

WHERE TO
INVEST NEXT

5 CRUCIAL CRITERIA
IN THE SITE
SELECTION
PROCESS OF
BUILDING DATA
CENTERS



Aquila Capital is an investment and asset development company focused on generating and managing essential assets on behalf of its clients.

Aquila Capital

Owner-managed, founded in 2001 in Hamburg. Own fully BaFin regulated KVG

AuM/AuA

We manage around **13 billion** euros on behalf of institutional investors worldwide

Clean Energy

15 GW in generation from wind, solar PV and hydropower plants. Largest portfolio of small-scale hydropower plants in Norway

Infrastructure portfolio

ca. **1.8 million** square metres of real estate and green logistics projects completed or under development



Europe



APAC



Source: Aquila Capital Investmentgesellschaft mbH, as at 30.09.2021.

EUROPEAN STRATEGY

FOR DECARBONISED DIGITALISATION



With its sub-brand, AQ Compute, Aquila Capital is part of **Europe's digitalisation.**

AQ Compute is an European market participant with **available colocation capacities** in **Norway** and pursues a **data centre strategy** focusing on **secondary markets.**

AQ Compute anticipates the ever increasing **demand for compute capacity** with a strong focus on **sustainability.**

AQ Compute aims at the development of both **conventional and high-performance computing (HPC) colocation/ built-to-suit data centres.**








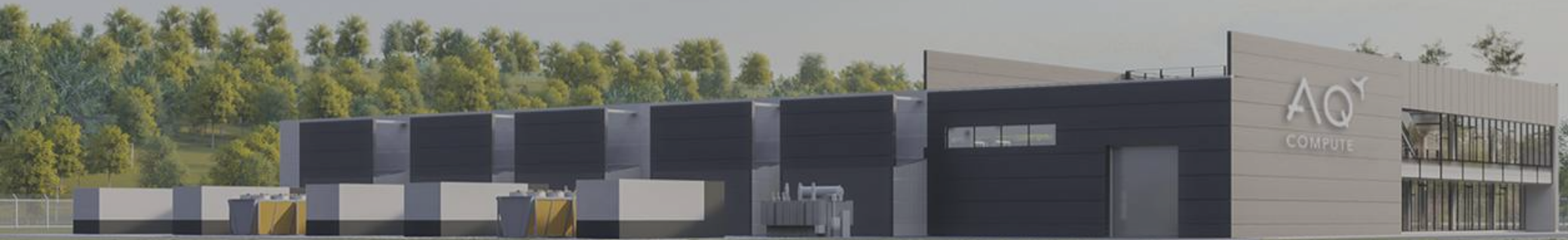
- General site selection process is based on an analytical tool with 40+ variables
- A 2-step approach
 - Analysis and selection of appropriate cities in Europe
 - Target plots within the proximity of the cities selected in the first step

Macro variables

-  **Macroeconomics**
 - Population
 - GDP
-  **Digital economy**
 - Internet access
 - Employment in IT companies
 - Share of cloud computing
-  **Data centre market**
 - Capacity in MW
 - Energy prices
 - Availability of renewable energy

Micro variables

-  **Plot size**
 - Dependent on target capacity
 - Scalability
-  **Fibre connections**
 - Amount of providers in the area
-  **Power availability**
 - Sufficient power required
 - Timely availability
-  **Edge computing**
 - Requires proximity to city centre to guarantee low latency
-  **Sustainability**



100% renewable energy

- High share of renewable energy available in the region
- Low emissions factor in grid desired
- Availability of Aquila managed renewables in close proximity

Waste heat recovery

- Opportunities for waste heat recovery
- i.e. district heating/cooling, fish farms

Sustainable construction

- ESG construction standards
 - i.e. LEED Standard
- Use of sustainable and recycled material
 - Recycled steel
 - Timber

Alternative power back-up solutions

- Battery storage systems
- Hydrogen systems



Increasing risk factor

- Unprecedented extreme weather events, i.e. floods, storms, wild fires etc.
- Threat to uptime of data centres if location is not assessed accordingly
- Increase in operational costs are likely, i.e. insurance

Google and Microsoft Dutch data centers may necessitate publicly-funded dikes

More costs for locals - but also more flood defenses

March 30, 2021. By: Sebastian Moss. Comment



Risk mitigation

- Early assessment in site selection process of possible climate related future risks
- Assessments usually based on historic data – risk of underestimation
- Design needs to be adapted accordingly – cooling systems that withstand extended periods of heat
- Regular review

