Turning oil into science Norway

Climate for cooperation

Now that the Bjerknes Centre for Climate Research in Bergen has become a centre of excellence, its strong tradition in collaboration is likely to come even further to the fore.

It already works with seven other Norwegian centres and over 60 institutes across 14 countries. Many of its projects have sprung from these collaborations. For example, the Norwegian Ocean Climate Project, a UK–Norwegian initiative on abrupt climate change, was originally proposed by the countries’

prime ministers in 1998.

The extra funds that come with its new status will allow the centre to recruit more extensively, says its director, Eystein Jansen. “We can recruit internationally for young scientists to enhance our talent.”

He expects to take on up to ten postdocs and five graduate students as a result. The funds will also allow the centre to bring in more scientists for temporary stays.

P.S.
Bjerknes Centre for Climate Research
♦ www.bjerknes.uib.no

Norwegian research institutions have historically tried to temper potential international recruits’ perceptions about the country’s cold, dark winters with talk of its natural beauty and excellent skiing. That approach has not been entirely successful — there are usually more Norwegian scientists leaving than foreign ones arriving. But the new government elected last autumn is planning a different tack.

“I think it’s wrong to try to attract researchers with the fjords and the mountains,”

says education and research minister Kristin Clemet. “We need to attract them with good research opportunities and afterwards we can tell them about all the other things.”

To create those opportunities, the country is providing the missing ingredient — money. Norway lags far behind its neighbours Sweden — which spends three times as much per capita on biomedical research — and Denmark, which spends twice as much. At 1.7% of gross domestic product (GDP), Norway’s investment in research and development is well below the average of 2.2%

quoted by the Organisation for Economic Co-operation and Development (OECD).

Norway has started to close that gap by tapping into something it has plenty of, at least in the short term — oil. Oil revenues were used to set up the Research Investment Fund in 1999, as a source of extra funding for science. Clemet

hopes that the fund, plus incentives for university researchers to commercialize their work and tax credits to promote industrial investment, will bring Norway’s scientific funding in line with its neighbours, and boost R&D up to or above the OECD average.

The fund, at 13 billion kroner (US\$1.7 billion), is ahead

Fishing for partners

Ever since Bjørn Høyheim, a scientist at the Norwegian School of Veterinary Science in Oslo, switched from pigs to fish, he has had better luck trawling for partners and casting for cash. He first received funding in 1997 to be a coordinator for SALMAP, a consortium funded by the European Commission (EC) to generate genetic maps of the Atlantic salmon, rainbow trout and brown trout. The group consisted of scientists from Norway, Denmark, Scotland, Ireland, France and Canada. Many of the same players then got EC funding for SALGENE, which aimed to build an

expressed sequence tag database for salmon.

So far Høyheim says that he has found it relatively simple to coordinate activities with his Norwegian partners in Oslo, Bergen and Trondheim.

But relationships beyond the borders are a bit trickier. For example, working with a microarray facility in Scotland can be difficult, because competition inevitably mixes in with cooperation, he says. But when resources for each country are dwarfed by those of, say, the United States, it is the only real option. "It doesn't make sense that all of us should develop the same tools," says Høyheim. **P.S.**

of schedule to meet its 15-billion kroner target for 2005. The current year is pivotal for science in Norway, as it marks the 525-million kroner yield's first investments, including 100 million kroner for a functional-genomics initiative and 70 million kroner to establish 13 centres of excellence.

A government white paper recommends that at least one centre be awarded in each of four broad categories — marine research; the intersection between energy and the environment; medicine and health; and information technology. But the centres awarded so far are tilted more

heavily towards the first two, which are areas in which Norway already has an established research tradition or has infrastructure in place.

For example, the Bjerknes Centre for Climate Research in Bergen recently became a centre of excellence. A joint-research venture, it already has plenty of collaborations set up within and beyond Norway (see "Climate for cooperation", page A13).

Other centres named tended to support existing industries within Norway, such as aquaculture, ships and ocean structures, and petroleum research. Only one centre dedicated to biomedicine was funded in the first round — the Centre for Molecular Biology and Neuroscience at the University of Oslo.

FUGE STATE

In some respects, FUGE, the functional-genomics project, is serving as a test case for how well Norway can scale up its science. Clemet likes it because it combines marine, biotech and environmental science. And to succeed, the programme will require both contact with international partners — such as Canada, which is working with Norway to sequence the salmon genome — and

industry, which is looking at the science behind many aspects of salmon raising (see "Fishing for partners", left).

"We want to be the leader in the world of salmon genomics," says Lars Aukrust, a member of the Research Council of Norway. But he thinks that will require more leadership from the government — he and the scientists who proposed FUGE had hoped that the first year of the project would be funded at three times the rate. "There is no sense of urgency," Aukrust says of the government.

But Ole Marvik, chairman of the Norwegian Bioindustry Association, says that the country does not yet have enough infrastructure to absorb a bigger boost. "You cannot create 500 trained people overnight even if you had the money," he says. He notes that the Norwegian biotech industry, with what he calls 45 "true" companies — about half of which are less than three years old — could not sustain excessively rapid growth.

Despite the modest starting size of FUGE and the centres, the two programmes will clearly have an impact on recruitment and employment, says Marvik, with a few hundred positions created immediately, and more commercial spin-offs and academic-industrial collaborations to follow. Although the money is not massive compared with the sums bandied about in the United States, it is enough to encourage more cooperation within Norway and to foster international collaborations. "The amount of money spent is not an important thing alone," Marvik says. "What's important is how this investment is creating a momentum."

Although Werner Christie, chairman of Norway's Biotechnology Advisory Board, agrees with Aukrust that the rate of investment should be increased, he thinks that the first rounds of both programmes have given the country enough momentum. "I think we will catch up," he says.

But that will require more than just a sustained investment,

Ole Petter Ottersen: hopes to encourage biomedical collaborations.

says Christie, who spent 1999–2001 in San Francisco learning the mechanisms of the bay area's biotech base. There he witnessed "the power of beer and pizza", the fuel that drives networking in the United States. "We have to learn that in Norway," he says.

Establishing FUGE and the centres of excellence will play a key role in forming Norway's part of that broader bioregion. "In FUGE, we see a new principle in Norwegian research strategy — the universities joining forces to launch a coherent research programme based on a national sharing of technology and resources," says Ole Petter Ottersen, who runs the Centre for Molecular Biology and Neuroscience. But the government must commit to raising the overall R&D budget every year, he adds. Proposals to increase funding for FUGE to 150 million kroner and to boost basic research overall by 600 million kroner will help. "With the growing importance of regional and international collaborations, and the increasing mobility within Europe and between continents, it would be detrimental to Norwegian research, should we remain as an underachiever in R&D spending," Ottersen says. ■

Paul Smaglik is editor of *Naturejobs*.

FUGE www.forskningsradet.no/fag/andre/fuge

Research Council of Norway

www.forskningsradet.no/english
Bioindustry Association

www.biotechforum.no

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Kristin Clemet: emphasizing science over fjords and mountains.