



Sustainability is key to success


Boliden Supplier Summit

Magnus Hall

Arland 19 November 2019



VATTENFALL




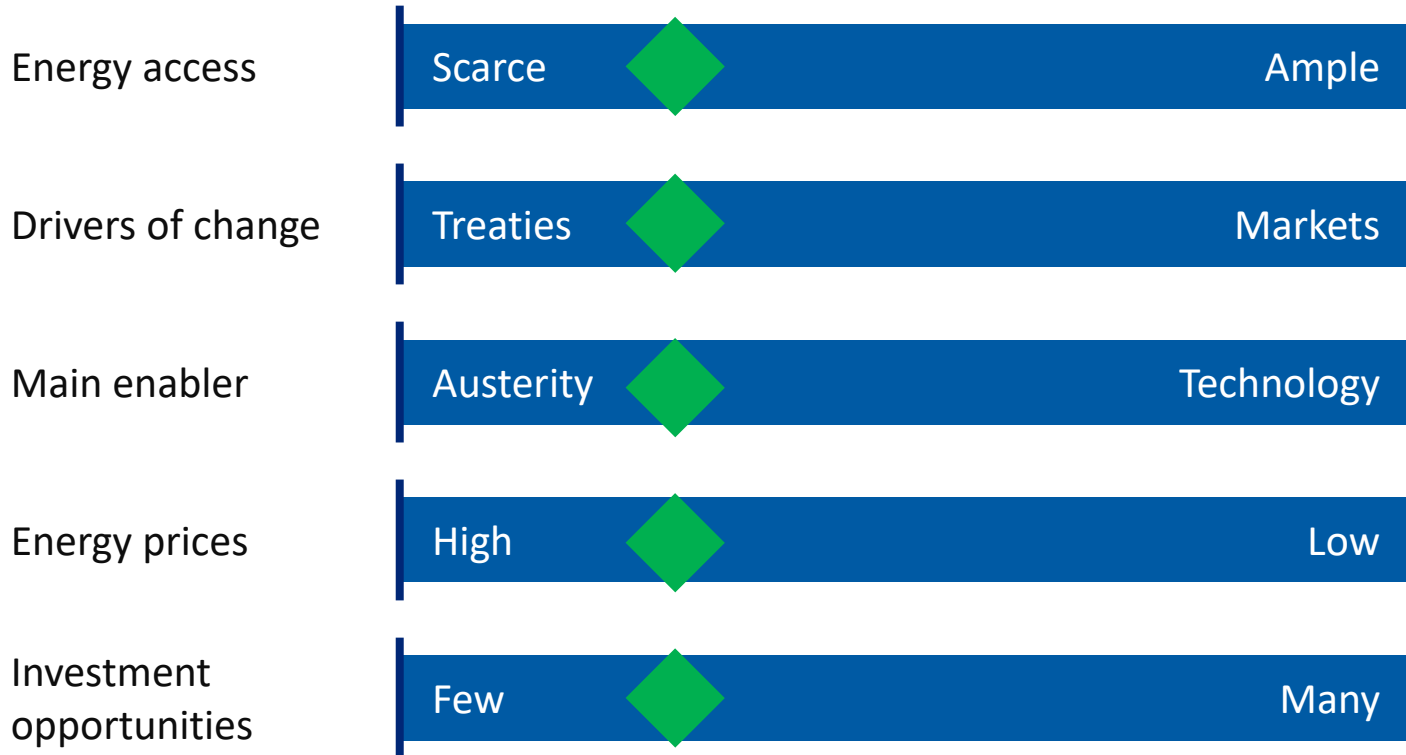
**The climate
issue gets
hotter...**

Do you know Greta?

