CLEMENS KRAFT

A SMALL-SCALE HYDRO POWER PLAYER PREPARING FOR THE NEW REALITIES

Oslo, 3 February 2022

CLEMENS KRAFT

OUTLINE

1. About Clemens Kraft
2. Where we are
3. The new realities (The Challenge)
4. Adjusting to the future (Our Response)
5. Closing remarks

1 IN A NUTSHELL….

- Corporation founded in 2006 by OVF
- CPV/CAP acquired 49,9% of corporation in 2017
- 42 fully and 12 partly owned companies (34-97% shareholding interest)
- 17 full time employees plus contracted caretakers
- 4 offices located in Oslo, Narvik, Tingvoll and Mo i Rana
- Second largest small-scale hydropower player in Norway
- Fully integrated: mature, develop, build and operate small hydro power plants

1 OWNERS AND MANAGEMENT

Owners

Opplysningsvesenets fond

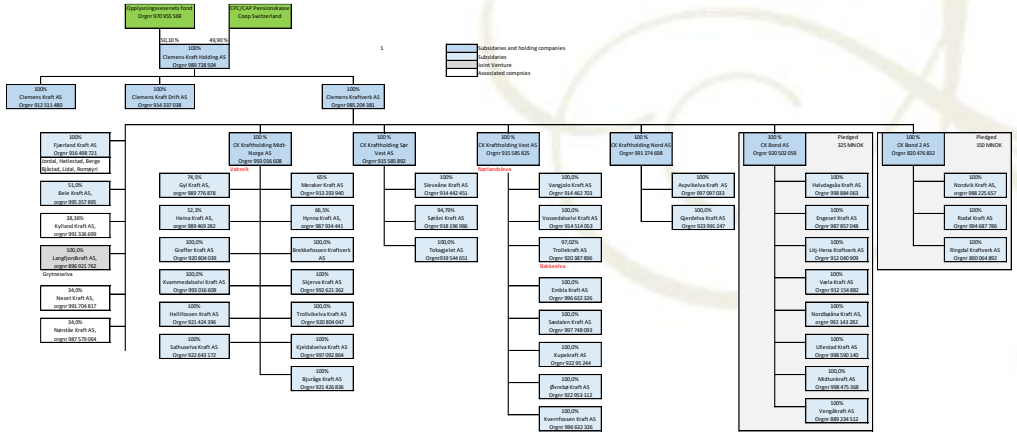
- 50,1% held by Opplysningsvesenets fond (OVF) (Eng: The Norwegian Church Endowment Fund)
- OVF was founded in 1821 and is regulated in the Norwegian constitution §116 and is owned by the Ministry of Children and Families. OVF is a commercial body. Its assets date back to the Middle Ages and originate from church properties including 918,000 acres of forests and uncultivated land

CPV CAP

- 49,9% held by Swiss CPV/CAP Pensionskasse Coop (CPV)
- CPV was founded in 1909 and manages the pension fund for the Swiss Coop-group. Assets under management is around 9 billion Euro. CPV has substantial investments in the Renewables business (solar, wind and hydro power)

