

Sundar Pichai ushered in Google's unsurprising but welcomed greetings. Finland is a good country to invest not only in data centres but in wind energy as well. More wind energy will rapidly be built for example in Kainuu.

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IN THE WIND FARM – OFFSHORE

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Lillgrund wind farm was completed at 2008. Its capacity is 110 MW but power in average is appr. 40 MW. With 48 wind turbines it is Sweden's largest offshore wind farm. Water depth in the area is only few meters. A study carried out 2016 found no significant effect on marine life. In the background one can see the Öresund Bridge between Copenhagen and Malmo.

THUS IN KAINUU. IN KAINUU? There must surely be good reasons for that but a bunch of new questions rises. Investments announced by Google on 9 September are so called PPA agreements (Power Purchase Agreement). Idea is to buy electricity mainly to own use by a long period agreement – more or less – at fixed price.

Google's own demand for example in Hamina Google data centre is exhaustive. All the wind electricity used there doesn't necessarily have to be really transferred wind energy from north. So called balance method could be exploited, where wind electricity can be used as much as it is produced even though actual electricity one is using wouldn't be actual wind electricity.

WIND POWER IN FINLAND

Let the Wikipedia guide us further. In the article Wind power in Finland it is told that in Finland it would still be possible to prevent a situation like in Great Britain and in Germany where

electricity grid is stressed since the emphasis of the production is in the north and emphasis of the consumption is in the south.

In Finland remarkable share of the wind power production is located in small cities in the Gulf of Bothnia. Real estate tax incomes in some cities like in Kalajokki are about one million euro level. In the longer run this significant income starts to have a larger impact on local economy in smaller municipalities in north.

According to VTT report 2018, basically all electricity consumption in Finland could be covered by wind power. Apparently this would be also very cost effective option. Should the wind energy be built more on south as well? This is also a political question. Many still argue that more wind power is not needed in south or anywhere else. But as a taxpayer, electricity consumer and a citizen a question of environmentally friendly and affordable electricity is anyway interesting.

UUSIMAA COUNTY PLAN 2050?

In Finland we still have very little so called offshore wind power. Despite the fact that in offshore areas wind conditions are by default best. Utilization period of maximum load can be even 50% higher than in inland realizations. Building costs few kilometres away from the coastline are naturally a bit higher but better efficiency of the production would probably compensate that. Icing conditions between the Gulf of Finland and e.g Ostrobothnia land areas are unknown for the author.

In the Uusimaa county plan 2050 process, offshore wind power has risen to a discussion but it seems that bigger changes com-

International Conference on Smart Energy Systems was organized in Copenhagen on 10–11 September 2019. One of the site visits was targeted to Middelgrunden offshore wind farm. Camilla Holbech (Wind Denmark) presented the wind farm and was able to answer to endless questions of the participants. Dr. Hermann Edtmayer, researching e.g. fifth generation district heating systems, had arrived from Graz, Austria.



pared to existing situation are not emerging. The Finnish Defence Forces opposes extension of offshore wind power apparently due to difficulties of scanning the sea areas fully. It is anyway hard to believe that this would be force majeure or even very expensive challenge to overcome.

Current Uusimaa county plan notations enable wind power construction so some extent already now. For a reason or another Kainuu and Sea Lapland land areas have been better options for realizations so far. Could it be a question of some kind of subsidies or is it just so that there is no political demand for offshore wind power.

Middelgrunden wind farm is located only 3.5 kilometers outside of Copenhagen. In the farm there are 20 two MW turbines. When farm was in the planning phase its location was opposed by a local environmental society, but the opinion changed later. Windfarm has 10,001 owners. Local energy company owns 50% and rest is owned by private investors. This can be seen as a typical Danish solution. For example main part of the district heating networks are owned by individuals.



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