

BCG × NHO

# Norway's Competitiveness *in the Energy Transition*



Boston Consulting Group partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities. BCG was the pioneer in business strategy when it was founded in 1963. Today, we help clients with total transformation—inspiring complex change, enabling organizations to grow, building competitive advantage, and driving bottom-line impact.

To succeed, organizations must blend digital and human capabilities. Our diverse, global teams bring deep industry and functional expertise and a range of perspectives to spark change. BCG delivers solutions through leading-edge management consulting along with technology and design, corporate and digital ventures—and business purpose. We work in a uniquely collaborative model across the firm and throughout all levels of the client organization, generating results that allow our clients to thrive.

The Confederation of Norwegian Enterprise (NHO) is Norway's largest organisation for employers and the leading business lobbyist. Our current membership of 28.000+ companies ranges from small family-owned businesses to multinational companies in most sectors.

NHO is the leading voice of business and industry in Norway. Having expert knowledge and an extensive business network, the NHO plays an important and constructive role in Norwegian society.

Our main objective is to create and sustain conditions that safeguard the competitiveness and profitability of business and industry in Norway, and thereby maintain the basis for a good standard of living, sound economic growth and sustainable development.

The NHO is made up of 16 Sectoral Federations and 10 Regional Offices.

# Norway's Competitiveness

## *in the Energy Transition*

**Børge Kristoffersen, Nils Klever, Robert Hjorth, Rolf Erik Tveten, Kjetil Sonerud, Karine Mogen, Jørgen Tvedt and Ingunn Haldorsen**

January 2021

## 1. Norway must act now to succeed in the energy transition

The Confederation of Norwegian Enterprise (NHO) has developed a roadmap for the future of Norwegian business. It highlights energy transition as an area of growth in the coming decades. This growth will materialize in Norway and abroad, and there will be significant potential for export-oriented businesses that are ready to take part in it.

Norway can exploit many competitive advantages associated with the energy transition. We have extensive access to natural resources. We have strong academic and research environments within relevant fields. Many Norwegian companies are successfully creating new, green jobs.

At the same time, there is an increased level of activity, with several countries actively positioning themselves for the energy transition. New business models that arise within green value chains will form the basis for future jobs in the energy sector and beyond. The strong momentum in Europe is further evident through the green footprint of COVID recovery packages, as well as several new initiatives related to the Green Deal of the European Union (EU). Against this backdrop, it is imperative that Norway makes conscious choices in the energy transition to maximize value and job creation.

## 2. Measuring Norway's competitiveness in the energy transition

BCG has, together with NHO, built a “temperature gauge” to quantitatively rank select countries’ competitive positions in the energy transition. The purpose of the temperature gauge is to identify and measure sources of competitiveness as a host nation for economic growth related to the energy transition, focusing on technology domains that have strong export potential. The goal is to identify patterns that reveal what the successful nations do well and where the rest can improve.

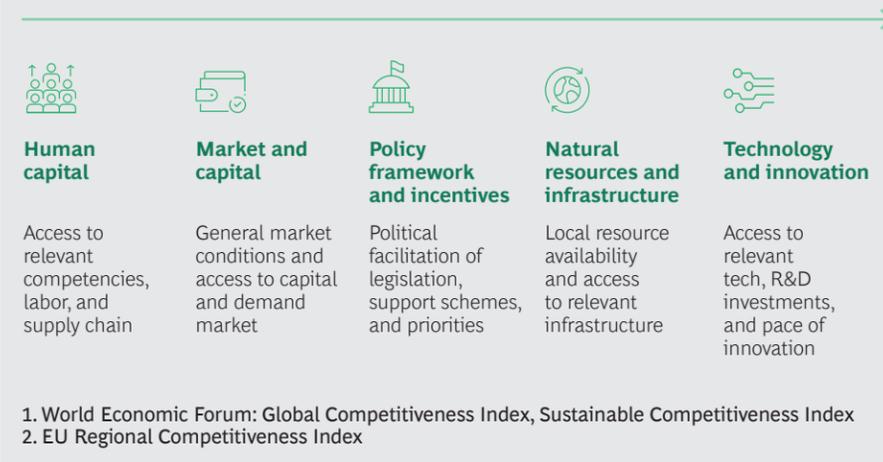
Our approach builds on recognized frameworks for measuring national competitiveness from the World Economic Forum (WEF) and the EU, adjusted for the purpose of the energy transition. The assessment is based on five dimensions: human capital; market and capital; policy framework and incentives; natural resources and infrastructure; and technology and innovation. Each dimension is measured using a set of indicators to ensure a quantitative, transparent, and objective comparison that is robust over time and can be scaled to more countries. In total, the temperature gauge counts 30 different indicators across the dimensions.

