

**VOORBURG GROUP ON SERVICE STATISTICS**  
**Seventh Meeting**  
**Williamsburg, 19-23 October 1992**

**ENGINEERING AND OTHER TECHNICAL ACTIVITIES AND THE  
CPC**

**Berit Olsson**  
Statistics Sweden

## ENGINEERING AND OTHER TECHNICAL ACTIVITIES, 1990

### 1. Commodity data for engineering and other technical services and the relationship to the Central Product Classification

The collection of revenue data, by type of engineering service, was introduced in the 1985 Survey of Business services and has been repeated for the years 1988 and 1990. The breakdown of the revenues has been more detailed and improved for every survey. The latest is the most harmonized to CPC.

Our experience of the breakdown of the revenues and the use of CPC correspond with the Canadian experience (Engineering services and CPC, Statistics Canada, Document 29, the sixth meeting of the Voorburg group). The most important conclusions from our survey are

- the present CPC seems on the whole to be quite practical for architectural, engineering and other technical activities
- the five digit breakdown of Architectural services can be questioned and seems not to be practical for the respondents
- for engineering services the breakdown on five digit level is practical and necessary to get good information
- the detailed breakdown of integrated engineering service is not very useful and can be left out
- an own category for "project management" would be useful.

Appendix 1 gives a connection between the survey's type of service classification and the CPC.

### Comments to the CPC classes and the survey

**8671 Architectural service** When we planned the survey and talked with the users of the statistics and the respondents' we found that the split up on five digit level was not practical but advisory and pre-design service could be separated from other architectural services. In our survey the class **86711** Advisory and pre-design service has been moved to a separate class for **advisory** aggregated with **86721** Advisory and consultative engineering service.

**8672 Engineering services** The most important part of the revenues comes from these kind of activities. The breakdown of the activities in several classes on the five digit level in CPC seems to be legitimated. We are, on the other hand required not to give out too detailed questionnaires in order to lower the response burden. When we discussed the CPC classes before we finalized the questionnaire, some enterprises found it difficult to separate **86722** Engineering design services for construction of foundations and building structures and **86723** Engineering design services for mechanical and electrical installations for building, as these activities were integrated in the same work and contract. On the other hand, there were also enterprises

that had one of these services as their speciality. After some hesitation we decided to aggregate these two classes to one in our questionnaire.

Now, that we have the result from the survey, we think it is a better idea to have them separated. About 40 percent of the revenues of 8672 Engineering services comes from these two aggregated classes. When we repeated the contact with the firms, after the survey, at least the big firms with 50 or more employees, said they wanted a more detailed split up of these activities. Firstly, they thought it would be easier to answer on a more detailed level and secondly, they wanted to have the result from the survey on a detailed level to be able to recognize their own market. They were especially interested in details as

- water supply and sewerage engineering
- HVAC, refrigeration and energy engineering
- lift and transport (steering and regulation) engineering.

**86721** Advisory and consultative engineering services did not get an explicit line in the questionnaire but were aggregated together with 86711 to a group Advisory (in general). **86724** Engineering design services for construction of civil engineering works was a separate class in the survey and so was **86725** Engineering design services for industrial process and production. **86726** Engineering design services n.e.c. get a specification: Construction services within specialized areas; acoustics, traffic control system, construction of new products. **86727** Engineering services during the construction and installation phase did not get a separate line in the questionnaire. The revenues from these activities have been aggregated to some of the other classes, probably **86729** Other engineering services. Perhaps some of the revenues in class 86727 should have been reported under the category "project management" if the possibility was given.

One important activity accounted to **86729 Other engineering services** was project management. We also found testing and control, economic administration, tendering (bidding) and legal service here. For small firms it was often the only or the main activity. Big firms most often have these activities included in some specialized engineering service.

As project management seems to be an important part of 86729 Other engineering projects and also included in "services n.e.c." we suggest a separate CPC class: **management for engineering and other technical services**.

