

Case

## The competitiveness of Norway and its challenges

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### Abstract

This case addresses the competitiveness of Norway and its challenges. Thanks to the discovery of oil & gas on the Norwegian continental shelf in 1969, Norway's economy prospered to become the sixth richest in the world in terms of gross domestic product (GDP) per capita. Different than other oil & gas rich countries in the world, Norway achieved to improve the societal welfare of its citizens and led the world in social progress. Despite the prosperity and the high level of social welfare, dependence on the oil & gas industry, the climate crisis, and poor transport infrastructure continued to challenge Norway, and the country lagged behind its Scandinavian neighbours in competitiveness.

**Keywords:** competitiveness, Norway

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Norway was a developing economy at the beginning of the 20<sup>th</sup> century, but the discovery of oil & gas in the Norwegian continental shelf in 1969 changed the country's fate, making it the sixth richest in the world in 2018 with a purchasing power parity (PPP) adjusted gross domestic product (GDP) per capita of USD 65,603<sup>1</sup>. Different than other oil & gas rich countries, but similar to other Scandinavian countries, Norway was also a leading nation in social progress with an index of 90.95<sup>2</sup> out of 100. Despite these good developments, it was ranked only 17<sup>th</sup> according to the global competitiveness index of the World Economic Forum, lagging behind its Scandinavian neighbours: Sweden was 8<sup>th</sup>, Denmark 10<sup>th</sup>, and Finland 11<sup>th</sup><sup>3</sup>. The country was still vulnerable to fluctuations in oil prices and a possibility of catching the Dutch disease (i.e. the lack of development in other sectors as a result of the dominance of a certain sector in the country) due to its high dependence on the oil & gas industry. Furthermore, as environmental challenges such as global warming created pressures for the use of more renewable sources of energy, the future of the oil & gas industry was questionable. Norway has responded to these challenges by creating its sovereign wealth fund (officially called the Government Pension Fund Global) in the 1990s, by trying to diversify its economy, and by taking leadership to adopt the use of environment-friendly innovations such as electrical cars. However, the challenges remained to be ahead for Erna Solberg, the Prime Minister of Norway since 2013. While her coalition government decided to withdraw unexpectedly 360 million Euro from the wealth fund in August 2019 in response to falling oil prices and increasing government expenditures<sup>4</sup>, the Norwegian Parliament started its new term on October 2, 2019 with hot debates on the country's challenges<sup>5</sup>. The ongoing harsh disputes among the leading coalition's conservative Progress Party and the Liberal Party was giving hard times for the Prime Minister, but she was still optimistic for Norway's future in her speech at the opening ceremony of the Parliament<sup>67</sup>.

## Country profile

Norway is located on the Scandinavian Peninsula in Northern Europe, surrounded by the North Sea, the Skagerrak Strait, which separates it from Denmark, the Norwegian Sea, and the Barents Sea, and it has land borders with Sweden, Finland and Russia (see Exhibit 1). Its territory occupies 323,759 square kilometres<sup>8</sup>, and it was a small country with a population of 5.3 million people in 2018 with an annual population growth rate of 1.08%<sup>9</sup>. Most of the population resided in cities along the southern coast such as Oslo, the capital, and Bergen. Nearly 1.7 million people lived in the metropolitan area of Oslo, and about 420,000 people lived in the metropolitan area of Bergen<sup>10</sup>. Norway has been receiving increasing number of immigrants, which represented 17% of the entire population in 2018<sup>11</sup>. 43% of Norway's population aged 15-64 had tertiary education as of 2017, and the unemployment rate was quite low at 3.8% in 2018 (see Exhibit 2). Norway was the world leader in social progress in 2019, reflected by among others high levels of inclusiveness, environmental quality, protection of personal rights, personal freedom and choice, sheltering, and access to information and communications<sup>12</sup>.