### EXHIBIT 1 | Framework for temperature gauge Five dimensions driving competitiveness in the energy transition



#### Norway's competitive position

Framework builds on WEF's<sup>1</sup> and EU's<sup>2</sup> frameworks  
— adjusted for the purpose of the energy transition



Norway's competitive position is evaluated in a “European championship” relative to ten other relevant European countries. To assess the performance of Europe in a global context, an initial quantitative assessment is conducted, using the same framework, of five countries outside Europe.

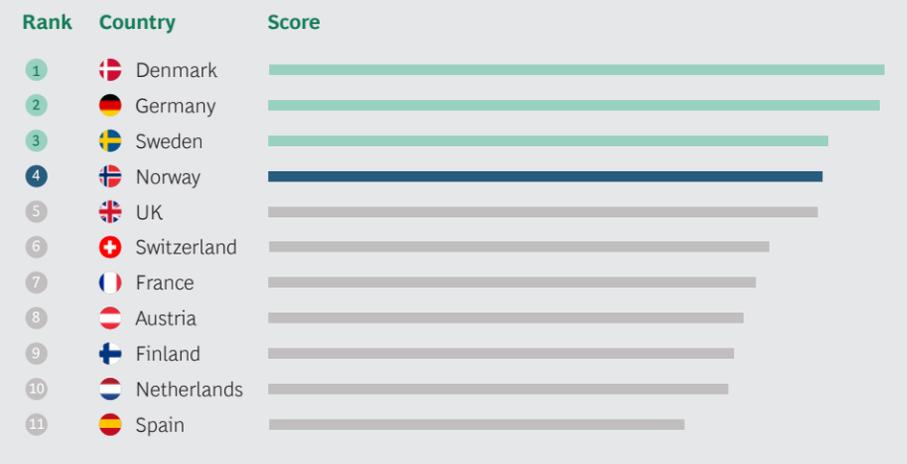
Quantitative findings from the temperature gauge are complemented by qualitative insights from interviews with leading companies in Norway to identify opportunities for growth in the energy transition, as well as requirements to succeed with export opportunities and job creation.

## 3. Norway has a good starting point, but is outside the podium

The analysis shows that Norway is in fourth place in Europe, behind Denmark, Germany, and Sweden.