**8673 Integrated engineering services** We did not find enough interest to break down this category into five digit level. After the survey, we asked some of the respondents, who had their main revenues in this category, about their possibility to split up 8672 on a more detailed level. Only a few big firms were interested in a split up of integrated engineering services and others found it too difficult to do so.

**8675 Related scientific and technical consulting services** We did not break down this category in the survey but we think the five digit level of CPC is practical and useful. If you want to analyze the enterprises with other technical activities as their main activity, the split up of this category in more

detailed classes is necessary. Moreover, the respondents said it is possible to do so.

**8676 Technical testing and analysis services** As for 8675 we did not break down this category into sub-classes but we think it is practical and can be useful.

As we know there are computer services in most of all business services, we included **CPC 84 Computer and related services** in the survey and called it: Development and consulting services within electronic and computer systems. As much as 5 per cent of all revenues accounted in the survey came from this category.

The questionnaire also included

- services n.e.c.
- sales of merchandise
- other revenues.

Examples of "services" n.e.c are education, enviromental engineering, mining engineering, test and control, project management, cleaning service and advertising. Of these things "enviromental engineering" was demanded as an own activity.

Sales of merchandise were of importance; nearly nine per cent of all revenues. Some of the enterprises with "other technical services" had a comprehensive sales of merchandise.

The Canadian survey has also used a classification of revenue by field of specialization. We have not tried anything like this, as we want to give priority to the improvement of the surveys according to CPC. On the other hand, we can understand the interest shown by users for this kind of data. The Swedish organization of engineering and technical enterprises have, for example, their own classification of the enterprises which is a mixed up of type of services rendered and field of specialization:

- general consultancy
- economy
- property management
- project management
- control and monitoring
- acoustics
- architecture
- landscape planing
- urban and regional planning
- subsurface engineering and geology
- surveying techniques
- building and industrial construction
- electrical installation engineering
- industrial electrical engineering
- industrial process engineering
- industrial heating engineering
- lift and transport engineering waste management
- soil mechanics
- power production engineering
- transport engineering

- road and traffic engineering
- water supply and sewerage engineering
- hydraulic engineering
- HVAC, refrigeration and energy engineering
- mechanics
- bridge building and civil engineering
- oil and gas engineering
- lightning protection engineering

### **Proposals for CPC classes**

According to our experience, the following classes seems to be useful and practical.

<b>8671</b>	<b>Architectural services</b>
<b>86711</b>	<b>Advisory and pre-design architectural services</b>
86712	Architectural design services
86713	Contract administration services
86712	Combined architectural design and contract admin services
<b>86719</b>	<b>Other architectural services</b>
<b>8672</b>	<b>Engineering services</b>
<b>86721</b>	<b>Advisory and consultative engineering services</b>
<b>86722</b>	<b>Engineering design services for the construction of foundations and building structures</b>
<b>86723</b>	<b>Engineering design services for mechanical and electrical installations for buildings</b>
<b>86724</b>	<b>Engineering design services for the construction of civil engineering works</b>
<b>86725</b>	<b>Engineering design services for industrial process and production</b>
<b>86726</b>	<b><i>Constructing services within specialized areas; acoustics, traffic control-systems, construction of new products</i></b>
86727	Engineering services during the construction and installation phase
<b>86729</b>	<b>Other engineering services</b>
<b>8673</b>	<b>Integrated engineering services</b>
86731	Integrated engineering services for transportation infrastructure turnkey projects
86732	Integrated engineering services for water supply and sanitation turnkey projects
86733	Integrated engineering services for manufacturing turnkey projects
86739	Integrated engineering services for other turnkey projects
<b>8674</b>	<b>Urban planning and landscape architectural services</b>
<b>86741</b>	<b>Urban planning services</b>
<b>86742</b>	<b>Landscape architectural services</b>
<b>8675</b>	<b>Related scientific and technical consulting services</b>
<b>86751</b>	<b>Geological, geophysical and other scientific prospecting</b>

	services
<b>86752</b>	<b>Subsurface surveying services</b>
<b>86753</b>	<b>Surface surveying services</b>
<b>86754</b>	<b>Map making services</b>
<b>8676</b>	<b>Technical testing and analysis services</b>
<b>86761</b>	<b>Testing and analysis services of physical properties</b>
<b>86763</b>	<b>Testing and analysis services of integrated mechanical and electrical systems</b>
<b>86769</b>	<b>Other technical testing and analysis services</b>
<b>8677</b>	<b><i>Project management services</i></b>