Norway is officially a kingdom run by monarchy, but the monarch in Norway is only the symbol of national unity and history<sup>13</sup>. The Norwegian King (currently Harald V) sits on the throne, and he is empowered to perform the ceremonial functions to host incoming heads of nations<sup>14</sup>. The actual governance is implemented by three independent forces as in any other democracy: executive, legislative and juridical<sup>15</sup>. The executive force includes the Prime Minister (the head of the government) and seven Ministers creating altogether the Council of State; the legislative force is embodied by Storting, the Parliament, which is formed every four year by elections; and finally, the juridical force includes courts of all levels<sup>16</sup>. Norway makes no compromise from the well-functioning of its institutions and ranked 8<sup>th</sup> in the institutions pillar of the World Economic Forum's global competitiveness index<sup>17</sup>.

Norway was overall the 17<sup>th</sup> most competitive country among 141 countries in the world in 2019<sup>18</sup>. The country was well-known for its high living standards with a PPP adjusted GDP per capita of USD 65,603, the sixth in the world. Despite fluctuations in oil prices, to which Norway was highly dependent, as reflected in the fluctuations in the growth of PPP adjusted GDP per capita during 2014-2018 (see Exhibit 2), the country still ranked the first in 2019 in terms of its macroeconomic stability<sup>19</sup>. One indicator of that was that the Norwegian currency Krone (NOK) has been relatively stable. Norway has also managed to keep its inflation at reasonably low levels (see Exhibit 2) by investing the revenues from the oil & gas industry in its wealth fund outside of the country. A key competitiveness challenge for Norway was its infrastructure. The country ranked 44<sup>th</sup> in the infrastructure pillar of the global competitiveness index, performing poorly especially in liner shipping connectivity and road connectivity<sup>20</sup>. The mountainous landscape and the long coast of fjords (see Exhibit 1) partly explain the disadvantage, which is also reflected by the fact that only 3% of the land is suitable for agriculture<sup>21</sup>.

The energy industry accounted for 28.8% of Norway's GDP in 2018, and the public sector including defence, education, health care and social work accounted for another 22.9%<sup>22</sup>. Exports accounted for 38.1% of GDP (see Exhibit 2). Main export items were crude oil and natural gas (49% of the total export value), refined petroleum products (8%), metals (8%), fish (7%), food products (5%), chemicals (5%), and machinery and equipment (4%), while Norway's main export partners were the United Kingdom (UK) (21% of the total export value), Germany (16%), the Netherlands (10%), Sweden (7%) and France (6%)<sup>23</sup>. Imports accounted for 32.5% of GDP (see Exhibit 2). Main import items were motor vehicles (11% of the total import value), machinery and equipment (10%), computer, electronic and optical products (9%), fabricated metal products (8%), and other transport equipment (7%), while the key import countries were Sweden (11% of all imports), Germany (11%), China (10%), the United States of America (USA) (7%) and South Korea (7%)<sup>24</sup>.

Norway ranked 11<sup>th</sup> in the business dynamism pillar of the global competitiveness index<sup>25</sup> and 7<sup>th</sup> in the ease of doing business index of the World Bank<sup>26</sup>. The country performed especially well in enforcing contracts, resolving insolvency, and willingness to delegate authority, while there was room for improvement in getting credits, and attitudes toward entrepreneurial risk<sup>27</sup>. Many of the largest companies in Norway were state-owned. Norway also encouraged foreign multinational companies to invest in the country, and businesses connected to fossil fuels, land acquisition, and energy were required to have agreements with the government<sup>28</sup>. As of 2017, foreign multinationals contributed to 23% of the total value added, and the main investing countries were Sweden (19% of all foreign annual turnover in Norway), followed by USA (18%), United Kingdom (8%), Germany (7%), and Denmark (7%)<sup>29</sup>. The

main investment areas were wholesale, trade and repair of motor vehicles (33.0%), manufacturing industries (21.5%), and oil & gas industry (20.0%)<sup>30</sup>.

