Chapter 17

EVALUATION OF THE DANISH GTS SYSTEM, 1995-97

by

Annette Birch
Agency of Trade and Industry, Denmark

Introduction

The approved technological service institutes (GTS) are specialised institutes which have the status of independent institutes and which receive some government funding with a view to fostering industrial development. In 1995-97, the Council for Technological Service and the Danish Agency for Development of Industry and Trade, which are responsible for planning and co-ordinating government action in support of technological service activities, evaluated 17 institutes/divisions.

The following six institutes were evaluated in 1995:

◊ Danish Hydraulic Institute;
◊ Danish Institute of Fire Technology;
◊ Dansk Standard (Danish Standards Association);
◊ Danish Institute of Fishery Technology and Aquaculture;
◊ FORCE Institute;
◊ Danish Design Centre.

The following six institutes were evaluated in 1996:

◊ Danish Institute of Fundamental Metrology;
◊ Danish Maritime Institute;
◊ Danish Toxicology Centre;
◊ Water Quality Institute;
◊ Danish Technological Institute – Industrial and Business Development;
◊ Danish Technological Institute – Building.
The following five institutes are being evaluated in 1997:

◊ Danish Technological Institute – Energy;
◊ Danish Technological Institute – Environment;
◊ Danish Technological Institute – Industry;
◊ DELTA Danish Electronics, Light & Acoustics;
◊ Biotechnological Institute.

The approved technological service institutes are self-governing, non-profit institutes. Each has its own board and some have a committee of representatives. Together, the GTS institutes employ more than 3,000 workers and generate a total annual turnover of around DKr 1.8 billion. Seventy per cent of the turnover comes from client assignments.

The Minister of Industry approves the individual institutes for three years’ at a time on the recommendation of the Council for Technological Service. Approval qualifies the institutes for a government grant. The total basic grant amounts to approximately DKr 300 million and, on average, covers 15 per cent of the turnover of the GTS institutes.

The aim of government policy is to create better framework conditions for companies by expanding the technological infrastructure and increasing the funds available for R&D with a view to raising the level of innovation in Danish companies. An OECD evaluation of Denmark’s research, technology and innovation system in 1994 helped to focus attention on the relatively low proportion of research in Denmark. One of the recommendations of the OECD evaluation was an increase in the basic grant. This led to a very substantial increase in the grants to the GTS institutes in 1994-95.

As a consequence of the allocation of the basic grants, the Council for Technological Service and the Danish Agency for Development of Industry and Trade have certain supervisory duties with respect to the GTS network.

The Council for Technological Service has the general task of ensuring that the basic grants are used in accordance with the rules governing the grants, and the Danish Agency for Development of Industry and Business has the administrative responsibility.

A number of functions have been established to improve and expand the interaction between the GTS institutes and the supervisory authority:

◊ Every three years, each institute draws up a strategy plan. This is used as the basis for approval of the institute as a GTS institute and for fixing its basic grant.
◊ Each institute delivers an annual report, showing whether it has achieved its objectives for the year. The grants are released on the basis of this report.

Since 1995, supervision of the GTS network has been improved by setting up two new units:

◊ a technical evaluation unit, which carries out evaluations of the institutes with the assistance of international and national experts;
◊ a controller unit, which monitors and analyses the institutes’ financial situation and development.
The prime task of the GTS network is to meet the needs of trade and industry for technological service. The short-term task of all the institutes is to supply technological solutions and to reach as many companies as possible with a view to improving their capacity for innovation and their competitiveness.

The institutes also have the task of ensuring access to the latest international research within their respective fields. Their role is to gather and communicate knowledge to Danish companies and help the companies make use of it. This service is intended particularly to benefit small and medium-sized enterprises, which do not themselves have the possibilities or the necessary competence to make use of international R&D.

The basic grants may only be used for specific purposes:

◊ for building up skills;
◊ for developing new services;
◊ for participating in codification and standardization work;
◊ for general communication activities.

The basic grant is not intended to be used for general operating tasks; consultancy assignments are performed on normal commercial terms.