#### Explanations

<b>86xx</b>	Sub-class we do not think is useful
<b>86xx</b>	<b>Sub-class we think is useful</b>
<b>86xx</b>	<i>New sub-class or new text</i>

## 2. Brief statistical analysis

Engineering and other technical services are an important part of total business services, as they have about 30 per cent of value added and employment. This kind of activity has increased considerable during 1985-90. The annual change of turn-over has been 19 per cent, in current prices, compared with 10 per cent for total companies .

In 1990 the turnover was SEK 35600 Million and the value added SEK 16000 Million, 1.4 percent of GDP. About 12000 enterprises, 2.4 percent of all enterprises, had Engineering and other technical activities as their main activity. Small enterprises are in the majority, and about 85 percent of the enterprises have 0-4 employees.

About 50000 persons were employed in these enterprises, 24 per cent in enterprises with 0-4 employees and 42 percent in enterprises with 50 or more employees. Only one percent of the enterprises had 50 or more employees but were responsible for 37 per cent of the turnover.

There is no sharp borderline between enterprises with engineering services and enterprises with other technical services but about 70 per cent of the revenues come from engineering services.

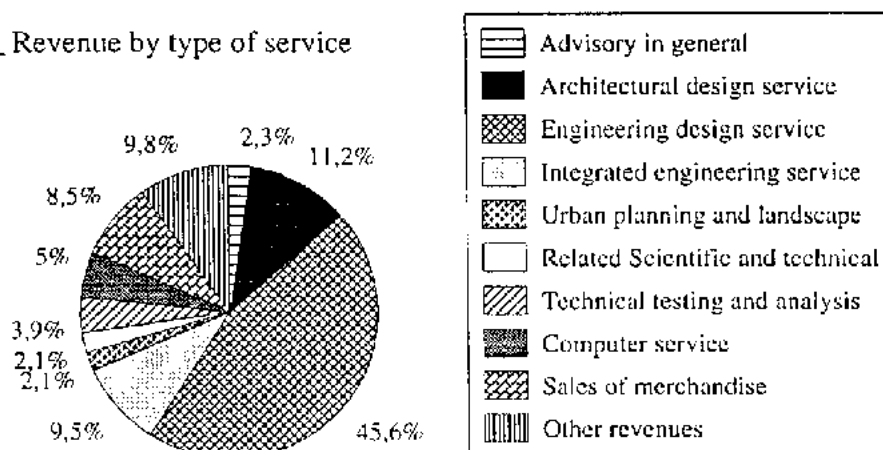
The customers come mainly, 86 per cent, from the domestic market but export is more important for this industry, 14 percent, then for business services as a total. The 86 percent in domestic market are split up into

- manufacturing enterprises, 34 per cent
- trade enterprises, 4 per cent

- bank-, finance- and insurance enterprises, 4 per cent
- other service enterprises, 22 per cent
- government and municipality, 21 per cent
- private persons, 1 per cent.

Revenues by type of service and size classes of enterprises are given in Appendix 2. The breakdown of revenues by type of service on a more aggregate level is given in the following chart.

**Chart 1** Revenue by type of service



In the 1990 survey of we asked, for the first time, for a breakdown of the total costs. The breakdown was not very detailed but gave at least the following information: Labour costs 45 per cent, intermediate consumption 14 per cent, external service 14 percent and other costs 20 per cent.

The engineering and other technical services enterprises have accounted for the following investments 1990, SEK Million :

- new buildings and new constructions	649
- machinery, inventories, motor vehicles (gross)	1668
- value of new contracts from leasing of machinery, inventories, motor vehicles	260
Total gross investments	2577
- sales of machinery, inventories, motor vehicles	188
Total net investments	2389

The external costs for education of the staff was SEK 247 Million.

