

## **2.6 University-associated Contract Research Organisations: The Role of SINTEF in Norway and in the Third World**

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SINTEF (The Foundation for Scientific and Industrial Research) is legally an independent foundation attached to the Norwegian Institute of Technology (NTH), which is the only fully-fledged technological University in Norway. SINTEF was founded in 1950, inspired by the apparent success of many of the numerous contract research organisations (CRO) operating from the campuses of technical universities in the USA. Today it employs nearly 1,900 full-time staff; of these about 1,100 are university graduates, primarily engineers. The annual income was over Nkr 1.1 billion in the 1990 (close to £100 million). This ranks SINTEF fourth amongst European CROs (after the Fraunhofer Gesellschaft in Germany, TNO in Holland and VTT in Finland) but first amongst those founded on a non-government (ie. university) initiative.

Over 70% of the income comes from contract work, of which more than half represents work undertaken for industrial clients. Basic grants from the national authorities comprise about 6% of turnover, the remainder being financial support from national research councils for specific projects within fields of national priority. SINTEF (or rather the SINTEF Group) has today a pronounced multi-disciplinary profile with close to 30 operational units. In the SINTEF system, the professional part of the organisation tends to become a replica of the corresponding NTH section, ie. SINTEF is basically organised by disciplines in the same way as NTH.

SINTEF was established primarily to stimulate Norwegian activities. However, SINTEF has also over the years engaged itself directly in a number of Third World projects which have not been an integral part of the SINTEF-NTH co-operation. SINTEF was one of the founding members of the World Association of Industrial and Technological Research Organisations (WAITRO), which was created in 1970 under the auspices of the United Nations Industrial Development Organisation (UNIDO). Although not explicitly expressed in the statutes, WAITRO's activities are primarily geared to the needs of the Third World. SINTEF has actively contributed to the development of this organisation as a vehicle to strengthen North-South co-operation between contract research organisations. I had the honour to serve as the President of the Association for the period 1979-82.

At SINTEF we have found that lack of training at the managerial level is more often the cause of problems in an industrial and technological organisation than lack of scientific skill. It is therefore characteristic of our direct assistance to the Third World that the form of support to research institutions normally takes place on a broader scale than the purely scientific.

Typical projects of this nature have involved assistance to:

- Industrial Tribology Machine Dynamics and Maintenance Engineering Centre (ITMMEC), New Delhi;
- National Institute of Oceanography, Goa;
- Beijing Institute of Software Research and Training, Beijing;
- Bangladesh Petroleum Institute, Dhaka;
- Petroleum Research Institute, Kuala Lumpur.

I also had the interesting and rewarding experience to assist personally in the establishment of The Caribbean Industrial Research Institute at the campus of The University of the West Indies in Trinidad.

Each project has its specific characteristics and challenges. In the case of ITMMEC, for instance, we experienced a lot of problems during the first years, many of which resulted from the inherent conflict between the academic ambitions of the staff at ITMMEC and their new role as servants to industry. However, the last 3 years of the project came off very well, first of all thanks to a strong, industry-oriented and internationally recognised leader of the centre. He left after the NORAD (Norwegian Agency for International Development) support terminated, and priority was apparently put again on academic activities such as university teaching and international publications.

The best example of institutional co-operation is, however, the long lasting co-operation with, and support to, the Departments of Chemistry and of Chemical and Process Engineering of the University of Dar es Salaam (UDSM) in Tanzania. The Norwegian part of this project involves close co-operation between NTH and SINTEF, both parties contributing with qualified staff for teaching and participation in research projects - both in Norway and on secondment to the UDSM. This project started back in 1973, financed by NORAD, on the initiative of Professors Katrine Seip Førland and Tormod Førland (see 2.19).

NTH and NORAD have cooperated in offering training opportunities for engineers and science graduates from developing countries for more than 20 years. During this period more than 1,000 graduates from about 60 countries have studied at NTH under the programme. A NORAD-NTH Coordination Committee was established very early, with overall responsibility for the NORAD sponsored programmes. The Committee reports both to the governing board of NTH and to NORAD. NORAD finances a small administrative office on the NTH campus and provides the funding for the training courses. NTH is also responsible for the academic aspects. Although SINTEF is not formally 'visible' in this picture, SINTEF staff are in effect running two of the five courses mentioned below and are heavily involved in running two of the remaining three.

Under this NORAD programme, NTH is now offering five one-year international diploma courses at postgraduate level. The combined annual intake is about 70-75 students, the majority holding a NORAD fellowship.

The five courses are:

- Pulp and Paper Technology;
- Port and Coastal Engineering;
- Hydropower Development;
- Electric Power Distribution Systems;
- Petroleum Exploration and Reservoir Evaluation.

SINTEF's Third World related activities follow two main avenues: support to the international diploma courses formally organised by the NTH and direct assistance to the establishment and development of R&D institutions. In addition, SINTEF takes a positive attitude towards employees seeking leave to join technological projects in the Third World. Such projects may be run by national or international aid organisations, and a fair number of our professionals have been on such missions. SINTEF also renders services to Norwegian consultancy and engineering firms operating in the developing world, but such contracts are to be considered as part of our normal business.

The main driving force for both SINTEF and NTH to devote resources to the benefit of the Third World is a felt obligation to contribute to the reduction of the development gap between the 'haves' and the 'have nots'. As institutions of importance in Norwegian society, both SINTEF and NTH naturally have an obligation to make such contributions to the official Norwegian foreign aid policy. Presently about 350 or close to 5% of the students at NTH come from the Third World. The fact that NTH does not receive any special economic compensation for 80% of these students probably makes this quite a respectable figure compared with other European universities.

SINTEF's activities oriented towards the developing part of the world are quite modest compared to our total business volume. The employees of SINTEF are in general quite positive towards the prospect of getting involved in Third World projects. However, as an independent CRO we have to earn our living by selling our services at realistic costs. It is therefore a true dilemma that the fees paid by international as well as national foreign aid agencies, although normally considered quite adequate for individual consultants, do not in any way cover the project's proper share of the operational costs of an organisation such as SINTEF. An institution-building project in a developing country requires the engagement of the very best and most experienced people; such people are also in great demand at home. Taking these facts into account, I do not expect SINTEF's Third World related activities to expand in the years to come. Hopefully, they will be maintained at their present level.

The SINTEF experience has served to emphasise two points, both very relevant to the work of aid agencies. Firstly, that cooperation aimed at human resource development and institutional building should be long-term, to allow for the development of mutual relations and confidence. Secondly, that the combination of teaching, training and applied research, including joint research projects, is a very fruitful and effective way of developing relevant competence and expertise in academic and R&D institutions in the Third World.

## The Author

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