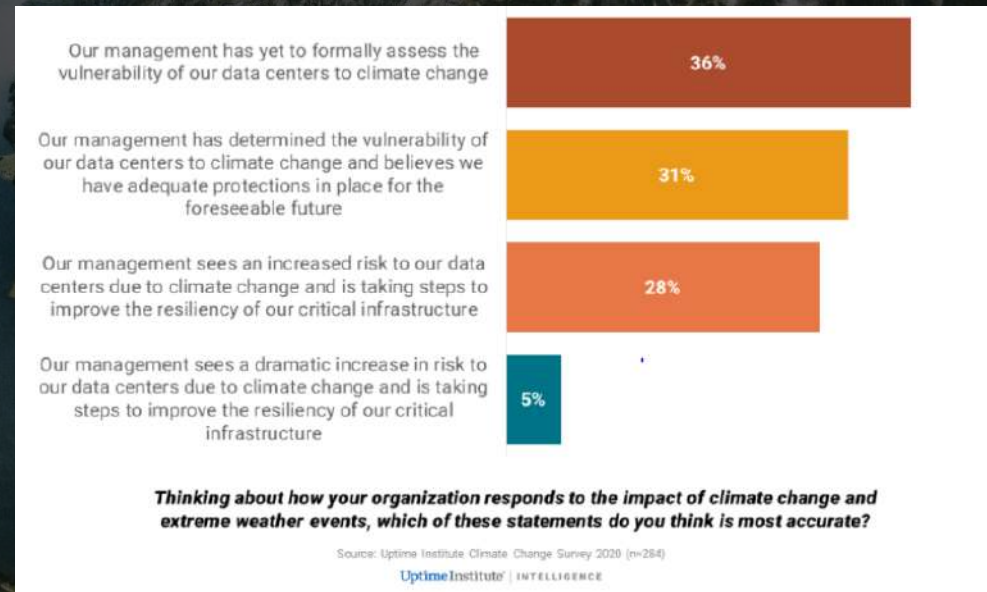
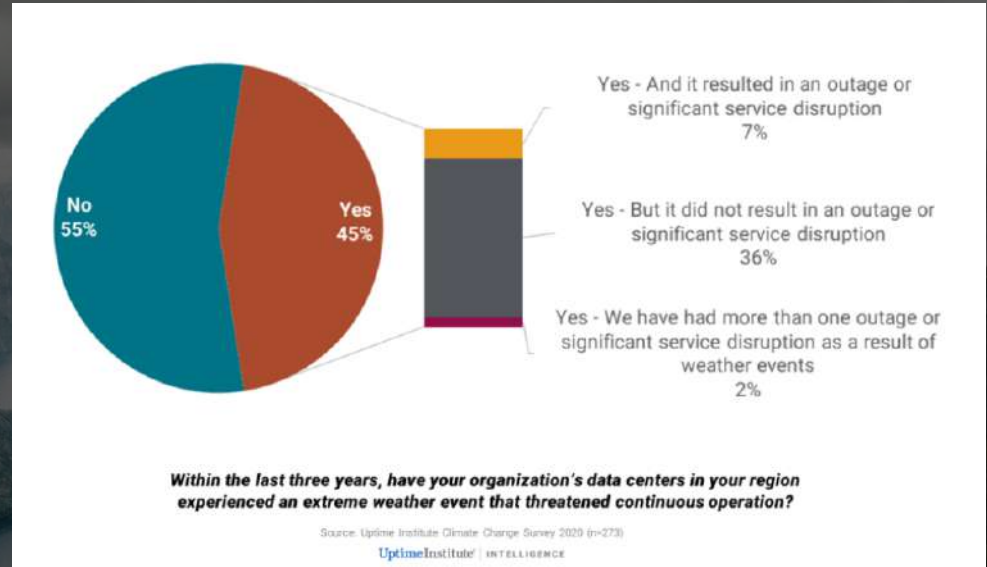


Figure 1&2: Uptime Institute Climate Change Survey 2020

Hybrid workplaces drive heightened demand for data centers

Innovation in workplace technology is contributing to higher volumes of data across the board, and higher volumes of data, means higher demand for the facilities that process it

October 07, 2021 [Comment](#)

Covid and e-commerce sees data centers facing-off against retailers for prime real estate

Online shopping habits are changing retailer's real estate footprints, putting them in direct competition for prime potential data center land

February 03, 2021 By: Dan Swinhoe [Comment](#)



President Zelensky hoping to lure US hyperscalers to Ukraine

President Volodymyr Zelensky met with Apple about building in Ukraine, reportedly hoped to projects with AWS, Microsoft, and Google

September 06, 2021 By: Dan Swinhoe [Comment](#)

Ukrainian government preps to move data and servers abroad as Russian troops advance

After centralizing data in Kyiv

March 10, 2022 By: Sebastian Moss [Comment](#)

Battle Intensifies To Keep Ukraine Online

and network engineers kept amidst a full-scale military invasion

Forbes

Feb 25, 2022, 04:09am EST | 6,116 views

Ukraine-Russia War Impact On Engineering And IT Services Availability

Exclusive: Ukraine prepares potential move of sensitive data to another country - official

By Raphael Satter and James Pearson

- The recent invasion of Russia in Ukraine reiterates the need for thorough risk assessment and alternative solutions of diversification purposes
- The Ukrainian government has stored critical data centrally in Kyiv for cybersecurity reasons. Due to the invasion preparations were needed in order to be able to move that data into safer territories
- Disaster recovery could be redefined in the future and add geographically diversified disaster recovery data centre in politically stable while cost efficient markets like Norway

Site Selection Process | Europe

Target location Norway



Macro & micro variables



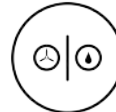
Sustainability



Climate change resilience



Politically stable



Country	Emissions factor	Emissions factor 100%	Year
Austria	0.102	0.0160	2018
Belgium	0.207	0.0151	2018
Germany	0.401	0.0342	2019
Ireland	0.353	0.0258	2018
Italy	0.248	0.0181	2018
Luxembourg	0.069	0.0050	2018
Netherlands	0.441	0.0322	2018
Norway	0.0189	0.0014	2018
Portugal	0.31	0.0226	2018
Spain	0.276	0.0201	2018
Switzerland	0.016	0.0012	2017
United Kingdom	0.3072	0.0224	2018

Figure 1: emissions factors of different European power grids

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