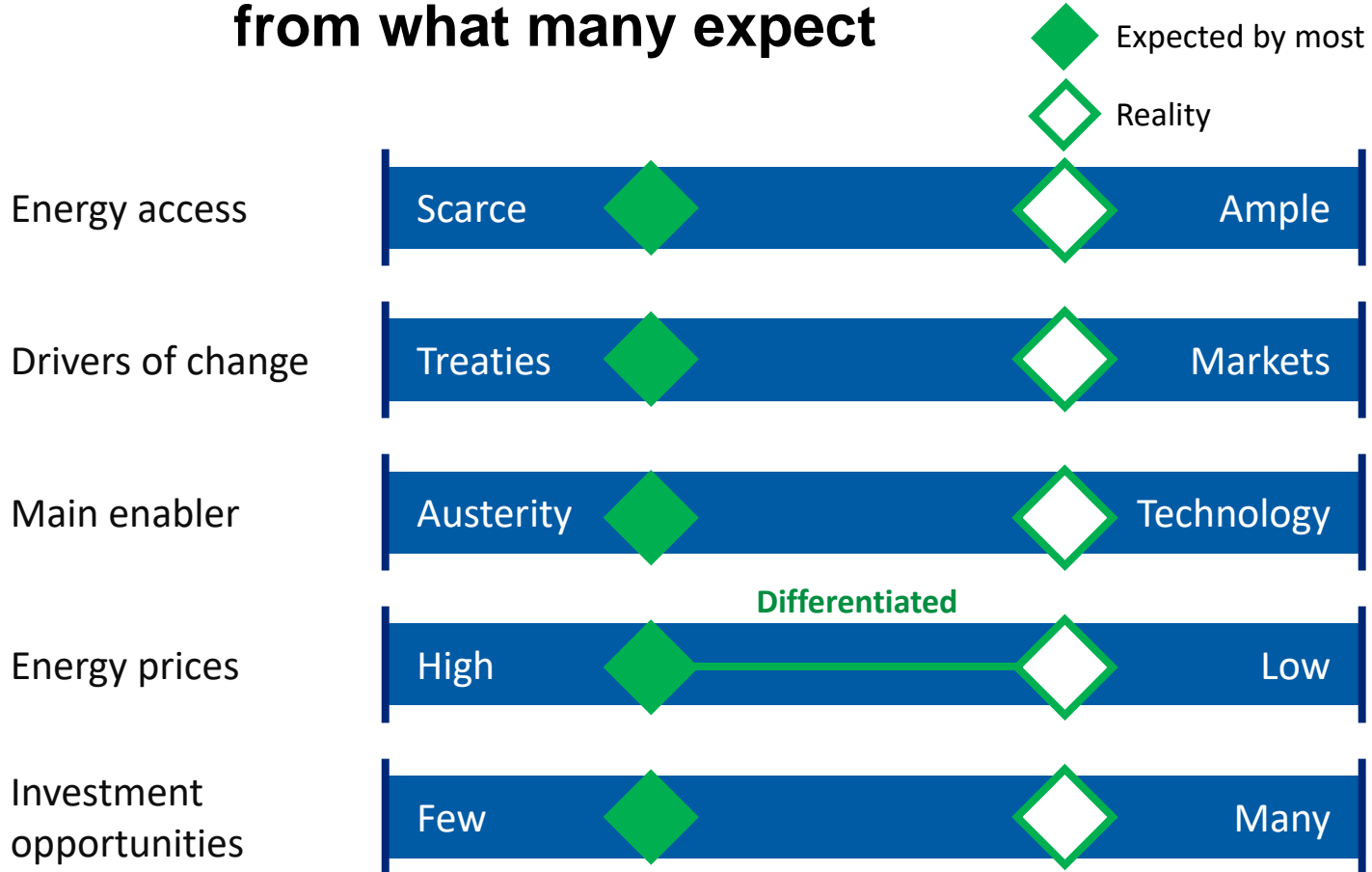


This is what people expect as a result of fighting climate change

 Expected by most



But the new world will be different from what many expect



New Commission with strong climate focus



I want Europe to become the first climate-neutral continent in the world by 2050. To make this happen, I will put forward a Green Deal for Europe in my first 100 days in office.

- Long-term climate target – net zero by 2050
- Review of 2030 ambition – 50 if not 55% reductions
- Maritime into ETS
- Just Energy Transition Fund
- EIB -> Climate Bank
- Energy taxation
- Border Tax Adjustment

Ambitious CO₂ targets across Europe speed up decarbonization and renewables growth

Government actions & technology trends...

