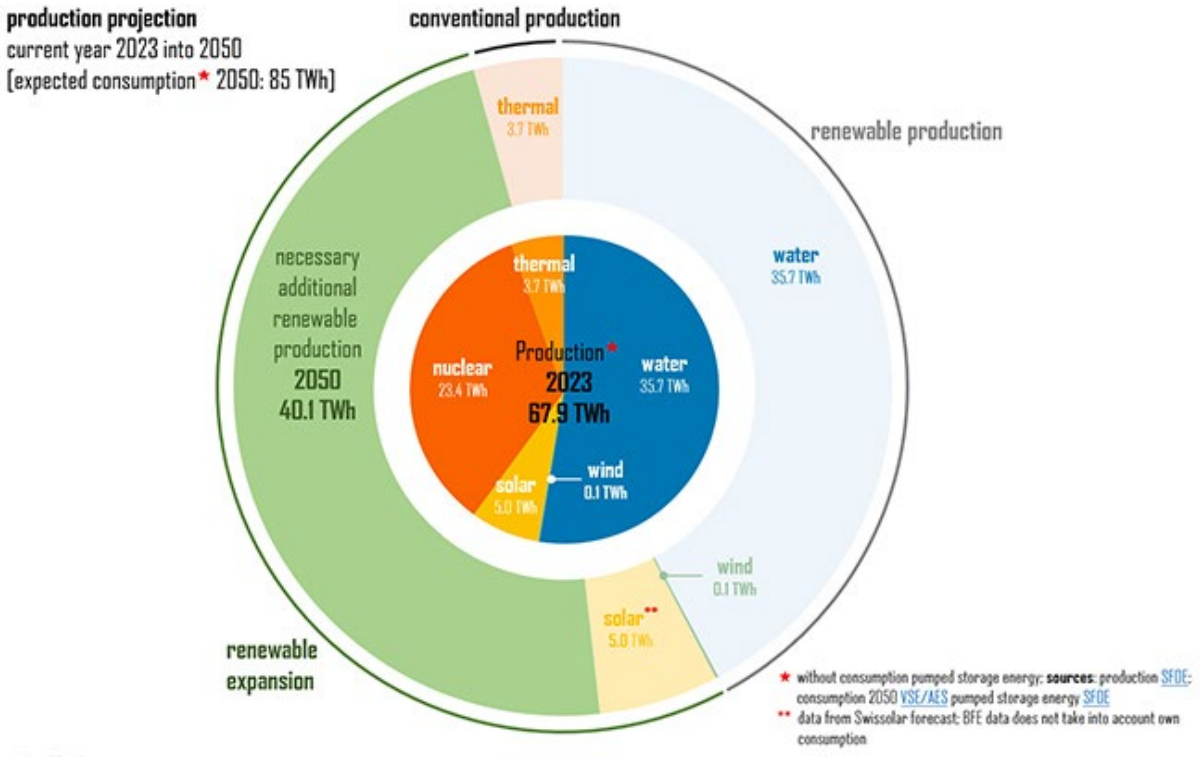
However, the winter months are particularly critical for security of supply. The aim here is to increase winter production by 6 TWh by 2040, 2 TWh of which should be reliably available from storage hydropower. To increase the commitment to meeting these targets, 25 projects are listed explicitly in the Electricity Act.

According to the hydropower statistics published by the Swiss Federal Office of Energy (SFOE) in May 2024, 705 hydropower plants with a capacity of more than 300 kW were in operation in Switzerland at the beginning of 2024, compared to 693 plants in 2023. This increase was due to several newly commissioned power plants and renovations. In 2023, hydropower plants (run-of-river power plants and storage power plants) produced 21.7% more electricity than in the previous year. At 40.8 TWh, this was the second-highest production result for hydropower plants after the record year of 2001 (42.3 TWh).

The expected production of power plants with an output of more than 300 kW was 37.1 TWh in 2023, which is similar to the previous year's level of 37.2 TWh. The main reason for the reduction was the below-average hydrology in Ticino and the Grisons in recent years.

No new wind power plants have been added. Photovoltaic (PV) production continues to expand. The overall renewable energy statistics for 2023 are expected to be published at the end of June 2024. The SFOE solar statistics, which are due to be published in mid-July 2024, will provide a more detailed overview of developments in PV production.

