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Sector Paper on:

ISIC Revision 4 (2008) 81 Services to buildings and landscape activities

Statistics Austria

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1. Introduction

The information in this report is based on papers and presentations of the Voorburg Group meeting in 2010 (Vienna), Task Force in April, 2008 (Luxembourg) and on two papers from The Netherlands¹.

In 2010, mini presentations were given on turnover/output concerning cleaning and facilities services from Norway (Jakob Kalko), The Netherlands (Noortje Urlings, Fintan van Berkel) and Germany (Daniela Röstel, Hanna Fischer). Additionally, Norway (Jonas A Hansen), Germany (Susanne Lorenz), Israel (Ruth Vizner) and Austria (Christian Stock) gave mini presentations on the development of corresponding SPPIs.

In April 2008 Hungary (Hamvainé Holocsy Ildikó) and Finland (Elina Pääkkö) presented their concepts of SPPIs for 81.2 'Cleaning activities' (NACE Rev. 2).

All of the mentioned SPPI mini presentations/presentations/papers deal with N 812 'Cleaning activities'. Mini presentations on turnover/output also include N 811 'Combined facilities support activities'. N 813 'Landscape care and maintenance service activities' were never treated neither by Voorburg Group meetings nor Eurostat Task Forces. That is why this sector paper only partly covers the comprehensive Division 81 'Services to buildings and landscape activities' (ISIC Rev. 4).

The paper deals with a comparison of the most common industry classifications ISIC, NAICS, ANZSIC and NACE and the respective product classifications CPC, CPA and NAPCS. The paper also gives attention to 'Turnover statistics' (Chapter 3) and 'Service Producer Price Index (SPPI)' (Chapter 4). The last chapter provides a short summary of countries developing or producing SPPIs and a detailed comparison of the mentioned industry and product classifications.

2. Classification

Services to buildings and landscape activities will be described by industry classifications as well as by the corresponding product classifications.

On the industry level the International Standard Industrial Classification (ISIC Rev. 4), the Statistical Classification of Economic Activities in the European Community (NACE Rev. 2), the Australian and New Zealand Standard Industrial Classification (ANZSIC 2006) and the North American Industry Classification System (NAICS 2007) are compared to each other.

In the paper, the product level is represented by the Central Product Classification (CPC Ver. 2), the Classification of Products by Activity (CPA 2008) and the North American Product Classification System (NAPCS 1999).

2.1 Industry classification

Division 81 'Services to buildings and landscape activities' in the International Standard Industrial Classification (**ISIC Rev. 4**²) identifies three three-digit level codes:

N 811 - Combined facilities support activities

N 812 - Cleaning activities

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¹ Spanjaard, M. SPPI For Industrial Cleaning In The Netherlands. 2011 CIRCA. NL report on cleaning activities SPPI (English). 12/12/2006

² http://unstats.un.org/unsd/cr/registry/isic-4.asp

N 813 - Landscape care and maintenance service activities

Group 811 covers the provision of a combination of support services within a client's facility but not the provision of only one support service (e.g. general interior cleaning service) or single function (e.g. heating). N 813 includes various services regarding landscape care and maintenance service activities. For instance, services like the planting, care and maintenance of parks and gardens for different consumers are one group of activities within this service sector.

N 812 'Cleaning activities' is further subdivided into:

N 8121 - General cleaning of buildings

N 8129 - Other building and industrial cleaning activities

A typical and common example of N 8121 'General cleaning of buildings' is general (non-specialized) mostly interior cleaning of office buildings. In contrast to this, the exterior cleaning of office buildings, window cleaning and a wide range of specialized cleaning activities are examples of N 8129 'Other building and industrial cleaning activities'.

Another important classification is the **NACE**³ in its latest Rev. 2. There are no distinctions on three-digit level but differences emerge on four-digit level in comparison to ISIC. Additionally, a third four-digit level code appears besides two four-digit level codes concerning building and industrial cleaning activities:

N 8121 - General cleaning of buildings

N 8122 - Other building and industrial cleaning activities

N 8129 - Other cleaning activities

Class N 8129 'Other cleaning activities' includes some very specialized cleaning activities, e.g. cleaning of trains, buses, planes, etc. or cleaning of the inside of road and sea tankers.

The Australian and New Zealand Standard Industrial Classification (**ANZSIC 2006**⁴) summarizes building exterior cleaning, building interior cleaning, chimney cleaning and other (specialized) cleaning activities in one class 7311 'Building and other industrial cleaning services'. Two other classes represent building pest control services and gardening services. Group 732 'Packaging services' is also included in subdivision 73 'Building cleaning, pest control and other support services'.

Subdivision 73 - Building cleaning, pest control and other support services

Group 731 - Building cleaning, pest control and gardening services

Class 7311 - Building and other industrial cleaning services

Class 7312 - Building pest control services

Class 7313 - Gardening services

Group 732 - Packaging services

At last, the North American Industry Classification System (**NAICS 2007**⁵) is mentioned in this chapter. The classification NAICS makes a difference between cleaning building interiors (561720 'Janitorial services') and cleaning building exteriors (561790 'Other services to buildings and dwellings') in contrast to ANZSIC on four-digit level.