### 3. Organization of the survey, coverage and sampling procedure

In May 1991, Statistics Sweden sent out questionnaires to enterprises with Legal services, Computer services and Engineering and other technical services. The questionnaire for Architectural, Engineering and Other Technical Services is shown in Appendix 3. The population consists of enterprises with company and sole proprietorship as legal status apart from sole proprietorships without employees and companies with less than SEK 100 000 in turnover. A sampling method, stratified by enterprises size class according to number of employees, was used. All enterprises with 50 or more

employees were included. The result has been supplemented with information from administrative records for the excluded enterprises.

The enterprises were reminded three times by letter and some of them were also reminded by telephone. Population, sample size and response rate is shown below.

Size of enterprise rate	Population	Sample	Response
0-4	11 825	340	74
5-19	1 168	93	85
20-49	194	40	88
50-	115	115	92
Total	13 302	588	80

The response rate according to turnover was 90 per cent.

A little more than 90 per cent of the revenues has been broken down by type of service. The next 10 per cent consists of enterprises which have only given total revenues and non-respondents for which we have taken total revenue from annual accounts.

Financial figures have been taken from the financial statistics for the companies and from tax returns for sole proprietorship. The samples for these three surveys have been harmonized.



**Concordance between the survey's type of service classification and the CPC**

<b>SURVEY</b>	<b>CPC</b>
Advisory	86711,86721
Engineering and architectural design services	86712-19
Urban planning and landscape architectural services	8674
Engineering design services for the construction of foundations and building mechanical and electrical installations for buildings	86722,86723
Engineering design services for the constructions of civil engineering works	86724
Engineering design services for industrial process and production	86725
Integrated engineering services (turnkey projects) for transportation, water supply and sanitation, manufacturing and other projects	8673
Other engineering services	86727,86729
Constructing services within specialized areas; acoustics, traffic controll system, construction of new products	86726
Related scientific and technical consulting services	8675
Technical testing and analysis services	8676
Development and consulting services within electronic and computer systems	-----
Services n.e.c.	-----

**Revenue by type of services for Consulting Engineers, Architects, Scientific and Technical service. Millions of SEK**

Revenue by type of services	Size of enterprise (number of employees)				Total
	0 - 4	5 - 19	20 - 49	50 -	
Advisory	217	22	307	235	781
Engineering and architectural design services	915	1 088	553	1 170	3 726
Urban planning and landscape architectural services	291	128	10	253	682
Engineering design services for the constructions of foundations and building structures including mechanical and electrical installations for buildings	1 263	1 513	378	2 680	5 834
Engineering design services for the constructions of civil engineering works	39	68	65	313	485
Engineering design services for industrial process and production	547	956	837	1 935	4 275
Integrated engineering services (turnkey projects) for transportation, water supply and sanitation, manufacturing and other projects	12	182	1 551	1 364	3 109
Other engineering services	1 055	1 872	192	1 135	4 254
Constructing services within specialized areas; acoustics, traffic control system, construction of new products	51	78	70	119	318
Related scientific and technical consulting services	99	-	50	217	366
Technical testing and analysis services	55	1	42	1 201	1 299
Development and consulting services within electronic and computer systems	232	376	344	687	1 639
Services n.e.c	1 057	443	457	725	2 682
Sales of merchandise	1 159	497	231	910	2 797
Other revenues	263	57	23	240	583
Revenues not specified	2 420	26	-	288	2 734
<b>Total revenues</b>	<b>9 675</b>	<b>7 307</b>	<b>5 110</b>	<b>13 472</b>	<b>35 564</b>

Consultation has been made with The Delegation for Reporting.