... are driving electricity demand and affecting wholesale prices



Fossil-based power

Strengthened national decarbonization targets can be seen throughout Europe



Renewable capacity

Renewables generation in Europe is expected to triple in the coming decades



Energy System

Supply

increasingly intermittent and less steerable



Demand

Overall increase from electrifying sectors



Energy Market

Wholesale prices

increasingly volatile, moderate increase in long term



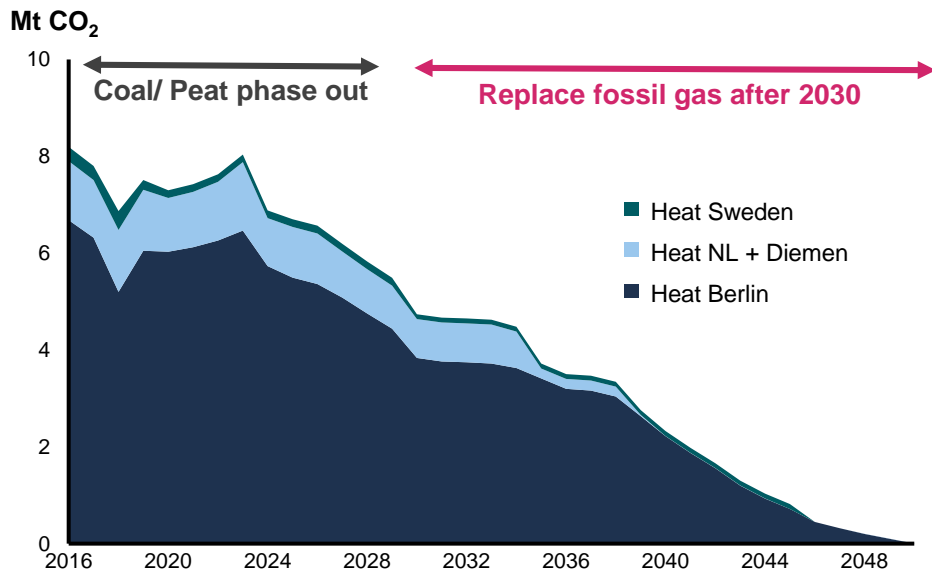
Ancillary Services and Intra-Day markets

volumes increasing



The CO2 roadmap for our district heating

puts Vattenfall at the forefront of the industry and we're exploring options to accelerate



Note: Moorburg and condensing portfolio not pictured. Moorburg does not fit Vattenfall's strategy plant's remaining lifetime will be determined by the planned coal phase out and by security of supply considerations

Coal phase out by 2030 is already defined

- Berlin Portfolio covers > 96% of CO₂-emissions of our heating business
- Collaborating with city of Berlin on solutions both up to and after 2030

Post-2030 gas phase out being investigated

- Planning underway to avoid stranded assets

| Fossil free solutions | | | | |
|------------------------|------------|-------------|------------|---------|
| Waste heat integration | Power-to-X | Sewage Heat | Geothermal | Biomass |

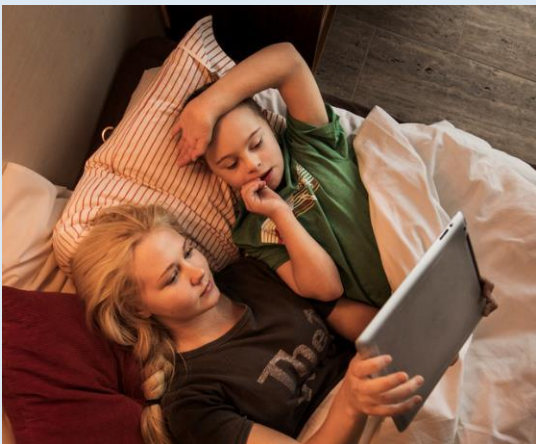
Approved

Science based targets

Reducing total CO₂ emissions by 38% by 2030 from a 2017 base year is in line with 2° climate science, and we're exploring ways to accelerate.

**Electrification
is a key solution!**

We must make it is easy for the next generation to live a fossil-free life!



Climate smart solutions for homes and cities available and affordable for all customers

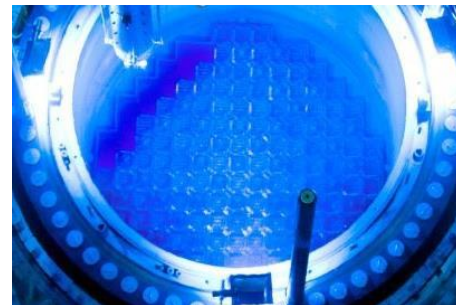


Partnerships with industry explore fossil-free solutions for steel, cement and data centers



Build-out of charging infrastructure supports electrification of transport sector