The GTS network has the following position in the knowledge system:

◊ **Universities.** These work mainly with basic research and do not address the commercial needs of trade and industry.

◊ **Government research institutes.** Government research institutes carry out strategic research based on the needs of the authorities. They perform long-term research with defined objectives, but are not purely market oriented.

◊ **The GTS network.** The GTS network meets the needs of trade and industry for technological service.

There is an increasing tendency for the work carried out by the three sectors to overlap.

**Purpose of the evaluation**

Every three years, the GTS institutes have to deliver a three-year strategy plan to the Danish Agency for Development of Trade and Industry. Each institute undergoes evaluation in the year in which it delivers its strategy plan. The evaluation acts as a source of inspiration for the institute’s board and management – a tool for use in the development of the institute.

The evaluation is also intended to give the Danish Agency for Development of Trade and Industry/the Council for Technological Service greater insight into and understanding of each institute’s work. This is of great value to the dialogue between the parties. The evaluation is used as the basis for allocating basic grants.

The aim of the evaluation is to ascertain whether each GTS institute’s development activities, professional competence and range of services are of the content and quality required to optimise the institute’s current and upcoming activities in relation to both the short-term and long-term needs of trade.
and industry and of society. In this connection it must be judged whether the organisation has a structure that ensures a proper professional function and development. The institute’s activities must also be judged in relation to the priorities and aims of industrial policy.

The purpose in this connection is also to investigate whether the institute works at a technically high and development-oriented level within its core areas, both in Denmark and internationally. It must be assessed whether the institute’s commercial and development activities enable it to develop the range of technological services for which there is deemed to be a future need.

Under the terms of reference drawn up for the evaluations, these are divided into three themes:

1. Evaluation of the institute’s role in society (25 per cent)
   - whether the institute serves the target groups it is intended to serve in its core areas and whether it offers a relevant service to these groups;
   - whether the institute co-operates to the necessary extent with relevant partners within the GTS system;
   - where the institute is placed within the knowledge system.

2. Evaluation of the institute’s role in industrial policy
   - consultancy role (developing new technology on commercial terms);
   - spearhead role (developing new technological knowledge);
   - sectoral role (technological foresight, demonstration projects, etc.);
   - national role (codification and standardization).

3. Evaluation of the institute’s level of activity and skills (50 per cent)
   - skills and know-how;
   - methods, tools, laboratories, facilities;
   - organisation, employees, quality assurance, etc.

This part also includes a section on special factors to which importance must be attached in the evaluation. The focus is on specific questions concerning the institute’s situation.

What the institutes can expect to get out of the evaluation process is, briefly:

◊ the possibility of obtaining valuable feedback and new ideas for the institute’s future development and business areas;
◊ feedback on whether or not the institute is concentrating on the right activities;
◊ feedback on whether or not the institute is doing things in the right way;
◊ constructive criticism and inspiration from impartial experts.

**Method of evaluation**

The main tool is peer review, *i.e.* evaluation by competent, independent colleagues of the institute’s professional activities, its strategic planning and its resources, skills and organisation.
An evaluation is carried out of the institute’s existing material – strategy, organisation, results, etc. Interviews are held with the management, key staff members and the board, covering the institute’s activities (about 20 interviews in all). This, however, reveals little about the institute’s relations with R&D institutions, competitors, customers, the authorities empowered to make grants, and policy-making authorities. It is important to talk to these groups as well (5-7 interviews in all), but for resource reasons, this area has been toned down.

The panel is free to plan the evaluation as it sees fit within the terms of reference and the time schedule. The working and reporting language is English.

The evaluation is divided into three phases: the planning phase, the evaluation phase and the strategy planning phase.

The planning phase

The planning phase lasts about three months. The Danish Agency for Development of Industry and Trade is responsible for this preliminary work, in which the entire evaluation process is planned and organised. The tasks involved are as follows:

◊ Terms of reference are prepared for each institute. They are based on standard terms of references but include specific questions for each institute.
◊ In co-operation with the institutes, panel members are appointed for the evaluation.
◊ Consultants are selected to provide secretarial assistance to the panels.
◊ A time schedule and a budget are prepared for the entire evaluation.
◊ A framework is prepared for the evaluation report.