Management

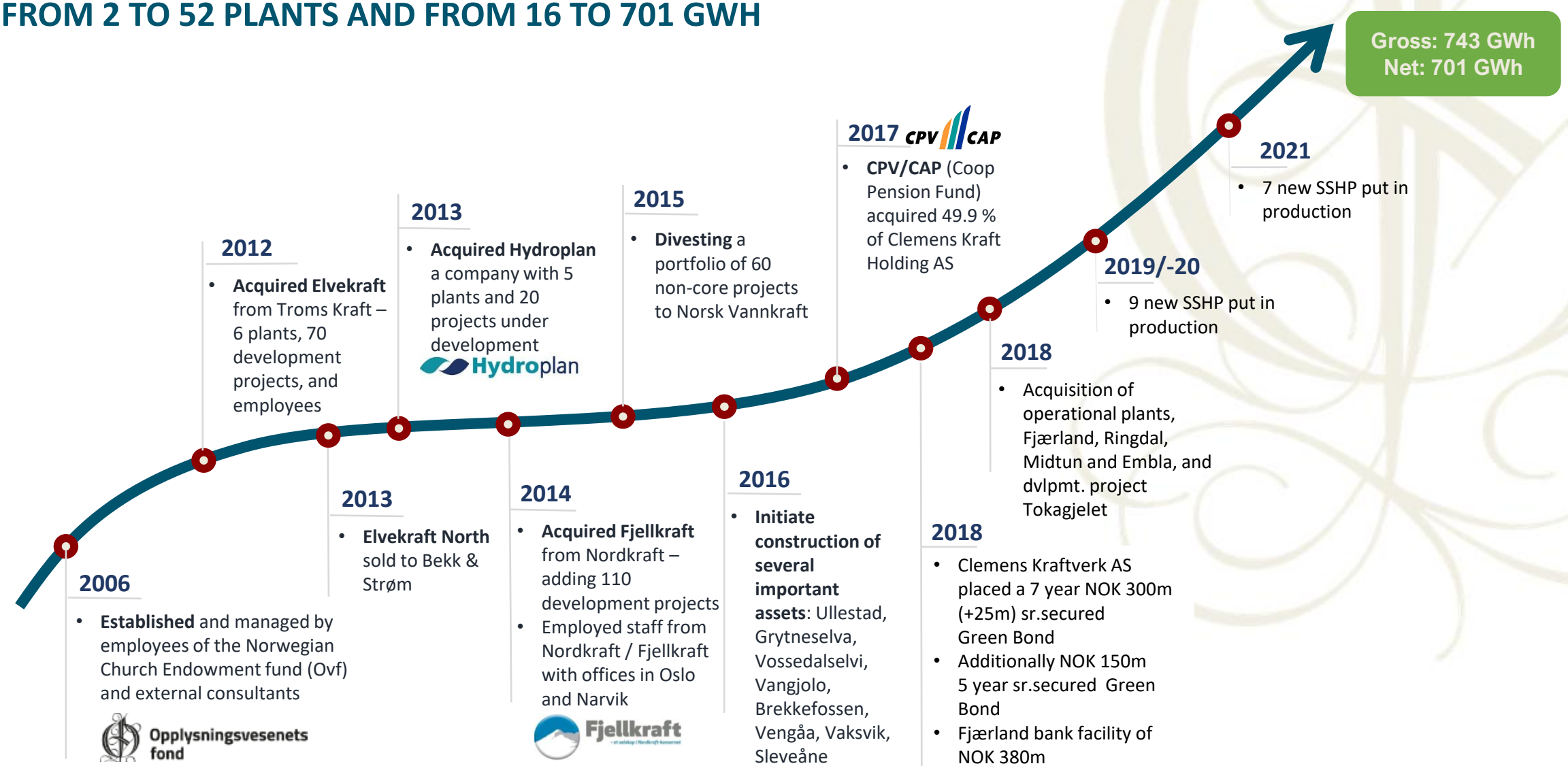
Group Structure



1

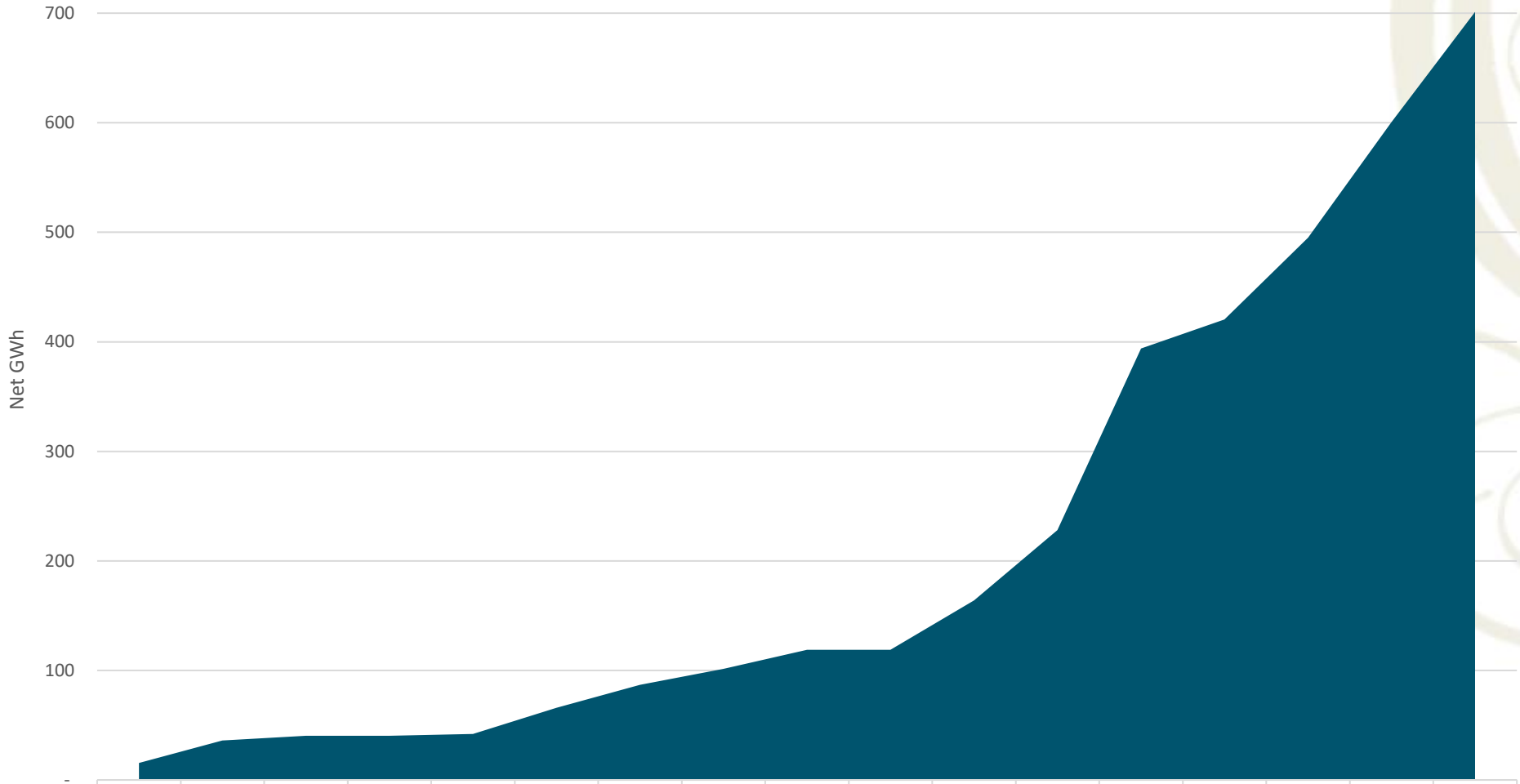
15 YEARS OF GROWTH THROUGH ACQUISITIONS AND DEVELOPMENTS

- FROM 2 TO 52 PLANTS AND FROM 16 TO 701 GWH



2 HOCKEY STICK ACHIEVED BY ACCELERATED INVESTMENT PLAN IN 2017

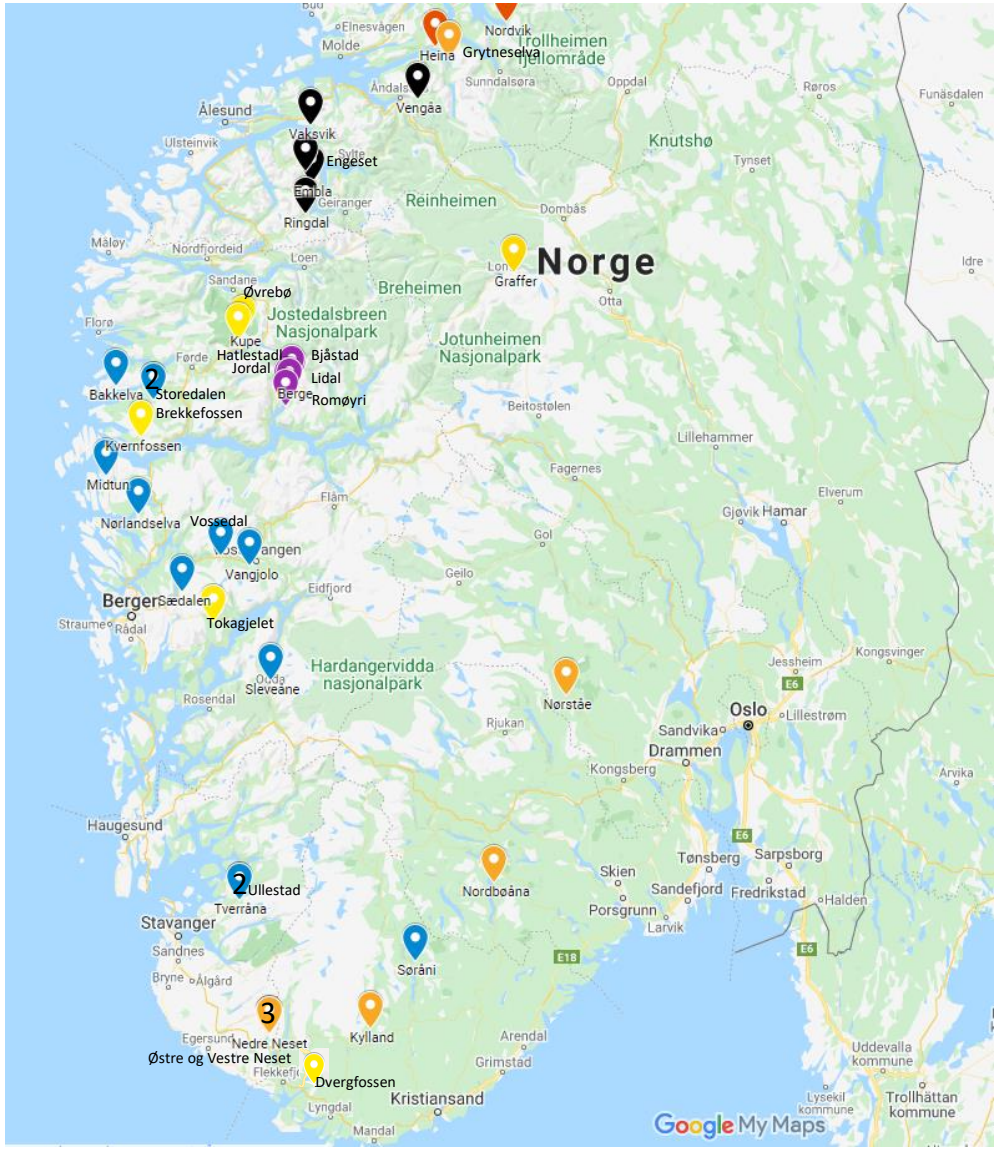