5617 - Services to buildings and dwellings

561710 - Exterminating and pest control services

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³ http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_REV2&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC

⁴ http://www.abs.gov.au/AUSSTATS/abs@.nsf/ViewContent?readform&view=DirClassManuals byTopic &Action=Expand&Num=6.2.1

⁵ http://www.census.gov/eos/www/naics/

561720 - Janitorial services

561730 - Landscaping services

561740 - Carpet and upholstery cleaning services

561790 - Other services to buildings and dwellings

'Exterminating and pest control services', 'Landscaping services' and 'Carpet and upholstery cleaning services' are classified separately in 561710, 561730 and 561740 on six-digit level.

Table 1 gives an overview of industry classifications with a description of corresponding services.

Table 1: Overview of Industry Classifications

Industry classification	2-digit level	3-digit level	4-digit level	
		Combined facilities support activities	Identical to 3-digit level	
ISIC Rev. 4	Services to buildings and landscape		General cleaning of buildings	
ISIC Nev. 4	activities	Cleaning activities	Other building and industrial cleaning activities	
		Landscape care and maintenance service activities	Identical to 3-digit level	
			General cleaning of buildings	
NACE Rev. 2	Identical to ISIC Rev. 4 except for Cleaning activities		Other building and industrial cleaning activities	
			Other cleaning activities	
	Duilding alonging good		Building and other industrial cleaning services	
ANZSIC 2006	Building cleaning, pest control and other support services	Building cleaning, pest control and gardening services	Building pest control services	
			Gardening services	
Industry classification	4-	digit level	6-digit level	
			Exterminating and pest control services	
			Janitorial services	
NAICS 2007	Services to buildings and	d dwellings	Landscaping services	
			Carpet and upholstery cleaning services	
			Other services to buildings and dwellings	

The above-mentioned table shows that ISIC Rev. 4, NACE Rev. 2 and ANZSIC 2006 are similar on 4-digit level. There are separate codes for 'Building pest control services' (ANZSIC 2006) and 'Exterminating and pest control services' (NAICS 2007). The industry classification NAICS 2007 divides services to buildings and dwellings into further groups of activities.

2.2 Product classification

The Central Product Classification **CPC Ver. 2**⁶, the respective product classification to the industry classification ISIC, identifies two separate sections, two divisions, three groups, seven classes and seven subclasses for services to buildings and landscape activities.

Section: 8 - Business and production services

Division: 85 - Support services

Group: 853 - Cleaning services

Class: 8531 - Disinfecting and exterminating services

Subclass: 85310 - Disinfecting and exterminating services

Class: 8532 - Window cleaning services

Subclass: 85320 - Window cleaning services

Class: 8533 - General cleaning services

Subclass: 85330 - General cleaning services **Class: 8534** - Specialized cleaning services

Subclass: 85340 - Specialized cleaning services

Group: 859 - Other support services

Class: 8597 - Landscape care and maintenance services

Subclass: 85970 - Landscape care and maintenance services

Section: 9 - Community, social and personal services

Division: 94 - Sewage and waste collection, treatment and disposal and other environmental

protection services

Group: 945 - Sanitation and similar services

Class: 9451 - Sweeping and snow removal services

Subclass: 94510 - Sweeping and snow removal services

Class: 9459 - Other sanitation services

Subclass: 94590 - Other sanitation services

There are two groups in division 85 which separate cleaning services (group 853) from landscape care and maintenance services (group 859). Another three-digit level code (group 945) summarizes 'Sanitation and similar services'. Two subclasses in this group represent 'Sweeping and snow removal services' (subclass 94510) and 'Other sanitation services' (subclass 94590).

The European equivalent to the CPC is the Statistical Classification of Products by Activity (CPA 2008⁷) which has a different structure. 'Combined facilities support services' (group 811) represent a combination of support services within a client's facility, such as general interior cleaning, maintenance, trash disposal, and so on. The individual service is classified as cleaning and facility service (e.g. general interior cleaning) or outside of the scope of this industry (e.g. guard and security). The provision of services regarding the complete operation of a client's establishment, such as a hotel, restaurant, and so on, can be found in the class of the unit operated. Further groups are 'Cleaning services' (group 812) and 'Landscape services' (group 813).

Division: 81 - Services to buildings and landscape

Group: 811 - Combined facilities support services

Class: 8110 - Combined facilities support services

⁶ http://unstats.un.org/unsd/cr/registry/cpc-2.asp

⁷ http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=CPA_2008&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC

Category: 81101 - Combined facilities support services

Subcategory: 811010 - Combined facilities support services

Group: 812 - Cleaning services

Class: 8121 - General cleaning services of buildings

Category: 81211 - General cleaning services of buildings

Subcategory: 812110 - General cleaning services of buildings

Class: 8122 - Other building and industrial cleaning services

Category: 81221 - Industrial cleaning services

Subcategory: 812211 - Window cleaning services **Subcategory: 812212** - Specialised cleaning services

Subcategory: 812213 - Furnace and chimney cleaning services

Class: 8129 - Other cleaning services

Category: 81291 - Other cleaning services

Subcategory: 812911 - Disinfecting and exterminating services **Subcategory: 812912** - Sweeping and snow removal services

Subcategory: 812913 - Other sanitation services **Subcategory: 812919** - Other cleaning services n.e.c.