Norway ranked 20<sup>th</sup> in the innovation capability pillar of the global competitiveness index<sup>31</sup>. Enterprises, independent of size, get financial support from Innovation Norway to develop their knowledge base in cooperation with R&D centres<sup>32</sup>. Norway's R&D expenditures totalled 6,450 million USD in 2017, which was 1.9% of GDP<sup>33</sup>. The ratio of researchers has been increasing steadily, reaching 12.3 per one thousand in 2017 (see Exhibit 2). Norway's innovation performance reflected by the number of patent applications has been considerably lower than other Scandinavian countries<sup>34</sup>. See Exhibit 3 and Exhibit 4 for comparisons of Norway's key indicators and competitiveness rankings with those of other Scandinavian countries.

### Historical background

Whereas modern Norway's history is a bit over 200 years, the land of Norway emerged from the Ice Age and became habitable as of about 12,000 BC thanks to the warming effect of the Gulf Stream<sup>35</sup>. While the first Norwegians lived mainly by hunting and fishing, farming started around 3,000 BC near Oslo, Trondheim, Lillehammer and Stavanger<sup>36</sup>. Following the Viking era in Scandinavia during the 8<sup>th</sup> and 9<sup>th</sup> Century, Harald Fairhair (Harald I) was able to unite the coastal part of the country by ending the civil war and became its first king<sup>37</sup>. Norway was converted to Christianity by the early 11<sup>th</sup> Century, and the country lived its Golden Age during the late 13<sup>th</sup> Century and the early 14<sup>th</sup> Century, when international trade in the Hanseatic League grew with the United Kingdom and Germany through the city of Bergen; this, however, lasted until the middle of the 14<sup>th</sup> Century when the Black Death (also known as the Great Plague, one of the world's most devastating pandemics in history) killed a third of the population between 1347 and 1351<sup>38</sup>. Norway was part of the Kalmar Union together with Denmark and Sweden from 1397 until 1523, and thereafter in union with Denmark until 1814<sup>39</sup>. A national assembly was called and the constitution was adopted on 17 May 1814, the date celebrated as the Norwegian Constitution Day, but this ended short when Sweden invaded Norway in July 1814<sup>40</sup>. Norway gained its full independence from Sweden in 1905<sup>41</sup>.

The economy of Norway was considerably dependent on Hanseatic trading partners, especially the United Kingdom, for its exports of fish and timber<sup>42</sup>. The recession of the 1820s triggered stagnation in the country, and thousands of Norwegians immigrated to the USA starting from 1825<sup>43</sup>. The Central Bank of Norway was established in 1816, and the national currency, the spesidaler, was introduced and pegged to silver<sup>44</sup>. The economy grew strongly from 1843 until 1875, and Norway became a major power in shipping, accounting for 7% of the world's merchant fleet<sup>45</sup>. Industrialization also took pace during the same period and led to the emergence of textile, paper and pulp, food processing and dairy industries<sup>46</sup>. Another recession hit Norway from 1875 until 1905, and more immigrants fled to the USA, totalling 860,000 by 1930<sup>47</sup>.

During the First World War, Norway was officially neutral, but as it had partnerships with the United Kingdom and its allies, its merchant fleet got its share from German attacks<sup>48</sup>. Being a small economy highly dependent on trade with Sweden and the UK, the country suffered from the international post-war economic recession in the 1920s<sup>49</sup>. During the Second World War Germany attacked Norway in 1940 and occupied its territory for five years<sup>50</sup>. The economic consequences of the war were devastating. The Norwegian Central Bank had to finance the military campaigns, and half of Norway's merchant fleet was destroyed<sup>51</sup>.

Norway joined the NATO in 1949. Like most of the Western European countries, Norway experienced growth in the post-war recovery period in the 1950s and the baby-boom years of the 1960s, but the 1970s may be considered as the turning point in Norway's economic growth thanks to the discovery of oil & gas in the North Sea. In response to rising interest from foreign companies to start exploring oil & gas in the North Sea, Norwegian authorities declared in 1963 that the continental shelf was under Norway's sovereignty and granted licenses for exploration to foreign multinational companies, which owned advanced exploration technologies<sup>52,53</sup>. Philips Petroleum reported the first oil findings in the North Sea in 1969, and the production of oil started in 1971<sup>54</sup>. Norway's national petroleum company, Statoil was established in 1972 by the Norwegian State as its sole owner<sup>55</sup>. The discovery of oil in the North Sea influenced the economy of Norway and its role in the global arena positively, as the share of the oil & gas industry increased to 14% of Norway's GDP already in the 1970s, and Norway became one of the main sources of oil for

Western Europe<sup>56</sup>. Norsk Hydro, the state-owned aluminium and renewable energy company, acquired Saga Petroleum in 1999 and then merged it with Statoil in 2007<sup>57</sup>.

