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Anne Kjersti Fahlvik of the Research Council of Norway highlights the health sector's increasing importance to the Nordic nation, the country's existing strengths – including a robust public health system and early uptake of digital tools – and how Norway can draw on its excellence in the marine biology and oil and gas sectors for health research and innovation.

What is the role of the Research Council of Norway and its importance to the country's innovation ecosystem?

We are a research and innovation council supporting researchers and business sectors in Norway from basic science up to the commercialisation of R&D. Although we sit under the Ministry of Research and Education, we receive significant funding from a variety of government ministries and our role is generally broader than research councils in other countries. The Research Council gives advice to the Norwegian government through various strategy documents and budget proposals and we are very involved in bringing stakeholders together via networking and conferences.

Our budget is significant; we directly invest more than NOK 10 billion NOK (EUR one billion) and handle the R&D tax incentive scheme, worth around NOK 5.5 billion (EUR 0.52 billion), on behalf of the government. The decision to grant funding comes from both bottom-up initiatives, where quality and innovation potential is the only criteria, as well as top-down schemes. Some of our key areas of focus include climate change, aquaculture, petroleum, health, ICT and digitalisation, and nanotechnology.

What is the importance of the health sector to Norway and how does the Research Council support it?

Health is the largest focus area for public R&D in Norway even though we do not have a strong industrial tradition in this field. There is a lot of activity taking place among research groups and hospitals in Norway, plenty of excellent research, and a growing number of start-up companies as well as some more established and internationally oriented businesses.

We use data and analytical tools to gain an overview of the landscape and from that begin interacting with various actors. These stakeholders range from research groups, venture capitalists to the pharmaceutical industry, ministries, and the hospital sector. We analyse what kinds of interactions they have with each other currently, what potential exists, and what we might be able to do through targeted and more coordinated initiatives to bring them together and strengthen the innovation ecosystem.

Areas in which we have recently been undertaking such initiatives include e-health, personalised medicine, production, and, of course, COVID-19.

Norway is not known internationally as a life sciences innovation hub, but how is the Norwegian life sciences industry able to draw on the country’s strengths in other areas such as marine biology?

Norway has a strong tradition within the marine biology sector that is also of relevance for medical research and innovation. The fish industry is not only about catching fish. It requires an understanding of biology and biotechnology and a very sophisticated set up for breeding, feeding, and disease control. Our knowledge and insight of fish farming, whether in terms of vaccines, food, disease control, or big data analysis, can certainly be applied to other areas.

Instead of considering our traditional focus on these sectors as a problem, we look at it as a source and a good starting point at quite an advanced level for our newer sectors of interest, such as healthcare.

We also have a strong public health system and are traditionally strong on digitalisation. Norway has good quality in terms of clinical and translational research with a number of success stories in immunology, oncology, and e-health.

The relatively large investment that has been made in health R&D has created a strong and varied portfolio of domestic projects. Now, the challenge is to connect the dots and create related industrial and implementation policies.

How can the Norwegian life sciences sector draw on Norway's oil and gas expertise and to what extent is the Research Council reliant on oil and gas prices to continue to make large investments in R&D?

Price per barrel is something we all follow; it has been very low and now it is at a medium level. More broadly, there is a huge transition underway in the Norwegian business sector along two lines: to move all we do within the energy sector, including oil and gas, in a cleaner way and to diversify and gradually replace the oil and gas sector with new sectors.

Our investments are to a large degree directed towards this transition and I am very optimistic for the future! The model that has been built up around the oil and gas sector is the best practice for well-developed research and innovation systems. The most sophisticated oil and gas projects are actually extremely complicated ICT and digitalisation projects. Much of the technology and knowledge from the oil and gas industry is extremely versatile and can be applied to other sectors. This kind of technology transfer can be beneficial to a wide range of fields, including the healthcare industry, and is easier to facilitate than we thought a few years ago.

The flow of technology, knowledge, and people is quite effective, but oil prices do affect this flow. The higher prices are, the more resources are kept in the oil and gas industry, the lower they are, the more resources flow into other areas.

