ALPIQ

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Dear Reader,

Do we have enough energy to see us through **winter**? It's a question that's discussed almost daily. Mark Twain already knew "**predictions** are **difficult**, especially when they involve the **future**." The fact is that we just don't know. What we do know, however, is that it **depends** a lot on how the **weather** will turn out **during winter**. Even though the general **market situation** in the energy sector is **better** than last year (the European gas storages have above-average fill levels, we have sufficient water in our dams in Switzerland and the availability of French nuclear power is better than a year ago), it's basically a weather game. We'll take a deep dive into this topic with Alpiq meteorologist Martin Bolliger in this ninth edition of Watt's the story. Before we do, however, let's look at movements on the energy markets in the past two months.

Market update

The worrying combination of critically low nuclear availability in France and the risk of insufficient gas for power production in Europe, the two main reasons **power prices exploded** in **2022**, are now causing decidedly less worry. There are no cast-iron guarantees, but the **risk** that last year's conditions will be repeated has continued to lessen and can now be considered **relatively low**.
For one thing, average **nuclear production** in **France** during calendar week 38 stood at 37 GW, no less than 37% above last year's level. The availability forecast for the coming winter is also

much **improved**.

With power demand much reduced, risk premiums in the power forward markets have collapsed outright. The clearest example of this is the fact that peak prices (Monday to Friday, 8am-8pm) in France for the fourth quarter of 2023 are currently trading at around EUR 135 per MWh, down from close to EUR 1,100 one year ago. **Swiss peak prices** for the **fourth quarter** are trading at around **EUR 140 per MWh**, down from EUR 850 one year ago.

Importantly, weakness in power demand is clearly not only confined to energy-intensive industries, with significant weakness also notable in the commercial and household sectors, where the high prices have led to the implementation of energy efficiency as well as energy saving measures. However, especially in the industries, production activities have been stopped or shifted away to other regions. There the **energy crisis** has **caused permanent damage** to **power demand**, although the full extent is not yet clear.

Low demand for gas (15% below the five-year average) and the abundant supply of liquefied natural gas (LNG) have contributed to **successful filling** of the **gas storages**, with EU storages reaching 95% fullness at the end of calendar week 38 (against 86% fullness at the same time in 2022). Importantly, **Europe** has been quick to alleviate the bottlenecks in regasification capacity (LNG-receiving terminals) and now has the **capacity to balance** supply and demand **without Russian gas**. That said, regasification capacity does not guarantee that the gas is being delivered: Europe still needs to compete with Asia and South America to acquire the gas.

Despite the successful filling of storages, the **gas markets** have remained **more nervous** than the power markets. **Gas prices** have also come down substantially year-on-year, but prices have been **trending sideways** since June and **power prices** have trended **downwards**. A substantial increase in maintenance work on Norwegian off-shore gas fields, most notably the large Troll field, and the labour dispute between Chevron and the off-shore workers' union in Australia, which threatens to curtail output at Chevron's LNG export facilities on the west coast of Australia, have combined to keep the market on its toes. At the time of writing, the dispute had not yet been resolved, and strike action could impact the huge Gorgon and Wheatstone facilities, whose combined output amounts to around six percent of the world's LNG supply. However, with mediation ongoing and the stakes high for Australia, the risk of a longer lasting curtailment of supply looks rather small.

All in all, we are **not out of the woods** yet in terms of **energy security**, but the system is vastly **more resilient** to shocks than one year ago.

Liquidity status

Looking back one year, prices reached an all-time high around the end of August and the beginning of September. Fortunately, the cautious trading strategy we maintained from the start of the energy crisis and our tight liquidity management enabled us to overcome this peak. The tide turned in early **September 2022**, when a **decrease in prices** and the return of collaterals brought **relief to the whole industry**.

Our **Group liquidity** stands at roughly **CHF 1.4 billion** as of late summer 2023, and our **headroom** at over **CHF 2 billion** as per end of August 2023. The main drivers of the evolution in July and August (compared to the situation as per the end of June) were planned increases in net working capital, which will be reversed by year end.

The forecast for the current month of September shows a **temporary decrease** in the **headroom**, based on operational cash-outs and the **extraordinary dividend** payment of **CHF 93 million**.

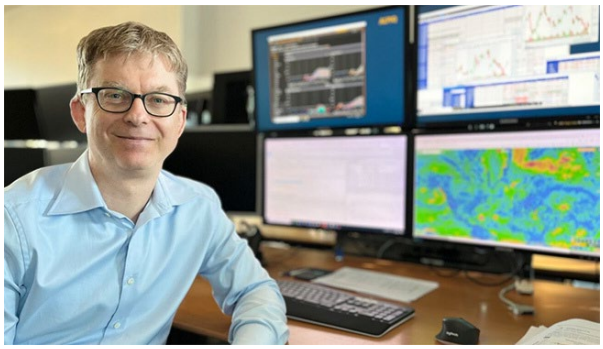
Deep-dive

It's a weather game

Gone are the days when weather was an easy thing to talk about. Nowadays, such discussions can quickly get emotional – and they're even used in campaigning, as some of you might have seen this summer in Switzerland or already earlier in the USA.