Norway along with other Scandinavian countries joined the European Economic Area in 1994, but following a nationwide referendum in 1995 it decided not to join the European Union (EU). However, the country became a member of different European agencies like the European Research Co-ordination Agency, the European Centre for Disease Prevention and Control, and the European Chemicals Agency, and it adopted almost all conventions from the EU<sup>58</sup>. Norway, a member of the General Agreement on Tariffs and Trade since 1948, joined the World Trade Organization in 1995<sup>59</sup>. Steep fluctuations in oil prices made the Norwegian government think about ways for the sustainable management of earnings from the petroleum business<sup>60</sup>. As a result, the Government Pension Fund Global (the wealth fund) was established by a decision of the Parliament in order to secure future generations by investing the wealth from incomes of non-renewable resources in international financial markets<sup>61</sup>. While investing in international financial markets avoided inflationary pressures in the country, the government was allowed to use only annual gains to finance its budget deficit<sup>62</sup>. The fund's market value reached NOK 8,256 billion in 2018 (ca. USD 1,019 billion), making it the world's largest fund<sup>63</sup>.

### Norway's key clusters

Norway launched in 2014 the "Norwegian Innovation Clusters" programme, which aimed to increase cluster dynamics and attractiveness, and the innovativeness and competitiveness of Norwegian companies<sup>64</sup>. According to this programme a total of 41 clusters were supported at three levels depending on their state of development. Among these three clusters were global centers of expertise (i.e. mature clusters with a global position), 18 clusters were Norwegian centers of expertise (i.e. mature clusters with a national position), and 20 clusters were immature clusters (i.e. promising emerging clusters) (see Exhibit 5 for the classification of Norway's key clusters). The three global centers of expertise, namely oil & gas (part of the energy cluster), blue maritime (part of the maritime cluster), and ocean technology (part of the maritime cluster), were Norway's globally most competitive clusters. The two leading clusters of Norway, the energy cluster and the maritime cluster represented nearly half of Norway's GDP (see below).

#### *The energy cluster*

The oil & gas cluster, under the energy cluster, was Norway's largest and leading cluster, making up 17% of the country's GDP in 2018<sup>65</sup>. It employed over 170,000 people, being one of the largest clusters in the world comparable to the Houston oil & gas cluster in the USA<sup>66,67</sup>. There were about 2,500 companies in the cluster, and the Norwegian state, owning 67% of Statoil, the largest company in the cluster accounting for 70% of Norway's production, was a key player<sup>68,69</sup>. Norway was the world's 15<sup>th</sup> largest manufacturer of crude oil in 2018 (2% of the world's crude oil production)<sup>70</sup>. It was also the 8<sup>th</sup> largest manufacturer of natural gas (3% of the world natural gas production) and satisfied about 25% of the natural gas consumption in the EU<sup>71</sup>. The significance of the cluster is reflected in the fact that oil & gas export together accounted for 49% of Norway's exports<sup>72</sup>. Norway offered high quality programs at different levels of higher education and vocational education related to geology, shipping, mining, and petroleum engineering<sup>73</sup>. Furthermore, both the number of researchers and the share of R&D expenditures in the oil & gas industry have been rising<sup>74</sup>. For example, Schlumberger, the American provider of oilfield services, spent nearly 10% of its global R&D budget in Norway<sup>75</sup>, and approximately NOK 125 billion (ca. USD 15.4 billion) was invested by the cluster in enhancing the infrastructure's efficiency and developing the continental shelf in 2018, accounting for 20% of total industrial capital investment in Norway<sup>76</sup>. Stavanger was the oil & gas capital of the country. The Node cluster, a sub-cluster of the oil & gas cluster located in Kristiansand, a city close to Stavanger, was one of Norway's three global centers of excellence. With its 145 companies and 18 knowledge and development actors, the cluster developed and delivered technology and systems for offshore drilling and platform operations<sup>77</sup>.

