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Overview of the actual Global, European and Swiss Natural Gas Market - Short report presented at the annual conference of SASEG in June 2018 in Chur

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1 Situation Global

The global gas markets are gaining more and more importance, as the production of Liquified Natural Gas (LNG) is growing fast. Biggest traditional LNG producer is Qatar, but Australian and US LNG production is growing quickly. In a few years the Australian production will be biggest in the world.

In US Cheniere Energy is investing billions of US dollar in the terminal Sabine Pass converting it from a former LNG import terminal to an important export terminal with a maximum capacity of 28 million tons of LNG, from which around 70% is already in operation (Fig. 1). Other terminals in US are following, as the shale gas production in US is also growing and very competitive.

Today the main market drives of global gas market is Henry Hub, representing the US gas market, Net Connect Germany (NCG) representing the European gas market and Japan LNG Hub representing the Asian market.

Fig. 1: Sabine Pass LNG-Terminal (Louisiana USA).

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2 Situation in Europe

Within Europe the gas market is also growing. Most of the gas sold in Europe is pipeline gas. Most important is Russian gas, actually representing one third of the EU demand and still growing. EU gas production – actually also around one third is on the contrary declining as the traditional gas fields in EU are coming more and more to an end. Nowegian gas is also growing representing actually more than 25% of EU market. There are furthermore many LNG import terminal along the Western Europe coast, which are used only at around 30% of its capacities, as European prices are still lower than Japan prices (Fig. 2). Therefore global LNG is sold mostly on the Asian markets, where they have only little pipeline gas as alternative.

Several import pipelines are either in construction (eg. Transadriatic Pipline (TAP) or at least planned as Nordstream 2 with two more pipelines crossing the Baltic Sea from Russia to Germany (Fig. 3).

3 Situation in Switzerland

Switzerland is very well located between three important European Hubs – in the north NCG (Germany) and PEG (France) and in the south PSV (Italy) - linking them by the Transitgas-Pipeline system (Fig. 4). So the Swiss gas market has several options to buy gas at competitive European market price. The structure of the Swiss gas Industry is a bottom up structure, carried by around 40 local facilities owning the 3½ regional gas

companies as Gasverbund Mittelland is one of them. The regional gas companies owns Swissgas and Swissgas is an important shareholder of Transitgas. Today there is only a third party access to the grid for bigger industrial consumers with a minimal capacity of 150 Nm^3/h per site. As there is still no Gas Market Law, this third party access is organised through and contractual agreement between the gas Industry and 2 Industrial associations. Of course this is only an intermediate solution, as such agreements are not protected against legal actions under antitrust law.

4 Political role of natural gas

Politically natural gas is in most countries in the world part of the solution of the climate change issue. Contrary to Switzerland where gas is seen as part of the problem, neglecting that with the all-electric energy strategy favoured by most of our politicians we are depending more and more on electricity supply from our neighbour countries with high CO_2 impact and also risk of being short in electricity supply especially in wintertime.

In the Winter 2016/17 the two nuclear plants Beznau I and Leibstadt were nearly the whole winter out of service because of important repairs. Therefore by the end of January 2017 after 2 very cold months the average level of the Swiss barrier lakes was already down to 27%, leaving only little water reserves for the rest of the winter (Fig. 5). Luckily in February/March 2017 the weather turned to be rather warm, so the limited water reserves could be managed by more electricity imports. If the barrier lakes are empty too early, we would lose around 8

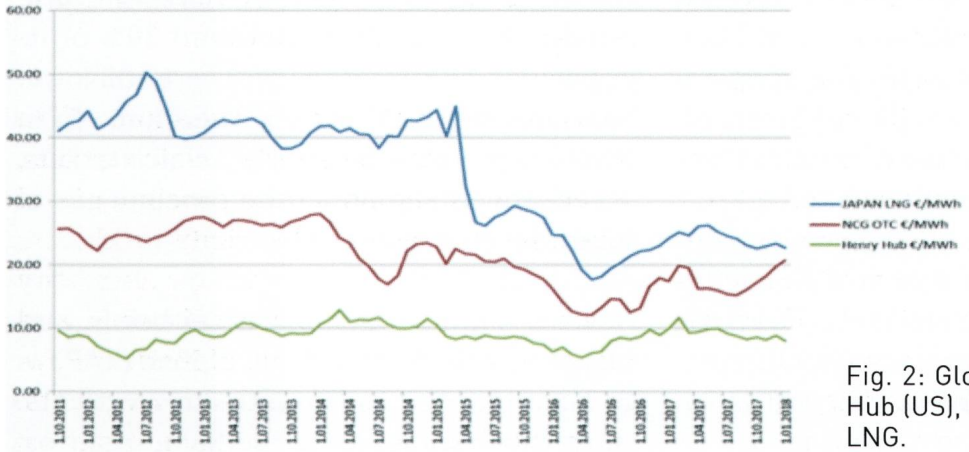

Fig. 2: Global Gas Prices of Henry-Hub (US), NCG (Germany) and Japan LNG.

Fig. 3: Quelle: APA, Der Standard.