As an energy company with a strong fleet of **hydropower plants**, the **weather** is extremely **important** to us. Inflow patterns, water levels for our run-of-river plants and flood protection have always attracted our attention but weather forecasting has increasingly become a determining factor in our market.

Our **meteorologist** in the markets analysis team, **Martin Bolliger**, plays a crucial role in this. He talks to us about weather patterns, the upcoming winter, and how his job has changed.



Picture: Alpiq meteorologist Martin Bolliger

Martin, the upcoming winter will once again raise questions about whether we have a sufficient hydropower reserve. Is it possible to make any reliable predictions from a meteorological standpoint?

First of all, it's important to mention that **weather is chaos** – so the weather forecast can

change at any time. **Long-term forecasts**, such as for the coming winter, are particularly uncertain. But they're still important in terms of showing us the **general trend**. Fifteen years ago, I didn't even look at these forecasts, but today I do because the development of meteorological models has come a long way. As things currently stand, the weather trends for the fourth quarter of 2023 look quite relaxed. That's to say, generally, a combination of warmer temperatures and rainfall. The supply situation in Europe looks much better than a year ago. But there's no guarantee of a relaxed winter on the electricity markets – the market is still very nervous.

The summer of 2023 was very hot and dry. From your perspective as a meteorologist at an energy company, this kind of weather doesn't only bring advantages, does it?

I'd say the summer of 2023 was okay for the energy markets in Europe. Periods of intense heat were followed by cooler weather in between. This allowed energy supply and demand to stabilise. The situation is always particularly **critical** when strong and correlated **weather anomalies** occur, such as during a lengthy heatwave. This not only means extreme temperatures, which increases demand, but often also little wind and precipitation, which reduces supply. These weather extremes have generally **increased** in **recent years**. Unfortunately, this pattern is likely to continue in the future due to **climate change**.

Why are weather forecasts so important for an energy producer like Alpiq – and how has their relevance increased over the years?

The weather is decisive for the production of renewable energy from **wind**, **solar** and **water**. It determines **when, where** and **how much** renewable energy can be **produced**. Since renewable energy production has increased massively in Europe over the last decade and will continue to increase in the future, weather forecasting has become more important. As mentioned, this not only applies to short-term predictions for the next few days but, increasingly, **forecasting long-term** weather scenarios. The dependence on weather is also reflected in the numbers: wind generation accounted for just under 40 TWh of production in Germany in 2010. Today, it's over 120 TWh and by 2028 it could be around 200 TWh.

How effective are precise forecasts of fluctuations in allowing us to optimise electricity generation and adjust our use of power plants?

Weather forecasts help an energy producer like Alpiq to **produce energy** as **efficiently** as possible and thus make an important contribution to **security of supply**. Fluctuations in the predicted generation levels can be an expensive challenge for electricity producers. In meteorology, the uncertainties in generation are captured by "ensemble" forecasts. Instead of a single forecast, many are made, providing a quantitative indication of what variations are possible. However, even a perfect meteorological forecast does not guarantee that there will be no fluctuations. Grid bottlenecks are also causing more production cuts, as we see in Germany. If the grid is overloaded, for example because there is more wind than expected, the number of generation units can be capped. **Grid expansion** in **Europe** is **lagging behind** the rapid increase in renewable energies.

Why do forecasts play such a crucial role in energy trading? Can you give an example?

Prices in energy trading are determined by **supply** and **demand** – and the **weather** has an **influence** on both. Windier weather increases the supply of wind power, meaning fewer expensive thermal power plants such as coal or gas are needed to cover demand. As a result, prices fall. During cold spells, demand for electricity goes up as more heating is used, which

pushes up prices. So **weather** is a piece of the puzzle in **energy pricing**. Sometimes it plays an important role, sometimes a less important one – but it's always a factor.

What information do you pass on to traders so that they can assess the trading opportunities and risks?

Our aim as meteorologists is to tailor the information we provide to traders as much as possible. We provide oral and written briefings in which we give assessments of the weather developments in Europe. It's important that we break down the complexity of the weather forecasts to make it relevant for trading. We analyse data from different weather models and quantify the **weather's influence** on **supply and demand**. The communication between trader and meteorologist is crucial – it's vital that we speak the same language. If I, as a meteorologist, think like a trader, that's a huge help.

Which individual parameters do you take into account?

The important ones are the **temperature** and the **supply of wind**, **solar** and **water**. But we also look closely at other interesting parameters. Because trading is interconnected globally, **worldwide weather patterns** are becoming increasingly **important**. Take tropical hurricanes: hurricanes can disrupt the scheduled shipping routes of liquefied gas tankers and thus delay the supply of gas, which is also relevant for energy trading.

Thank you for these insights, Martin.

> Web version

The next edition of **Watt's the story** will appear at the end of **November**. In the meantime, enjoy the changing autumn colours as the leaves begin to fall.

Until then, we wish you an enjoyable time. Take care!

Best regards,

Your Investor Relations Team @Alpiq

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