The oil & gas cluster was part of the energy cluster, which accounted for 28.8% of Norway's GDP in 2018<sup>78</sup>. A related key cluster was that of the hydropower industry. Thanks to its geographic landscape with height differences, Norway was the home for 10 of the world's tallest 30 waterfalls<sup>79</sup>. As a result, Norway had a highly developed hydropower industry, accounting for 95% of the total power production in the country with about 1,600 power plants<sup>80,81</sup>. Historically, Norway has been among the top producers of hydropower in Europe, and it has been an

exporter of electricity to Europe through the Nord Pool, an open electricity market with Denmark, Sweden, Latvia, Lithuania and Estonia<sup>82,83</sup>. Universities such as the Norwegian University of Science and Technology offered tailored bachelor and master degree programmes for this cluster. The state-owned Statkraft, the leading company in this cluster and the largest producer of renewable energy in Europe, announced to invest NOK 10 billion (ca. USD 1.2 billion) per year in renewable energy from 2019 until 2025<sup>84</sup>.

#### *The maritime cluster*

Surrounded by seas Norway has historically been a maritime country, and it had a complete maritime cluster with advanced commercial fleets, lead industrial shipping and shipbuilding, offshore construction, and fisheries<sup>85</sup>. The cluster employed about 90,000 people<sup>86</sup>. Norway was the 5<sup>th</sup> in the world in 2017 in ship owning by value after Japan, Greece, China, and the USA<sup>87</sup>. Moreover, the production and supply of seafood accounted for 7% of Norway's GDP<sup>88</sup>. Norway was the second largest exporter of seafood in the world after China, exporting seafood in the amount of NOK 94.5 billion (ca. USD 11.4 billion) in 2017, of which ca. 60% was to the EU<sup>89,90</sup>.

Trondheim was the technology hub for the maritime cluster, hosting high quality research institutes such as the Norwegian University of Science and Technology, Centre for Ships and Ocean Structures, Foundation for Industrial and Technical Research at the Norwegian Institute of Technology (SINTEF), and MARINTEK<sup>91</sup>. Sevan Marine, Marine Cybernetics, Ulstein Group, Sway, Fugro Oceanor, Kongsberg Maritime were among the leading maritime knowledge companies<sup>92</sup>.

The blue maritime global center of expertise and the ocean technology global center of expertise were the two leading sub-clusters in the maritime cluster. The blue maritime global center of expertise, which is located in Møre, near Trondheim, consisted of eight knowledge and development actors and 125 companies that designed, built, equipped, and operated advanced vessels for the global oil & gas industry<sup>93</sup>. The ocean technology global center of expertise, which is located in Bergen, the second main hub of the maritime cluster, included 82 companies and 18 knowledge and development actors that developed and delivered skills and technology for operations and maintenance of subsea installations globally<sup>94</sup>. This sub-cluster, which had the world's leading research group on subsea technology, aimed to expand their scope beyond oil & gas<sup>95</sup>.

### **Norway's competitiveness challenges**

#### *Dependency on the oil & gas industry and the innovativeness of Norwegian companies*

As the oil & gas industry made up about 17% of Norway's GDP, Norway remained vulnerable to fluctuations in oil prices. For example, when the crude oil prices dropped dramatically by 70% from USD 100 per barrel in 2014 to USD 30 per barrel in 2016<sup>96</sup>, the cash inflow to the Norwegian government's budget declined by 40%<sup>97</sup>, and Statoil reported 54% loss in revenues in 2016<sup>98</sup>. In response the government needed to make the first-ever withdrawal from its wealth fund<sup>99</sup>. Although the crude oil prices have recovered to USD 52 per barrel as of October 2, 2019<sup>100</sup>, it was far short from its level in 2014, making the budget of the Norwegian government volatile. Indeed, the government withdrew once again from its wealth fund in August 2019<sup>101</sup>. Norwegian governments have been pursuing cluster policies since the early 2000s and investing in emerging clusters (see Exhibit 5) with the aim of diversifying the economy in order to diminish the dependency on oil & gas. It seemed, however, that there was still room for progress to realize this objective, and Norway lagged behind Scandinavian countries in its innovation capabilities (see Exhibit 4).