How has the Research Council of Norway responded to the COVID-19 crisis?

From mid-March 2020 we have been giving out significant levels of funding to small and medium-sized enterprises (SMEs) for targeted real-time research on the pandemic and its implications. The aim of this push was to collect as much data as possible in the initial period when the incidence of COVID-19 was particularly high and pass it on to these SMEs so that they could use it in their research for therapeutics and vaccines.

The Council has not made any specific efforts in terms of COVID-19 vaccines, but we have had calls for private-public collaboration between SMEs and the healthcare sector on the issue. We have also been working to involve other actors such as the Norwegian Cancer Society as well as philanthropic organisations on investment in various ICT and health system projects related to the COVID-19 situation. Another area of focus has been giving grants to stimulate the domestic business sector more broadly within this period.

COVID-19 has seen interest in the healthcare sector and in healthcare start-ups boom. We have received a lot of funding applications from these types of companies and if there is anything positive from the COVID-19 crisis it is the speeding up and greater coordination within life sciences to gain momentum.

Does Norway have the potential to play a role in the manufacturing of therapeutics or vaccines for COVID-19?

Together with the pharma industry and the trade associations, we have been looking carefully at how we can define our role in this global effort. Given Norway's expertise in very efficient automated process-driven industries, we are confident of carving out a role for ourselves, not necessarily in vaccine production per se, but in the products, ingredients and supplies related to it. Vaccine production represents a huge market opportunity which we would be foolish to ignore.

The production facilities we have in Norway, including GE's huge facility producing X-rays contrast agents, Pharmaq's production site which produces 70 million salmon vaccines per year, and Thermo Fisher enormous facility which supplies some of the key Novartis products all show that it is possible to cost-effectively produce high quality, specific components in Norway. The labour costs for experts are relatively low compared to other countries, we have a highly-skilled workforce, and automatisation is the name of the game here. Moreover, Norway is a politically stable nation with few workers' strikes and we are not prone to natural disasters such as earthquakes or tornados. Norway has a lot of potential in manufacturing!

What is Norway's level of collaboration with your Nordic neighbours that perhaps have a more established industrial footprint in the life sciences?

Over the years there has been a lot of interaction with Denmark and Sweden in terms of data registers and this is something we hope to continue. Along with the research and innovation agencies in the other Nordic countries, we have pushed out initiatives related to personalised medicine to bring the business sectors together. Although Denmark and Sweden have stronger industrial traditions than Norway, they are interested in what we can bring in terms of access to the research community, start-ups and knowledge from other sectors. Though overall, it is probably a disadvantage to lack industrial strength, it does give us an opportunity to do things in a different way.

Having been with the Research Council for over 14 years what do you see as your greatest achievement?

I joined the Council after several years working in Big Pharma, including a spell in California, and five years as an entrepreneur; experiences which I drew upon when setting out an approach for my work here.

The first thing I implemented was a more portfolio management-oriented strategy which has now become completely integrated into the way we operate. We had a lot of instruments and schemes, but they were somewhat isolated from each other; my aim was to start connecting them.

The second big change was linking the separate actors together. Given my past as both a researcher and an entrepreneur, I have seen how an organisation like this can bring seemingly disparate actors together and understand how they connect in a wider innovation ecosystem.

Beyond 2020, what are your hopes for the life sciences industry in Norway?

The evaluations we have done tell is that there is a lot of business potential in the Norwegian life sciences sector. Our neighbouring countries have prioritised the life sciences and, as we need to replace the income from oil and gas, life sciences will grow in importance for Norway in the coming years too.

We are in the midst of a huge transition where we are trying to facilitate, foster and nudge the diversification of the Norwegian business sector, working with universities, research institutes, and businesses themselves to take advantage of the knowledge we have. Norway has a solid public R&D. We need to get that sector involved in the big societal challenges. As aforementioned, there is much that can be taken from fish farming and oil and gas, but we must be careful not to copy blindly; any strategy for the life sciences, as well as other developing areas, needs to be tailor-made.

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