

The Norwegian debate on its wealth of natural resources and economic status has focused on avoiding what has been termed the “Dutch disease” or a “Kuwait economy”.

These terms cover the consequences of spending riches dumped into a nation’s lap on importing everything people want, so that domestic industry becomes unnecessary and decays.

That once represented a highly plausible threat to Norway, and the country is still not out of

that sets no final boundary for how far a strongly knowledge-based Norwegian industry can go. And that is even before opportunities for internationalisation have been mentioned.

Modern economic theory indicates that a country’s ability to create value grows in line with the number of commercial knowledge communities it possesses. Its industrial peaks must have world-class technology in their sector. By being demanding customers, and by building up capital and

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danger. By and large, however, it has taken and passed this test.

The country has built up a strong petroleum-related industry which, together with the oil companies and other players, forms a highly knowledgeable petroleum cluster. Today, this cluster is the source of a large and rising share of Norwegian petroleum revenues. The future will provide almost no easy pickings for the nation, but “ordinary” value creation can be significant.

The petroleum cluster represents Norway’s most important commercial resource in technological and knowledge terms – its premier grouping of this kind. There has been no shortage of political statements to the effect that Norway will have to concentrate precisely on know-how and technology when the oil runs out.

This makes it all the more ironic that so many Norwegians fail to see what is in front of their own eyes: the most important knowledge base already exists, and could remain in place for a long time.

It will be many years before Norway has exhausted its oil, and even longer before its gas is gone – if ever. Only the super-rich resources which laid the basis for extraordinary tax revenues are running out. Such earnings cannot be replaced by any other industry, unless the country suddenly discovers gold or diamonds in large quantities.

Other nations – Finland, for one – have developed leading industrial clusters with the aid of a massive commitment to education and research.

Norway has devoted corresponding efforts to building up an effective industrial structure to wrest increasingly demanding resources from its continental shelf. This can continue by applying ever more knowledge as the resource base is depleted.

Documented cases show that a stronger input of knowledge and technology can create huge extra value from improved oil recovery, extended tail production and development of small finds as well as from large new discoveries in deep water.

All the signs are that Norway can keep up with the world as long as oil and gas remain in demand. But other energy bearers will eventually take over. No Norwegian industry is better equipped than its petroleum cluster to stay abreast of these developments. The transition to an energy cluster will happen gradually.

Global demand for energy remains, but even

knowledge which can subsequently be applied for other purposes, profitability and value creation can be boosted for the nation as a whole. The higher the peaks, the greater their spin-offs.

Norway must accordingly get used to regarding the petroleum cluster as something more than an instrument for moving natural assets from below ground to the bank.

Increasingly, it has to see this grouping as an independent creator of value and the country’s most important commercial knowledge base – even if it plays both roles for a time.

This primarily requires a change in national mentality. From the start, the Norwegian petroleum business was almost defined out of the domestic economy. This had major consequences for policy – maximum taxation, strict and unpredictable regulation and an economy extensively based on negotiation.

Since then, the offshore sector has gradually moved towards becoming a “mainland” sector in economic terms, because a growing share of its value creation derives from human activity in Norway.

That means in turn that achieving optimal taxation, normal and objective regulation and a more rights-based relationship with the authorities is becoming ever more important.

The transition could last for a few decades more, but in such a way that new projects have already become primarily part of the mainland economy.

Traditionally, the dividing line between the offshore and mainland economies was perceived to run between oil companies and their suppliers. Many Norwegians will therefore frown at the use of the term “cluster” to embrace both types of company. But the point is precisely that the distinction between them is disappearing.

Let us quickly agree that ownership has no significance in this context. The question is where the production factors are to be found.

The trend is for intellectual capital – in relative terms – to displace financial and natural assets. Applying more knowledge reduces the cash investment needed to find more demanding resources.

After the “easy” projects are completed, new ones will in principle be implemented when they just reach profitability – once both financial and intellectual capital have been paid for.

THE PETROLEUM CLUSTER

VIEWPOINT: HANS HENRIK RAMM

The opportunities for creating value from the Norwegian continental shelf are to be found in applying more intellectual capital. That represents a dramatic change for a country which has been accustomed to talking about tapping oil and gas and converting resources into financial assets. Value creation also calls for important strategic choices by offshore players, and changes in their composition.

HOW TO DO IT

With the exception of significant positive surprises, therefore, these developments offer no opportunity to harvest any “economic rent”.

Norway is accustomed to producing natural resources with no economic rent component. Mining and fisheries are cases in point. Aquaculture offers perhaps the best comparison. Both fish and petroleum are natural resources, but human effort is needed to obtain more than nature serves up on a plate.

Both the oil companies and Norway’s offshore

This intellectual capital is applied by national oil company organisations, with Statoil and Norsk Hydro as the largest. However, they have no foreign parent on which to draw. The other companies can call on expertise from parents and affiliates.