#### *The climate crisis*

The carbon-based oil & gas industry was one of the main polluters of the environment, and recent calls for the climate crisis and global warming demanded urgent environment-friendly solutions. Due to increasing crude oil production Norway's gas emissions have increased by 15% from 1990 to 2015<sup>102</sup>, making Norway's gas emission per capita the highest among Scandinavian countries<sup>103</sup>. The government, in turn, supported projects related to the reduction of emissions and approved the goal of achieving climate neutrality in 2030 by cutting carbon trading<sup>104</sup>. Norway generated 98% of electricity in 2016 from renewable sources and achieved to reduce gas emissions by 2.2% from 2016 to 2017<sup>105,106</sup>. Norway was also the leader in the per capita usage of fully electric cars leaving behind Hong Kong, Iceland and Sweden thanks to government support by dropping import taxes and VAT on electric cars and providing

free parking for them<sup>107</sup>. This was a part of the government's strategy to reduce the use of fossil fuel cars and ban their sales fully by 2025<sup>108</sup>. As a result, Norway ranked the 1<sup>st</sup> in the environmental quality dimension of the social progress index in 2019<sup>109</sup>. These achievements, however, did not ease the worries for the economy of Norway, which was highly dependent on the oil & gas industry.

#### *Road infrastructure*

In 2009, Norway was named as one of the worst European countries in terms of the quality of its roads, being 48<sup>th</sup> among 134 countries with a score of 4.1 out of 7<sup>110</sup>. Comparably, Switzerland, a country with similar mountainous landscape, was placed second<sup>111</sup>. Although the National Transportation Plan 2010-2019 aimed to increase the quality of the entire road infrastructure by investing NOK 322 billion (ca. USD 44.1 billion)<sup>112</sup>, the situation only slightly improved as of 2017, when Norway was 43<sup>rd</sup> in the same ranking with a score of 4.5<sup>113</sup>. Other Scandinavian countries scored much better: Sweden was 15<sup>th</sup>, Denmark 16<sup>th</sup>, and Finland 23<sup>rd</sup><sup>114</sup>. The poor performance of Norway against these countries was also reflected in the global competitiveness index's infrastructure pillar (see Pillar 2 in Exhibit 4). Such a poor performance and an aim to prevent road deterioration led the government to introduce the National Transportation Plan 2018-2029<sup>115</sup>. The plan aimed to improve the quality of roads and to increase their number: there would be 1200 km of new roads and 290 km of 4 lane roads, and NOK 100 billion (ca. USD 12.3 billion) would be spent for maintaining purposes<sup>116</sup>. The failure to improve the situation could lead to increasing differences in the development of Norway's regions.

In the light of these challenges, Prime Minister Erna Solberg still wanted to sound optimistic in her speech at the opening ceremony of the Parliament on October 2, 2019. However, in doing that she needed to provide convincing answers to the following questions:

*How could the dependency on the oil & gas industry be diminished?*

*How could the innovativeness of Norwegian companies be improved?*

*How could Norway respond to the climate crisis?*

*How could Norway catch the competitiveness of its Scandinavian neighbours?*

**Exhibit 1.** The map of Norway and its neighbors



Source: Harvard University Center for Geographic Analysis.