Production Switzerland



Sources: production SFOE; consumption 2050 VSE/AES pumped storage energy SFOE
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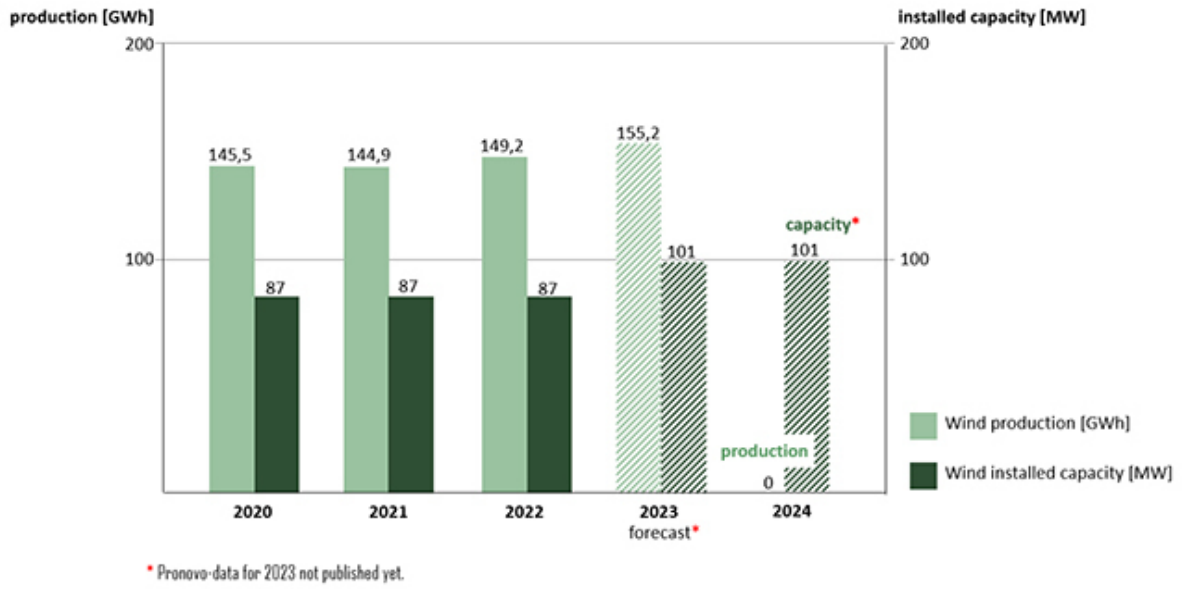
Development of wind energy



Source: SFOE
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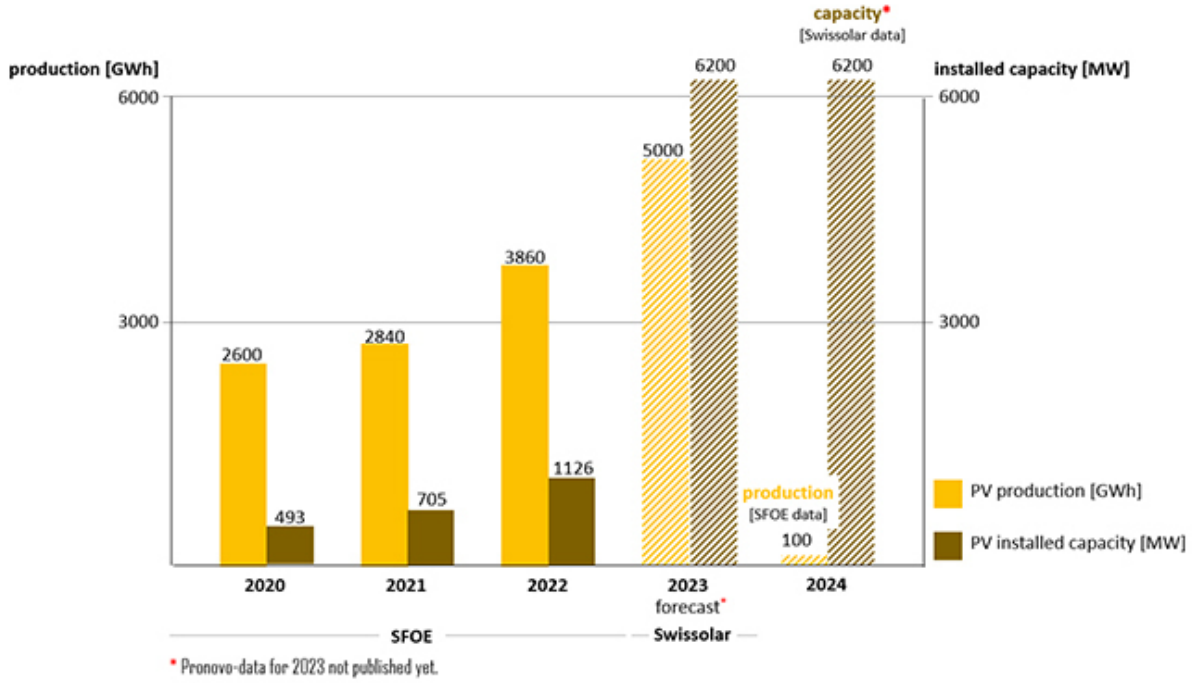
Development of photovoltaics



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And that rounds off our newsletter for this month. We look forward to providing you with further news and updates in our next issue, which will appear after the summer break at the end of September 2024. Stay tuned!

Until then, we wish you a pleasant and relaxing summer.

Best regards,
Your Investor Relations Team @Alpiq

PS: Please feel free to forward this newsletter to other interested parties, who can also sign up to receive it directly HERE. All previous editions, including our deep dives, are also available HERE.

PPS: Please send us your feedback, thoughts, and requests for future deep-dive topics to investors@alpiq.com. Thank you!

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