But oil is not the only industry in Norway to pursue production with know-how from abroad (and vice versa). This is part of the new global knowledge-based economy, and entirely analogous with the way financial capital is invested

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supplies industry have changed their behaviour, with the former steadily doing less of the physical labour.

They have concentrated on their core competence – which almost entirely takes the form of knowledge, partly relating to the actual reservoir (interpreting seismic, for instance). The rest is organisation in the sense that an oil company is a kind of “conductor”, which puts together a large number of different activities.

That includes making strategic technological choices and initiating technology development. Actual implementation, commercialisation and application of such work has been taken over by the supplies industry. Who actually owns the installations is less important.

without regard to national frontiers.

The supplies industry has been given the principal responsibility for technology development as well as the actual production of platforms and equipment. That also makes growing demands on knowledge and organisation in this part of the cluster.

One outcome is a new division of labour between a small number of large integrators – such as Aker Kværner, ABB and Halliburton – their sub-contractors, and a number of typical branded goods manufacturers.

The job of the integrators is not simply to coordinate their own and external technology development, and to be the main contractors of the oil companies.

It also involves joining with the latter to spearhead the internationalisation of Norway's petroleum industry. These companies must not be "Norwegian" in trying to impose products from home on other host nations, but be present in many parts of the world as well as having a solid footing in Norway. In this way, there will be players around the globe who are familiar with Norwegian made and developed products, which can be utilised where they are competitive.

Being involved in or having access to a global marketing organisation is crucial for any manufacturer with a commitment to leading-edge technology. Such solutions must be sold as often as possible in the brief period before they leak out and become cheap off-the-shelf products. Despatching a salesperson with brochures is no use at all. Only global companies have the organisation to cover a world market fast enough.

In some cases, actual production can take place in Norway. But it is often necessary to produce close to the market. Again, only global firms are able to spread technology rapidly to all their production sites – via the internet, for instance. For many types of technology, therefore, solutions developed locally – as in Norway – are likely to give the best return if they or their owners get taken over by one of the integrators.

with enough volume, since domestic investors are best placed to prioritise national innovation and price investments correctly.

In addition, the authorities should recognise that knowledge growth in the most advanced national clusters has the largest subsequent cascade effects for others.

So these industries should be prioritised when allocating government research and development cash. That conflicts directly with the egalitarian mindset which says everyone should be treated equally, and even more with false beliefs about a dying petroleum sector. But it nevertheless represents the best solution for the national interest.

Norway is not alone in finding that new projects are more demanding, and that the economic rent gets phased out in an initial stage when the easiest and richest deposits are exploited first. These phenomena are experienced on a global basis.

Few "easy" reserves remain, but opportunities nevertheless exist for finding large volumes in unexplored provinces.

A new division of labour is accordingly emerging, in which the largest oil companies move on to fresh pastures where they can obtain big volumes of oil and gas for their downstream operations. Mature areas are then left to small companies. In both regions, the resources are

end users in a hierarchical business chain, combined with largely unique, tailor-made products, means that a negotiation-based economy has also largely prevailed between oil companies and suppliers. This is reinforced by the strong element of development contracts, testing requirements for new technology, joint research and development projects and so forth.

In addition come known cluster effects. These particularly include knowledge sharing – which, under favourable conditions, gives a net gain to everyone involved – and variations in the level of activity affecting capacity utilisation and profitability for suppliers.

All these considerations tie cluster companies together in a mutual dependence, where advances and retreats have consequences for everyone. The oil companies are able to pass possible excess taxation on to suppliers, and also generally to limit the returns achieved by these contractors. If suppliers fail to renew their technology and other know-how, however, the oil companies will also be affected.

Internal conditions in a knowledge-based industry accordingly differ from those encountered in a normal market economy. This requires that players know when to compete and when to cooperate. Competition is more a matter of know-

"IN OTHER WORDS, CAPITAL CAN TAKE THE FORM OF RESOURCES AND KNOWLEDGE AS WELL AS CONVENTIONAL FINANCE. ALL REQUIRE A RETURN, BUT ACT DIFFERENTLY."

These are examples of two sides of the new knowledge-based economy. Knowledge can be scaled, applied many times without being used up. Globalisation, with its efficient information routes, makes it possible to scale quickly. At the same time, however, the technology leaks out rapidly and so makes fast scaling even more necessary.

Local clusters, like the Norwegian, must accordingly renew themselves all the time in both technological and organisational terms. Norway must ensure a plentiful crop of new venture companies, and see to it that its medium-sized firms can renew their technology and forge alliances with suitable and equal international partners on balanced terms.

Similarly, innovative Norwegian teams must be properly rewarded in those cases where technology or companies are sold to major international groups.