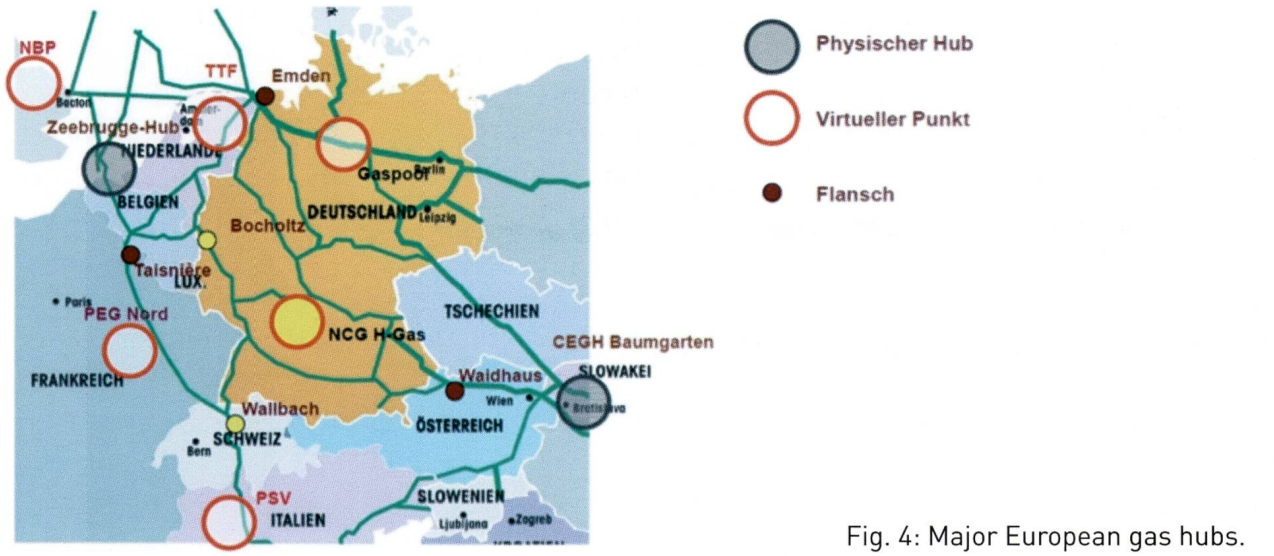

Fig. 4: Major European gas hubs.

GW of turbine power, which could end up in blackout.

In the Project of the Energiestrategie 2050 send by the Federal Councel to the parliament, up to 5 Combined Cycle Gas Turbines (CCGT) power plants were foreseen to replace Swiss nuclear power plants (NPP), knowing that we will need them in winter. During the voting campaign for the Energiestrategie these CCGT's were because of political tactic/reasons no longer mentioned and erased in all documents related to the Energiestrategie. Fact is, by the end of next year NPP Mühleberg will shut down definitively and we will have no other option than replacing its electricity production by more imports.
But also in Baden Württemberg and France electricity supply in winter will get shorter, as some of their power plants - not only nuclear, but also coal - will shut down and the new High Voltage DC-Line Suedlink will probably not be ready before 2030 to transport more renewable wind electricity from north of Germany to the south. And even then, Suedlink will end near Heilbronn, still far away from the Swiss Border.

So winter electricity on the Swiss hub will in the coming years get shorter, which means, we effectively should on end consumer level invest more in winter electricity producers as cogeneration instead of winter electricity consumers as electric Heat Pump's and together with the shutdown of Nuclear Power Plants invest also in CCGT-Power plants. Only, these solutions are today not part of the Swiss political agenda.

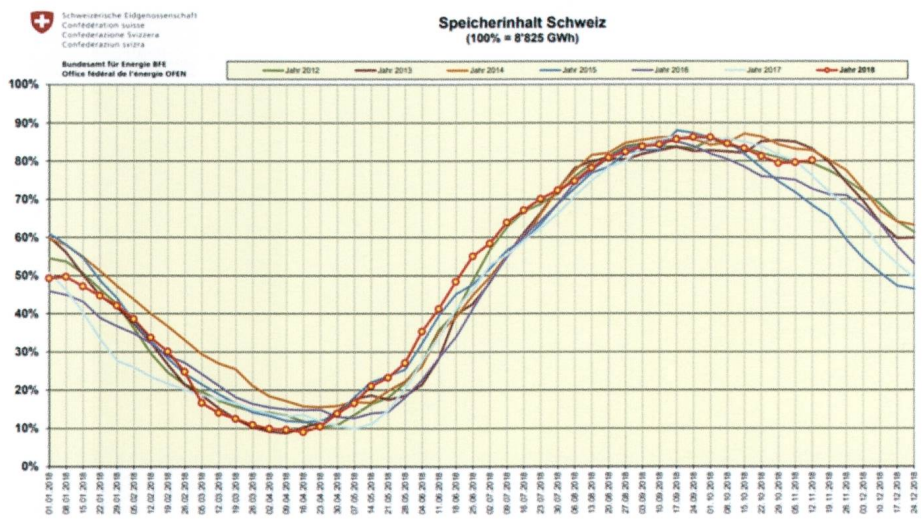

Fig. 5: Electricity statistics – Level of Swiss barrier lakes (Federal office of Energy).