- NOW NEW PHASE WITH STRONG FOCUS ON PRODUCTION PERFORMANCE

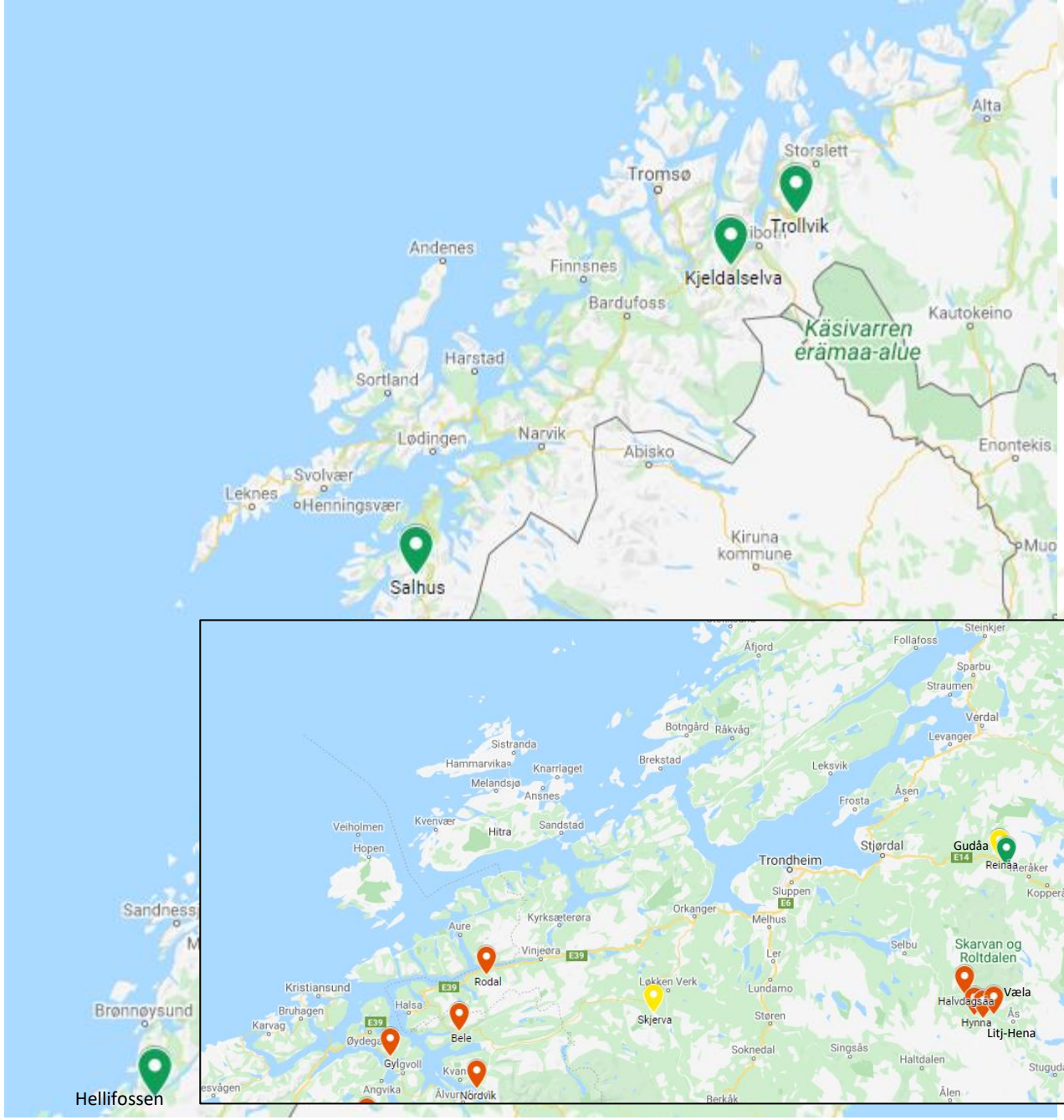


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GWh	16	36	40	40	42	66	87	101	119	119	164	228	394	421	495	601	701

Year	Plant
2022	Kupekraft AS
	Tokagjelet AS
2021	Dvergfossen
	Øvrebø Kraft AS
	Reinåa
	Kvernfossen Kraft AS
	Skjerva Kraft AS
	Hellifossen Kraft AS
	Graffer Kraft AS
2020	Trollvikelva Kraft AS
	Storedalen Kraftverk AS
	Sædalen Kraft AS
	Salhuselva Kraft AS
	Nørlandselva
	Kjeldalselva Kraft AS
	Gudåa
2019	Trollekraft AS
	Søråni Kraft AS
2018	Vengåkraft AS
	Vaksvik
	Romøyri
	Lidal
	Jordal
	Hatlestad
	Brekkefossen Kraftverk AS
	Bjåstad
	Berge
2017	Vossedalselvi Kraft AS
	Vangjolo Kraft AS
	Sleveåne Kraft AS
2016	Ullestad
	Grytneselva
2014	Væla Kraft AS
	Litj-Hena Kraftverk AS
	Halvdagsåa Kraft AS
2013	Midtunkraft AS
	Hynna Kraft AS
	Bele Kraft AS
2012	Nordbøåna Kraft AS
	Neset Kraft AS
	Embla Kraft AS
2011	Rodal Kraft AS
	Ringdal Kraftverk AS
2010	Kylland Kraft AS
2008	Heina Kraft AS
2007	Gyl Kraft AS
	Engeset Kraft AS
2006	Nørståe Kraft AS
	Nordvik Kraft AS