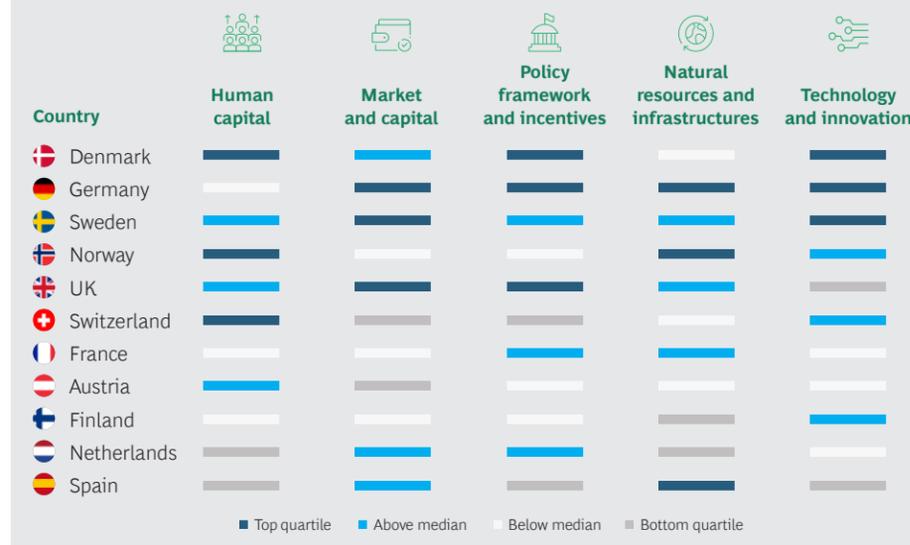
As seen in Exhibit 2, the race is close, with the Scandinavian countries dominating the top positions together with Germany. Norway has a solid starting point with rich natural resources and a strong foundation in human capital and technology and innovation. It has a large petroleum sector and a highly skilled future energy workforce with a large per-capita number of technology students in universities. Norway also has a substantial advantage thanks to its access to hydropower and natural gas, in addition to well-established transport and electricity infrastructure.

EXHIBIT 2 | Temperature gauge  
Results in “European championship”



Looking at the results in Exhibit 3, Norway lags behind leading countries in some dimensions, specifically in policy framework and incentives and market and capital. Germany is a leading player in market and capital, while Denmark sets an example in policy framework and incentives and in technology and innovation.

EXHIBIT 3 | Score on five dimensions among European peers



Our analysis indicates that Europe has a strong competitive position in the energy transition compared with the global front-runners. All selected countries—United States, Japan, China, Australia, and Canada—score below Norway, with Japan closest to the European podium.

#### 4. Norway can boost competitiveness by learning from the best

Norway’s strong overall score, combined with its access to natural resources and human capital, serves as a solid foundation for the energy transition. Although a strong foundation is essential to compete with the top nations in Europe and globally, it is not sufficient by itself to create a sustainable competitive advantage. There are clear characteristics among the winners that can serve as lessons. Winners are able to connect strengths in a holistic, long-term strategy.

Take Denmark, the top country in this analysis. It has set an ambitious target of 70% CO<sub>2</sub>e<sup>1</sup> reduction with a focus on long-term competitiveness, wealth, and job creation along the way. The target is codified in law and the Minister of Climate and Energy is held accountable for that target. To successfully reach this goal, government and business partnerships have been established, with representatives from the business community ensuring alignment and progress on green priorities. The government has delegated responsibility to the business community to efficiently identify relevant measures, set priorities, and suggest policies that support business needs.

Additionally, Denmark has built a 30-plus-year track record of applying a holistic, long-term approach to priority areas such as wind power and energy efficiency. As part of this holistic approach, significant subsidies have been allocated to the early phase of long-term profitable plans.

Norway can improve its competitiveness by using these lessons from winning nations. We need to set a clear direction for the energy transition, define a holistic strategy connecting all strengths, and establish partnerships across government and businesses with a clear sense of accountability.

EXHIBIT 4 | Connecting the pieces



#### 5. Success in the energy transition requires a national strategy

There is a clear sense of urgency, as other nations are creating significant momentum. Norway needs to set a clear and consistent direction for the energy transition. Norwegian businesses are ready, but to focus on the right opportunities, there must be a holistic and united approach across private and public sectors. Our recommendation is to follow a three-step approach:

- 1. Establish partnerships across public and private sectors.** Using Denmark as inspiration, Norway needs to establish powerful partnerships across government

<sup>1</sup> CO<sub>2</sub> equivalents

and the business community that cover all relevant sectors in the energy transition. The purpose of the partnerships is to enable the coordination of public investments, interest from the private sector, efforts from academia, and research to work toward the same goal.