## SERVICE STATISTICS 1990

Returned to the SCB  
latest the 14th of June 1991

Name of the survey  
**F/SE 83240**

Activity according to the enterprise register of Statistics Sweden

### ARCHITECTURAL, ENGINEERING AND OTHER TECHNICAL ACTIVITIES

ACTIVITY OF THE ENTERPRISE (Give a detailed description of kind of activity)

#### ENTERPRISES REVENUE 1990

	SCB cod	1 000 SEK
Total revenue.....	01	

State exactly period for the figures given

Year	Month	Year	Month

#### SPLIT UP OF REVENUE 1990

	SCB cod	1 000 SEK
Advisory (in general).....	02	
Engineering and architectural design services.....	03	
Urban planning and landscape architectural services.....	04	
Engineering design services for the construction of foundation and building structures including electrical installation for buildings.....	05	
Engineering design services for the construction of civil engineering works including transportation, infrastructure projects etc.....	06	
Engineering design services for industrial process and production.....	07	
Integrated engineering services (turnkey projects) within transportation, watersupply and sanitation, manufacturing and other projects.....	08	
Other engineering projects.....	09	
Constructing services within specialized areas; acoustics, traffic control system, construction of new products.....	10	
Related scientific and technical consulting services.....	11	
Technical testing and analysis services.....	12	
Development and consulting services within electronic and computer systems.....	13	
Services n. e. c. (please, specify).....	14	
Sales of merchandies.....	15	
Other revenues, please specify.....	99	
TOTAL revenues	100	

Directions about the basic account (BAS 90) for revenues, costs and investments can be found in the instructions.

Data about the revenues of the enterprises can be collected from the annual report of 1990.

Do not include the financial and the extraordinary revenues, VAT or subsidy from the public sector. However, rent, tenancy and provision will be included.

The data given refer to the enterprise, not to possible combine.

The information given may be estimated.

Other revenues include rent, tenancy, licence, royalties, insurance repayment etc (notice account 38, BAS 90)

**ENTERPRISES EXPENDITURE 1990**

<---- Do not include financial and extraordinary costs, depreciation, VAT or discounts.

	SCB cod	1 000 SEK
Labor costs (wages + social fees).....	22	
Purchase of primary products/consumable supplies.....	23	
Purchase of services.....	24	
Other costs.....	25	
<b>TOTAL expenditure</b>	<b>101</b>	

**REVENUES SPLIT UP ON CATEGORIES OF CUSTOMERS 1990**

The information given may be **estimated**.

	SCB cod	1 000 SEK
<b>Domestic sales</b>		
- Manufacturing enterprises.....	26	
- Trade enterprises.....	27	
- Bank, finance and insurance enterprises.....	28	
- Other enterprises within the service sector.....	29	
- Gouvernement and local authorities.....	30	
- Household/privat persons.....	31	
<b>Export</b> .....	<b>32</b>	
<b>TOTAL</b>		<b>100%</b>

For example: contractors, consultants, advertising enterprises, the Post Office, the National Telecommunication, hotel and restaurant etc.

<---- Public companies counts as enterprise. Not as public authority.

<---- As foreign sales counts only invoice outside Sweden. Invoice to foreign enterprises subsidiaries or representatives in Sweden counts as domestic sales.

**INVESTMENTS 1990**

	SCB cod	1 000 SEK
Expenditure for education of the staff.....	33	
New buildings and new constructions.....	34	
Machinery, inventories, motor vehicles (gross).....	35	
Sales of machinery, inventories, motorvehicles.....	36	
Value of new contracts from leasing of machinery, inventories, motorvehicles.....	36	

<---- The costs according to account 581 (BAS 90) i.e. acclimation, further education etc and fees for external courses, boarding costs for internal arranged courses and travelling expenses in connection with education etc.

<---- State the cost price according to leasing contract. The data will refer to contracts started during the year.

**EMPLOYMENT 1990**

	SCB cod	Number of employed (annual account)
Employers.....	102	
Employees.....	103	

<---- As employers counts owner of close company, private firm, trading company etc and member of a family who work permanent in the company without being employed.

**COMMENTS**


Signature of authorized person	Telephone Number
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