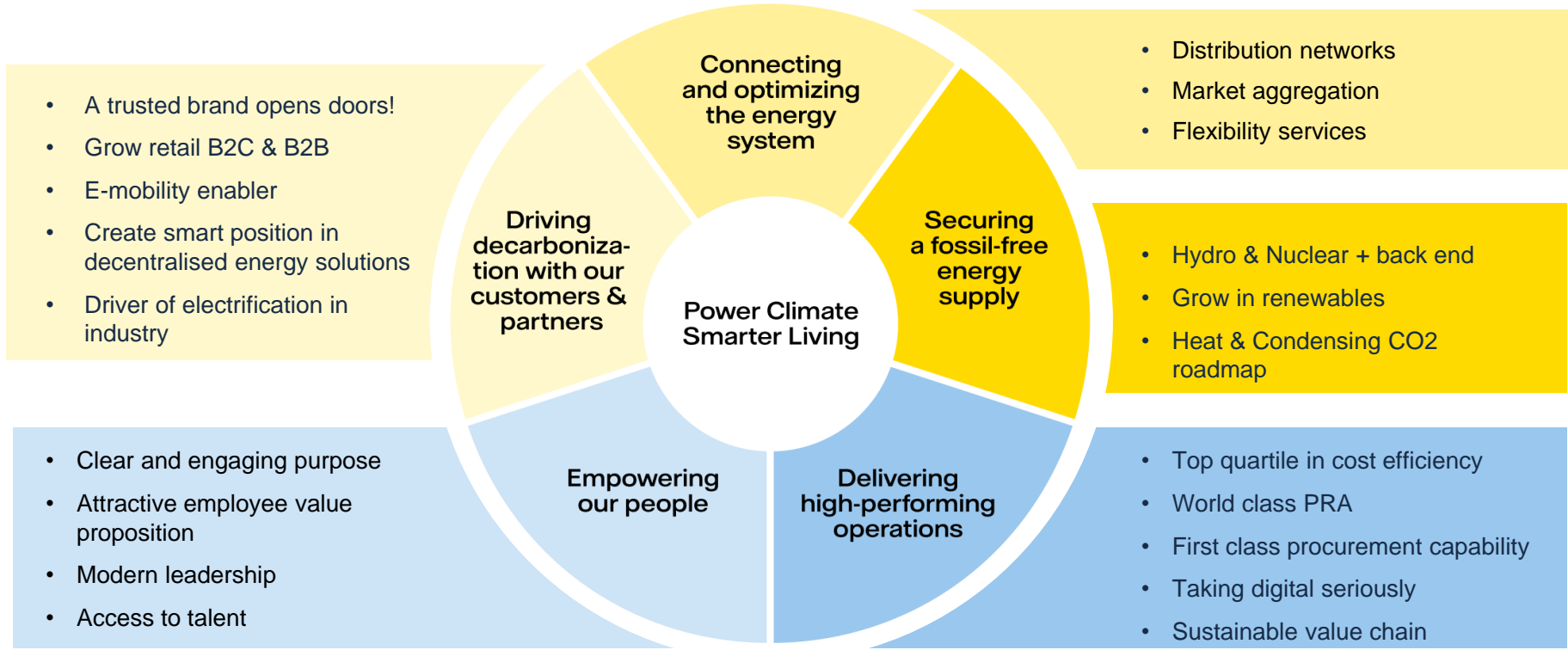
Fossil free living within one generation – a powerful message



Power Climate
Smarter Living

At Vattenfall we exist to help all of our customers power their lives in ever climate smarter ways and live free from fossil fuel within one generation

A strategy for leading the fossil free energy arena



Our partnerships pave the way for new solutions to decarbonize the industry sector



Vattenfall is well-positioned in four potential areas:

- 1 Integrated on-site solar & battery provider
- 2 Owner & aggregator of electric boilers
- 3 Green hydrogen operator & supplier
- 4 Partner to develop new electrification applications



Expand successful partnership models from Sweden to the continent



Our milestones towards fossil-free living within one generation

2020

Fossil-free energy solutions available for all our customers

★ Our operations in the Netherlands are coal-free

2023

We provide electric charging for half a million cars

★ 10 GW of third party renewables capacity under management

600 MW additional, flexible hydro capacity enables more renewable generation

2025

We generate fossil-free energy to power 30 million homes

We pilot 100 MW of green hydrogen gas production from fossil-free electricity

★ The Nordic production fleet is free from fossil fuels

2030

Coal is phased out from all our heat operations

★ Our emissions are reduced by 40%, in line with required level to limit global warming to below 2°C

2035

We are not done, more to come...



Thank you!



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26/11/2019