The actual evaluation is preceded by a round of visits to the institutes to tell them how the GTS evaluation is going to be carried out, to gain a closer knowledge of the institutes’ fields of activity and to establish contact with the institutes’ management group. During these visits, the terms of reference, the evaluation panels and the time schedule for the evaluation are discussed with the institutes. They are subsequently given the opportunity to comment on the final draft of the terms of reference, panel proposals and time schedule.

The institutes prepare background material for the panel on the basis of a fixed framework. The material is intended to give a description of the institute and its commercial and development activities, organisation, staff, financial situation, history, etc. This material is sent to the panel before the evaluation commences. The panel is also provided with the institute’s annual report, latest strategy plan, any brochures, CVs for key staff, etc.

The evaluation phase

Since the evaluation imposes a heavy burden of work on the institutes, it is considered best to concentrate it within as short a period as possible, so the time allowed for the evaluation is only 3½ months.
The evaluation starts with an opening seminar for all those who will be involved: panel members, consultants, the GTS institutes, the Danish Agency for Development of Industry and Trade, etc. The seminar presents the background and content of the evaluation. On the following day, the panels are invited to the respective institutes to describe the work they are going to carry out. The actual evaluation exercise then starts, with the panels planning the rest of the process themselves.

Each panel plans the practical implementation of the evaluation within the terms of reference, and the evaluation ends with a report. Normally, three to four two-day meetings are required. The panel itself collects the material it needs from interviews with management/staff, customers, co-operation partners and competitors, etc. The interviews are normally shared between the different panel members according to their professional background and competence. A check-list based on the terms of reference is used as a guide for the interviews. Each interviewer is responsible for reporting the results of the interviews he/she carries out.

The panel stays in close contact with the institute management during the evaluation, asking questions, setting up hypotheses and testing conclusions. The panel’s work ends with a report.

**The strategy planning phase**

The final phase lasts three-four months. The evaluation ends with a closing seminar, at which all the parties involved meet once again. The seminar is used to discuss the lessons learned from the evaluation process. The panels then hold a meeting with the respective institutes to discuss the conclusions of the report with a broader circle of institutes.

On the basis of the evaluation reports, each institute delivers a strategy plan for the coming three years. The strategy plan is discussed with the Council for Technological Service/Danish Agency for Development of Industry and Trade, which then enter into result contract with the institute for the next three years. The strategy plan forms the basis for renewed approval as a technological service institute, and the basic grant is fixed for a three-year period.

**Fees**

The GTS evaluations are funded by the Danish Agency for Development of Industry and Trade.

The panel members each receive a small fee for their services. Foreign members receive a slightly larger fee than Danish experts because of the extra travelling time involved. All expenses – travel, hotel accommodation, etc., – are covered.

The panel members each receive DKr 15,000, and the chairman DKr 20,000. Foreign panel members receive an extra DKr 5,000. The consultants are remunerated at the usual rate. The first year’s evaluation indicated some dissatisfaction with the low – purely symbolic – fee paid to panel members. In the second year, the fee was increased slightly, silencing the criticism.

The panel members themselves say that the fee is unimportant: they (and especially the foreign experts) regard it as an honour to participate. In addition, participation in an evaluation panel makes a useful addition to a CV. Panel members also gain a thorough knowledge of the institute they are evaluating and meet interesting people on the panel team and at the GTS institute which may provide useful contacts in their personal networks.
Last, but not least, a good relationship usually develops between the members of the panel, so the social aspect helps to move the work forward. The individual members usually put a great deal more work into the evaluation than might be expected.