2 CK POWER PLANTS



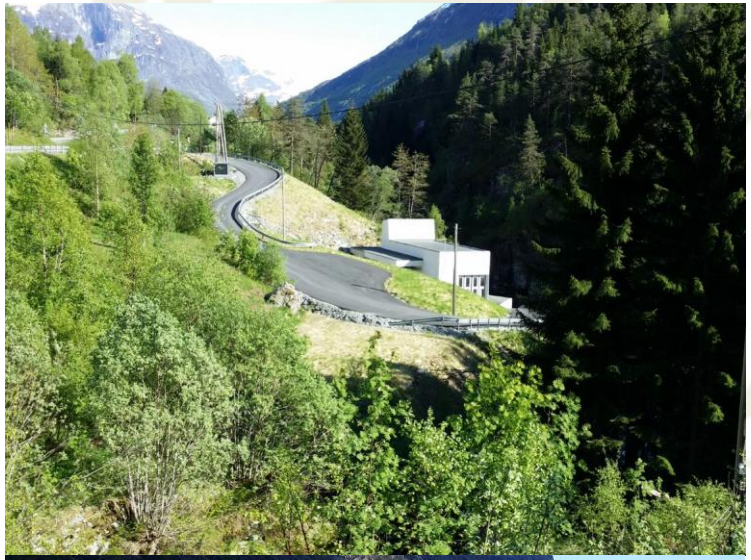


2 THREE REPRESENTATIVES

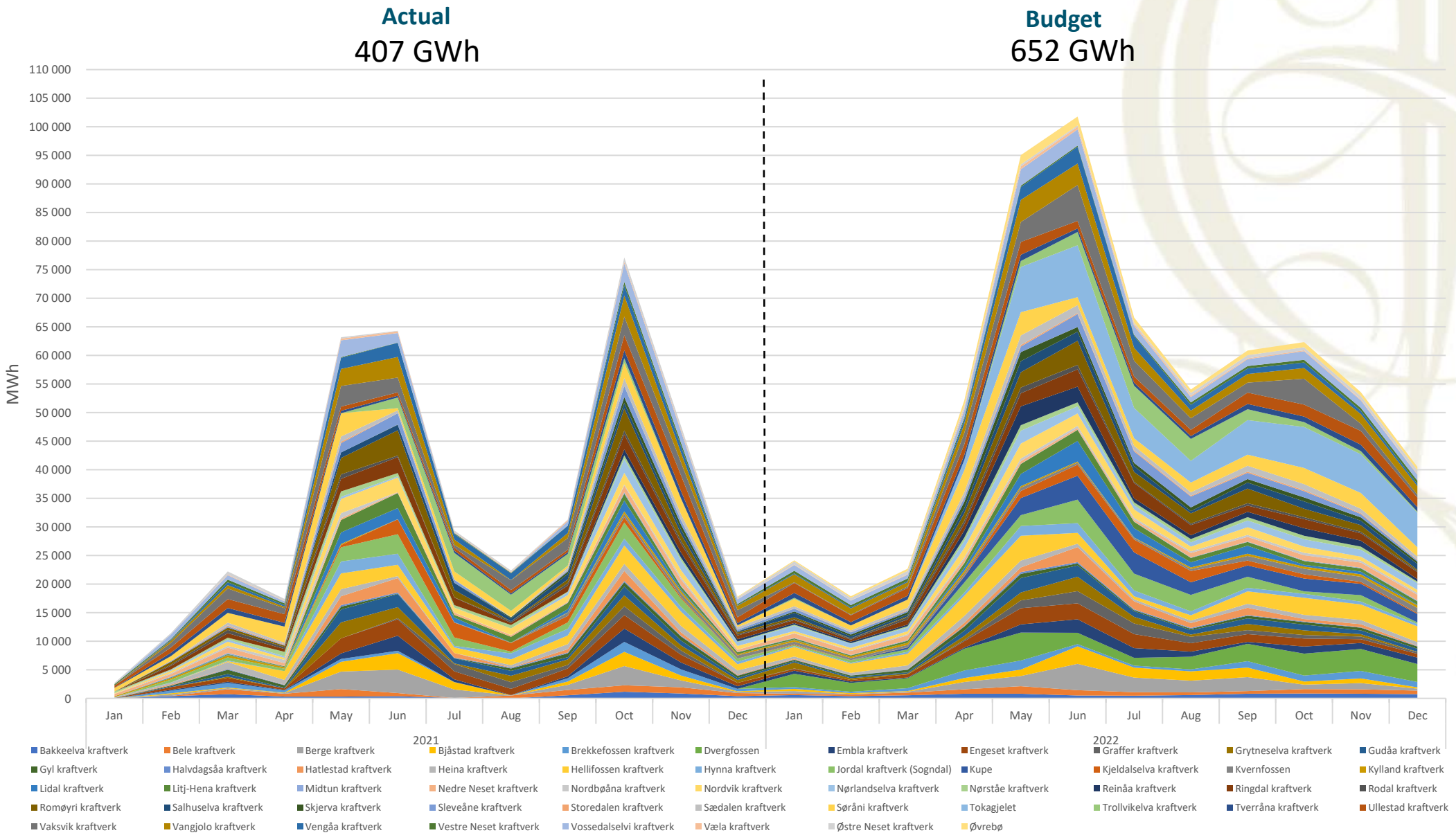
Vaksvik (2018) 22,5 GWh

Romøyri (2018) 17,6 GWh

Ringdal (2011) 17,8 GWh



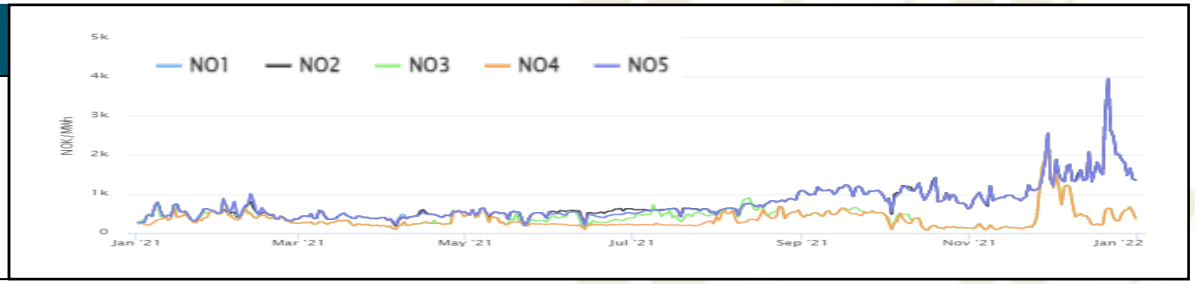
2 CK GROSS PRODUCTION 2021A -2022B



3 THE NEW REALITIES

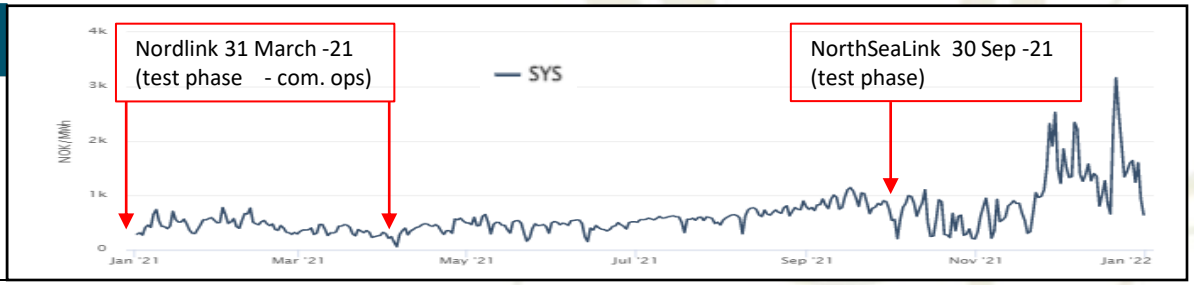
Regionalization of Norwegian power prices

- Assets in NO3/NO4 exposed to grid bottle necks