Rapid technological renewal and innovation are accordingly important not only to get the most out of Norway's offshore resources, but also to exploit opportunities for internationalisation and extending knowledge to the rest of the Norwegian economy.

All this can be summed up by saying that everyone must be properly paid for their intellectual capital, and must earn well above what they need to service their financial capital.

That calls for diversity among the major players (oil companies and integrators) and taxes which do not reduce the return on knowledge for all players.

It also requires a Norwegian capital market

more demanding to recover – but in different ways.

Clear signs of this shift can already be seen in reduced participation by the majors in Norwegian offshore licensing rounds. New players have signed up, but to nothing like the extent or the aggressiveness seen in other mature provinces around the world.

Small participants are often not typical oil companies, but various types of supplier or others (such as gas distributors) who are extending their related expertise.

It will be particularly important for Norway to ensure that the space evacuated by the large players is attractive to the Norwegian supplies industry. After all, this has the best know-how about the existing production infrastructure.

So it is natural to envisage a long industrial phase in mature areas. Industry must be freely able to devote capital, labour, hardware and know-how across continental shelf boundaries if it is to find these opportunities attractive.

This again argues for an appreciation that Norway can no longer regard offshore operations as something entirely separate from the mainland economy.

Fiscally, it calls for equal taxation of ordinary income in every area, and a special tax structured in a way which guarantees that it is only levied on the real economic rent.

Changes in the division of roles are not the only reason why the boundaries between oil companies and their contractors are being lowered.

Strong direct dependence on a small number of

ledge and technology then price, and collaboration focuses on establishing rules of the road rather than monopolisation. The rules of the road should ensure more rights-based relations within the cluster in order to avoid too much of a negotiation-based economy. They should also establish an optimal balance between secrecy and openness.

Otherwise, we know little about how the internal market in a typical cluster works. That ignorance undoubtedly also extends to the cluster's own players. Specifically, it appears that the two main sides have limited insight into and understanding of the other's requirements. A lot of internal services remain.

At the same time, the world at large has problems comprehending that framework conditions for one side also affect the other, and in general on how society should treat such a cluster. This is unlikely to be specifically Norwegian, but Norway faces a special challenge because it involves not only creating new conditions for a knowledge-

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based industry but also understanding a business of this kind, which works with natural resources and occupies a transitional phase from harvesting to long-term activity. In other words, capital can take the form of resources and knowledge as well as conventional finance. All require a return, but act differently. The opportunities for this cluster are huge, but will not come by themselves. That is more than enough of a challenge for everyone concerned.

Petoro has emerged as a new player in the midst of these developments. This is exciting, because it is the only participant to concentrate solely on the NCS. At the same time, it occupies an interface between industry and government as a non-operator in a rather more neutral relationship with suppliers than the other oil companies, and as a non-taxpayer with a pure incentive to maximise socio-economic value creation. That puts Petoro in a unique position. In addition to its primary functions, this company can act as a bridgebuilder and policy shaper for optimal functionality of the petroleum cluster in the community, and for the cluster's internal rationality. Petoro can also contribute to planning and coordination at the level of the NCS and its regions. It will be highly interesting to see how the company exploits this position. ■

MISSION POSSIBLE

Selling a Norwegian-built platform jacket to the UK might seem to many people about as easy as trading sand to the Sahara. But Aker Verdal has shown that this is not an impossible mission.

“Specialisation has enhanced efficiency and improved competitiveness,” says Kværner chief executive Helge Lund, whose group now embraces this mid-Norwegian fabricator. “Contracts to build two jackets for UK platforms are evidence that restructuring has been successful so far, but we're under constant challenge and the pressure to improve is continuous.”

Lying north-east of Trondheim, Aker Verdal is a large company by local standards. Many observers judged it to be ripe for closure only three-four years ago. The company had an empty order book and was losing money.

But a new course was staked out, and employees, management, owners and the local community joined forces to keep the yard afloat.

Strong medicine was needed – the business was downsized and module

building abandoned. But investment was also made in enhanced expertise, changed working methods and new equipment.

The picture below shows three jackets currently being built at the yard, for Norway's Kvitebjørn (right), Grane and Valhall fields respectively. On the left is the base section for Kvitebjørn. Construction has yet to start for Britain's Goldeneye and Clair jackets, which are not due for delivery until 2003 and 2004 respectively.

Inputs such as raw materials and hourly rates are relatively more expensive in Norway than in many other countries. And Norwegian companies are challenged by macro-economic conditions such as high interest rates and a strong currency.

“Our principal competitive edge today is the knowledge and expertise of our employees, our systems and working methods, and our ability to stay in the front rank,” says Mr Lund.

From that perspective, Aker Verdal is representative for companies in Norway's new petroleum cluster, which create value in Norway without relying on the country's own offshore resources. ■