**Confidentiality**

In order to protect the GTS institutes’ interests, strict rules are made concerning confidentiality. The institutes have feared that business secrets and confidential information might come to the knowledge of competitors through the evaluations. At the recommendation of the Counsel to the Treasury, secrecy is enjoined upon the people working with the evaluations. The panel members and the consultants sign a declaration of confidentiality underlining the special rules of confidentiality applying to their work. The reports are confidential and are only supplied to designated persons who have signed a declaration of confidentiality.

Since the reports are therefore only seen by a narrow circle, the evaluations cannot be made a subject of public debate.

**The panel**

As the prelude to the GTS evaluation, the Agency asked the institutes to suggest people for the evaluation panels. The institutes were asked to nominate candidates with both research and commercial knowledge in their respective core areas. In the composition of the panels, importance was attached to professional breadth, expertise in the respective areas, and impartiality in relation to the institute.

The following criteria were applied:

◊ impartiality in relation to the institute;
◊ good professional insight into the institute’s development and commercial activities;
◊ experts with a research/institute background and a user background;
◊ national and international background;
◊ the panel must cover the institute’s various core areas.

The institutes were asked to nominate four-six panel members, including international experts.

The institutes endeavoured to find the right people with the right background who were willing to participate in the panels. In most cases, the entire management team was involved in this task, and in some cases, the question was also discussed at board level.

Once the Agency had received the lists of candidates, it discussed the composition of the panels with the directors of the institutes. In most cases, the Agency took cross-references on some of the candidates in order to ensure that they would be suitable for the task.

It is regarded as vital that the most qualified candidates be picked for the task. The panel must be able to function as a team, both professionally and socially. Their combined expertise must cover all the institute’s core areas. With a well-qualified team that works well together, an evaluation gets under way
quickly and on the right track. A panel should therefore not include any members who might prove to be an obstacle to open interaction between the panel and the institute management.

As the evaluations proceeded, more and more international expert members were chosen to participate. In the third year’s evaluations, half of the panel members were international experts – from Germany, France, Austria, the United Kingdom, the Netherlands, Spain, Switzerland, the United States, Canada, Finland, Sweden and Norway.

Each panel has four or at most five members. A chairman is chosen. Where there is active and fruitful co-operation between the chairman and the consultant, the panel usually functions well. It is important to have a chairman who can and will lead the panel. In the first year’s evaluations, it was decided that the chairman should be Danish; the reason being that a Danish chairman would be familiar with the Danish industrial development system and particularly the GTS system, whereas international experts would lack that knowledge. However, this practice has since changed, the most suitable person for the job being chosen. In practice, it has been found that panels function perfectly with an international expert as chairman.

The Agency needs to be in close contact with the institute director during the composition of the panel. The institute itself knows best where to find the most qualified experts to assist the institute in its strategy development work.

If problems arise during an evaluation – for example, if the result of the evaluation is less than favourable – the institute will find it difficult to object to the panel’s judgement when it has itself been heavily involved in finding the panel members. The institute’s frustration will therefore at worst be directed not at the Agency, but at the panel. A real discussion can thus take place between the institute and the panel, with the Agency very much out on the side line. The discussion will not be about whether the right panel members have been found or whether the panel has misunderstood the assignment, but about the actual content of the evaluation, making it easier to keep the evaluation on track.

**Distribution of the work**

The parties involved in the evaluation are the panel, the consultant providing the panel with secretarial services, the GTS institute, the Council for Technological Service and the Danish Agency for Development of Industry and Trade. The distribution of the work between the parties is as follows.

**The panel**

The panel is responsible for planning and implementing the evaluation within the terms of reference for this. This involves identification and definition of the content of the task and the method to be used, and preparation of a time schedule and work plan.

The panel also has the task of visiting the institute, interviewing the management/staff at the institute and selected groups of users. The panel must help with the writing of the report, but is assisted by the consultant in the above-mentioned areas. Responsibility for the report and for the conclusions presented lies with the panel.
The consultant

The consultant acts as secretary for the panel. The consultant is chosen primarily for his/her specialised knowledge of the institute to which he/she is attached. The consultants are thus senior consultants with specialised knowledge who can act as process consultants. As the evaluation process is very short, the consultant must know the technical field so well that he/she is “at home” in the technical discussions, largely on an equal footing with the members of the panel.