- NO3 prices sensitive to windpower contributions
- Unregulated power supply locked in in NO3 and NO4 when windy and rainy weather hits the region – leads to oversupply situations



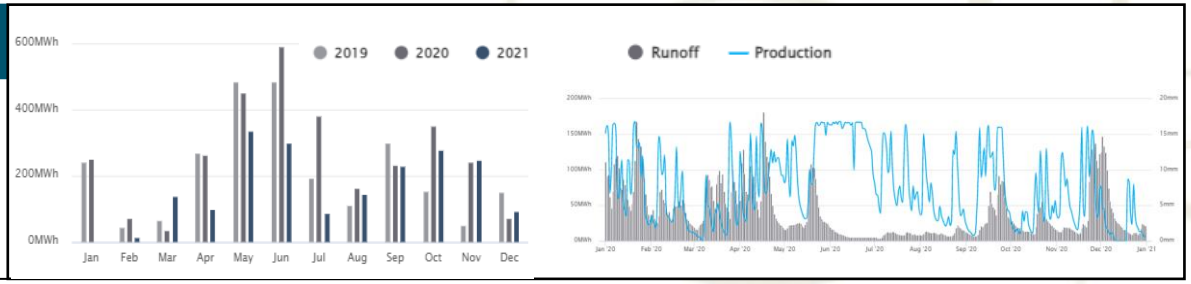
Increased price volatility

- More abrupt changes and higher maximums
- Influence of NW European supply/demand situation on NO1, NO2 and NO5 prices through high capacity export cables to undersupplied Germany, UK and Denmark