2. **Create sector-specific plans.** Each partnership should be given the responsibility to identify initiatives where Norway can best leverage its competitive strengths within a specific sector. Businesses must be actively involved in recommending policies and measures needed to succeed in creating export opportunities, wealth, and jobs in the renewable energy sector while reducing CO<sub>2</sub>e emissions. The business community must also take ownership of the targets allocated to each sector.
3. **Ensure accountability and track progress.** This is a transformation, where the solution cannot be found in one single company or one single institution. And just like any transformation, we recommend to set up a strong coordinating body to ensure collaboration between companies and institutions in and across sectors. This coordinating body needs to establish goals and track progress across sectors.

Norway needs to show national leadership and set a clear and consistent direction for the energy transition. Only by joining forces, across disciplines and traditional boundaries, can we reap the full benefits of our competitive advantages in the energy transition.

BCG firmly believes that Norway has an opportunity to advance from fourth place to the podium. If Norway shows leadership in the energy transition, economic growth and new green jobs await.

## EXAMPLES OF ATTRACTIVE PLAYS

### Hydrogen and Carbon capture, utilization and storage (CCUS) with a good fit to Norway's fundamental strengths

In the coming years, Norway needs to prioritize technology domains where our strengths as a nation can be leveraged. Norway's access to natural gas and hydropower as well as strong human capital provide good starting points for green and blue hydrogen and CCUS.

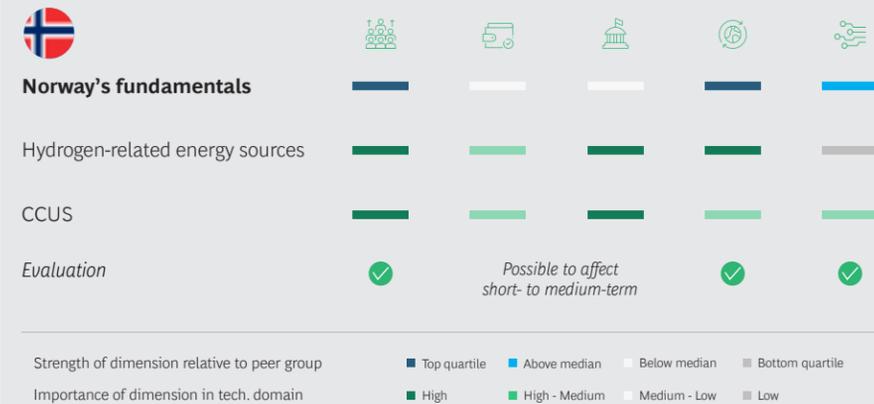
The market for CCUS has been growing, in part due to the Paris Agreement, which established that an estimated 14% of total reduction could come from this technology domain. With access to efficient CCUS technology, Norway can utilize large natural gas reserves to

produce blue hydrogen, which in turn can be used to decarbonize some of the harder-to-abate industries (cement and metal production are two examples).

There are clear downstream synergies for green hydrogen produced by utilizing Norway's clean hydropower. Ecosystems around green hydrogen presents an opportunity to capitalize on the oxygen and heat produced from electrolysis of water (fish farming is one example), and green hydrogen has the same application areas as blue hydrogen.

### EXHIBIT 5 | From assessment of Norway's fundamentals in the temperature gauge, hydrogen and CCUS emerge as attractive plays

#### Norway's strengths are a good match for green and blue hydrogen and CCUS



## Acknowledgments

Thank you to the companies and experts who have provided input to this report.

## For Further Contact

### **Børge Kristoffersen**

Managing Director and Senior Partner  
*Oslo*

Kristoffersen.Borge@bcg.com  
+47 9589 6835

### **Nils Klever**

Managing Director and Partner  
*Oslo*

Klever.Nils@bcg.com  
+47 9589 6793

### **Robert Hjorth**

Partner  
*Oslo*

Hjorth.Robert@bcg.com  
+47 9589 6873

For information or permission to reprint, please contact BCG at [permissions@bcg.com](mailto:permissions@bcg.com).

To find the latest BCG content and register to receive e-alerts on this topic or others, please visit [bcg.com](http://bcg.com).

Follow Boston Consulting Group on Facebook and Twitter.

© Boston Consulting Group 2021. All rights reserved.

**BCG** ×  **NHO**