If it turns out that the panel does not function as well as expected or that there are some “gaps” in their technical coverage of the institute, a qualified consultant can play an important technical role in the evaluation process. With the consultant, the panels actually get an additional panel member.

The consultant’s task is to plan the panel meetings and participate in them. He/she also helps the panel to plan and organise the evaluation, including defining its content and drawing up a time schedule for the work. The consultant arranges visits to the institute, carries out interviews and collects relevant background material. His/her most important task is writing the report.

The consultant enters into a contract with the Danish Agency for Development of Industry and Trade and reports to the Agency.

Danish Agency for Development of Industry and Trade/Council for Technological Service

The Council for Technological Service is responsible for the overall management of the evaluation of the institutes. The final reports on the evaluations are presented to the Council for consideration.

The Danish Agency for Development of Industry and Trade, which acts on behalf of the Council for Technological Service, takes care of the practical side of the work. In other words, it plans and co-ordinates the administration of the evaluations.

In addition to the planning and co-ordinating function, an officer from the Agency is attached to each evaluation. The officer monitors the evaluation, answers queries and ensures some uniformity in the methods used and the structuring of the reports. The officer also gains good insight into the core areas of the institute being evaluated. Finally, the officer enters into a dialogue with the institute on its strategy plan.

Effect of the evaluation

During the first year evaluations, the Agency encountered some scepticism among the directors of the institutes facing evaluation. Several institutes regarded the evaluation as an extra burden of work in relation to the public system and also as a form of control. Some referred to the evaluation as “exam time”.

In the second year, the mood was totally different. The institutes had realised that the evaluation had provided them with a useful tool for their strategy work and had resulted in a constructive dialogue with the Agency on their future work and following basic grants.

In the third year, the institutes were very active in finding panel members and organising the evaluation process in the best possible way in order to ensure the best possible result. The institutes
actively used the panel members to adjust the organisation and find new development and business areas. For example, in the third year’s evaluations, 50 per cent of the members of the panels were international experts, compared with only 20 per cent in the first year, when there had been some unwillingness to use other than Danish experts.

The three years’ evaluations were all constructed around the same method. The model was fixed in the first year’s evaluations and proved to hold good in practice. In the following two years, the model was adjusted and improved on the basis of the experience gained during the process. It was found important for the same method to be used for evaluation of all the GTS institutes in order to have a proper basis for comparison.

A small survey among some of the institute directors shows that they take a very positive view of the evaluations. The directors have made extensive use of the results in the work of their institutes and try to guide the institutes in the direction recommended by the panels. Weak areas pinpointed by the panel have subsequently been discussed in the institutes. The directors were often already aware of the areas of their activities that needed strengthening, but once these were pointed out by the panel, they received more attention in the institutes’ work. It became easier to get the institute’s staff to accept the need for change when an external panel had spoken.

The Agency has attached great importance to dialogue between institute and panel from the first day of an evaluation to enable the institute to incorporate the panel’s views and recommendations in its work at an early stage. The report which the panel delivers to the institute at the end of the evaluation should not contain any big surprises for the institute because the institute has been involved in the process all the way through.

The evaluations carried out have led the Danish Agency for Development of Trade and Industry to demand more precise and targeted strategy plans. As an innovation, a result contract has been introduced, together with the requirement for a more detailed explanation in the institutes’ strategy plans of the activities and projects for which the basic grants will be used. This is a process that has just started, and the GTS institutes and the Agency are working to find a form that will produce greater visibility with respect to objectives and the use to which the basic grants are put.

Evaluation of the GTS institutes will not enter the public debate because the evaluation reports are confidential.

From 1995 to 1997 the GTS institutes have undergone a thorough evaluation, involving many experts and a lot of work for all those involved. The GTS institutes will undergo a new evaluation round in the years 1998 to 2000. A new model must be developed for this second-generation evaluation. The challenge now facing the Danish Agency for Development of Industry and Trade is to develop that new model.