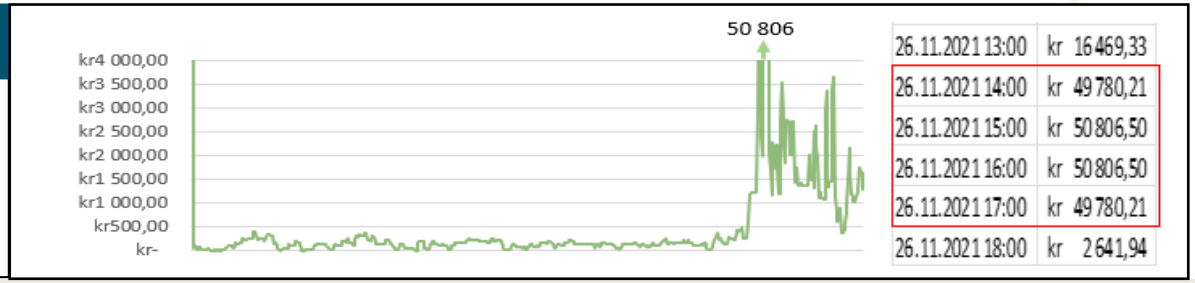
Climate change impact on hydrology and assets

- Increase in local heavy rainfall leads to higher flood losses
- Changes in weather impact on hydrology and expected production
- Extreme rainfall events impact on powerplant facilities



Regulated power market unstability

- Run-of-river plants need to balance nomination by using R-market
- Increased Norwegian Export has led to extreme events in the R-market where the market was not able to balance – latest at 26 Nov. with resulting in prices at 5000 EURO/MWh for 4 hours



4 HOW WE PREPARE TO FACE THESE REALITIES

Regionalization of Norwegian power prices

- Reprioritize development portfolio and review fall lease agreements
- Check robustness of projects for NO3/NO4 located concessions
- Strong focus on regularity, intake efficiency and added GWh opportunities to increase robustness against low prices

Increased price volatility

- Price volatility mitigation -> hedging etc.
- Improved operational readiness to take advantage of peak periods
- Active use of regulation possibilities (intraday) where possible
- Stronger focus on liquidity planning

Climate change impact on hydrology and assets

- Review NAP for all pants to check if hydrology has changed
- Search for opportunities to delay flood water and thereby reduce flood losses
- Robustness check of facilities

Regulated power market unstability

- Improve production forecast modelling (machine learning etc.) to reduce imbalance
- Dialogue with regulator to amend regime for small-scale hydropower

5 CLOSING REMARKS

- Macro environment looks good for small-scale hydro power. Energy transition targets requires step up in renewables supply to support domestic political ambitions for decarbonisation of transport sector, electrification of offshore installations and export to NW Europe
- Challenging to deliver additional power supply from new large scale hydro and onshore wind developments due to strong civil resistance against such developments in pristine nature. Small-scale hydro - with remaining potential of ~8 TWh - is less intrusive and more publically accepted

However,

- The easiest small-scale hydro opportunities are realized – the more difficult, but still attractive ones remain (typically requires tunnels/boreholes)
- A revision of public authorities' current administrative practices will be required to take advantage of the potential in small-scale hydro power:
  - Stringent concession terms (e.g. design, environmetal flow) make developments sub-economic and projects are not executed
  - Lengthy approval processes and high refusal rates (~40%) slow down development pace
  - Grid restrictions and slow pace in local grid development hinder effective and timely developments
  - A regulation regime designed for big hydro is not supporting development of unregulated small-scale hydro (ref. imbalance challenges)
  - Regionalization of Norwegian power prices is reducing interest for Northern Norway where potential is largest

➢ **The regulatory regime need to be adjusted if smallscale hydro is meant to contribute to the energy transition**

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