**Exhibit 2.** Norway's key indicators from 2012 to 2018.

Indicator	2012	2013	2014	2015	2016	2017	2018
PPP adjusted GDP per capita (USD)	65 442	67 051	66 018	60 492	58 122	62 182	65 603
Growth in PPP adjusted GDP per capita (%)	na	+2.5	-1.5	-8.4	-3.9	+7.0	+5.5
Government debt (% of GDP)	34.8	35.2	33.2	38.5	42.3	42.8	45.5
Exports (% of GDP)	40.6	39.1	38.8	37.7	35.2	36.2	38.1
Imports (% of GDP)	27.5	28.4	29.8	32.1	33.6	33.1	32.5
Inward FDI stocks (million USD)	na	190 836	173 127	147 487	147 524	144 177	na
Outward FDI stocks (million USD)	na	181 736	162 028	172 432	192 013	199 647	na
Inflation rate (%)	0.7	2.1	2.0	2.2	3.6	1.9	2.8
Exchange rate (1 USD = NOK)	5.8	5.9	6.3	8.1	8.4	8.3	8.1
Crude oil price (USD per barrel)	108	109	102	51	46	54	73
Tertiary attainment in population aged 25-34 (%)	39	40	42	43	43	43	na
Unemployment (%)	3.1	3.4	3.5	4.3	4.7	4.2	3.8
Gross domestic expenditure on R&D (million USD)	4 970	5 114	5 286	5 789	5 955	6 450	na
Researchers per thousand employed	10.4	10.4	10.6	11.1	11.5	12.3	na

Source: OECD<sup>117</sup>; na: not available.

**Exhibit 3.** Norway's key indicators in comparison with Scandinavian countries in 2017.

Indicator	Norway	Denmark	Finland	Sweden
Population (million)	5.3	5.8	5.5	10.0
PPP adjusted GDP per capita (USD)	62 182	54 337	46 344	51 405
Government debt (% of GDP)	42.8	48.9	73.2	58.5
Exports (% of GDP)	36.2	54.5	38.5	45.3
Imports (% of GDP)	33.1	47.4	38.2	41.7
Inward FDI stocks (million USD)	144 177	118 462	88 110	325 107
Outward FDI stocks (million USD)	199 647	203 393	123 148	374 490
Inflation rate (%)	1.9	1.1	0.8	1.8
Tertiary attainment in population aged 25-34 (%)	43	39	44	42
Unemployment (%)	4.2	5.7	8.6	6.7
Gross domestic expenditure on R&D (million USD)	6 450	8 138	6 056	15 128
Researchers per thousand employed	12.3	15.5	14.5	15.0

Source: OECD<sup>118</sup>; Worldometers<sup>119</sup>

**Exhibit 4.** Competitiveness of Norway in comparison with Scandinavian countries in 2019.

Rankings in the pillars of the global competitiveness index / 141 countries	Norway	Denmark	Finland	Sweden
P1: Institutions	8	7	1	10
P2: Infrastructure	44	15	22	19
P3: ICT adoption	10	9	13	4
P4: Macroeconomic stability	1	1	1	1
P5: Health	20	29	27	11
P6: Skills	6	3	2	7
P7: Product market	36	12	15	16
P8: Labour market	13	3	17	22
P9: Financial system	20	11	5	8
P10: Market size	50	55	60	40
P11: Business dynamism	11	3	7	6
P12: Innovation capability	20	11	12	5
Overall ranking (all pillars)	17	10	11	8

Source: Schwab (2019)<sup>120</sup>

**Exhibit 5.** Classification of Norway's key clusters.

Type of cluster	Clusters
Global centers of expertise (3)	Oil & gas (Node), blue maritime, ocean technology
Norwegian centers of expertise (18)	Aquaculture, aquatech, tourism fjord Norway, seafood innovation, media, maritime clean tech, Eyde, micro- and nanotechnology, systems engineering Kongsberg, Oslo cancer, Norway health tech, Raufoss, smart energy markets, energy technology, iKuben, blue legasea, finance innovation, Heidner bio
Immature clusters (20)	Cod, betongklyngen, arctic, forest industries, renewable energy, tequity, MIDSEC, Norwegian smart care, Norwegian tunnel safety, smart city innovation, ocean hyway, Norwegian energy solution, Norwegian offshore wind, Stiim aqua, sustainable autonomous mobility systems, industrial green tech, Oslo – the smart event city, Norwegian fashion hub, the life science, Oslo renewable energy and environment

Source: Norwegian Innovation Clusters<sup>121</sup>

**Endnotes**

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