Group: 813 - Landscape services
Class: 8130 - Landscape services

Category: 81301 - Landscape services

Subcategory: 813010 - Landscape services

The North American Product Classification System (NAPCS 1999)⁸ is a trilateral initiative of Canada, Mexico and the United States and is still considered provisional. The final aggregation structure will group products regardless of industry. 102 product lists (98 trilateral, 3 bilateral and 1 US only) are available at this time but these product lists bear no necessary relationship to the final NAPCS structure. The following NAPCS product list for NAICS 5617 'Services to Buildings and Dwellings' is presented in the following:

5617 1 Pest extermination and control services

- 5617 1.1 Pest extermination and control services, residential; Further distinction available
- 5617 1.2 Pest extermination and control services, nonresidential; Further distinction available

5617 2 Cleaning services

- 5617 2.1 Residential interior cleaning services
- **5617 2.2** General-purpose and comprehensive commercial cleaning services; Further distinction available
- **5617 2.3** Cleaning services for window exteriors
- 5617 2.4 Cleaning services for building exteriors
- **5617 2.5** Damage restoration and cleaning services
- 5617 2.6 Hard-surface floor care services
- 5617 2.7 Cleaning services for carpets, rugs, and upholstery; Further distinction available
- 5617 2.9 Other specialized cleaning services; Further distinction available

5617 3 Landscaping services

- **5617 3.1** Residential landscaping services
- 5617 3.2 Commercial landscaping services; Further distinction available

5617 9 Related products

5617 9.1 Reselling services for cleaning products and related merchandise, retail; Further distinction available

5617 9.2 Reselling services for plant materials, retail

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⁸ http://www.census.gov/eos/www/napcs/

- **5617 9.3** Reselling services for construction materials, retail
- **5617 9.4** Reselling services for swimming pool supplies, retail
- 5617 9.5 Off-site curtain and drape cleaning services
- 5617 9.6 Landscape architectural services
- **5617 9.7** Landscape construction services; Further distinction available
- 5617 9.8 Collection services for hazardous waste
- **5617 9.9** Collection services for non-hazardous waste and recyclable material
- 5617 9.10 Maintenance and repair services for household furniture
- 5617 9.11 Home inspection services
- 5617 9.12 Cleaning services for commercial and industrial machinery and equipment
- 5617 9.13 Snow removal services for parking lots and driveways
- 5617 9.14 Cleaning services for parking lots and driveways
- 5617 9.15 Cleaning services for aircraft, railcar, and ship interiors
- 5617 9.99 Other related products

The structure of these product lists is different compared to the CPC and CPA classification system. One reason could be the purpose of this classification to group products regardless of industry. Nonetheless, it is necessary to wait for the final NAPCS structure.

Main sectors and subsectors:

Group N 811 'Combined facilities support activities' represents cleaning activities, security activities and other combined facilities services. These activities are of less importance regarding the number of enterprises and turnover in Division 81 'Services to buildings and landscape activities' (ISIC Rev. 4). In Germany and Norway (2008) more establishments were registered in group 812 'Cleaning activities'. These enterprises are producing a significant part of the turnover in this division. Group N 813 'Landscape care and maintenance service activities' was not mentioned in the papers on turnover and output but in Austria this three-digit level code is of least importance.

There are some market leaders in the general buildings cleaning service sector with a lot of small and medium-sized enterprises. They account for most of the turnover in this group (Cleaning activities). This market is highly competitive and entry barriers are relatively low.

In contrast to this 'Chimney sweeping' is regulated by law (e.g. Austria and Germany). Many small enterprises are operating in this service sector. In Austria, only some services are not under regulation. In Germany, the market of non-sovereign tasks (e.g. maintenance of combustion plants) will be opened to all licensed chimney sweeper establishments from 2013 onwards.

The class N 8129 'Other building and industrial cleaning activities' comprises different services and a few cleaning service subsectors. Some services (e.g. exterior cleaning of buildings of all types) are carried out by (specialized) cleaning enterprises but they are not considered as separate cleaning service subsector. In Austria, enterprises which offer disinfecting and exterminating services are represented by a trade association. There are some specialized enterprises in this branch and others that offer these services as secondary business.

3. Turnover statistics

This chapter deals with the main findings of the mini presentations on turnover and output measurement for cleaning and facilities services presented at the VBG-meeting in Vienna (2010) from Germany, Norway and The Netherlands. In the following different possibilities of collecting turnover data are described particularly with regard to the advantages and disadvantages of them. Additionally, the different practices which are in use will be covered by this chapter. At the end different options for developing turnover statistics are

recapitulated in table 3: 'Options for Developing Turnover Statistics'. Subchapter 3.1 'Other considerations' provides some extra findings and conclusions.

The following is primarily concentrated on ISIC Rev. 4 code N 812 'Cleaning activities' and 811 'Combined facilities support activities' because the mini-presentations on turnover and output measurement do not cover N 813 'Landscape care and maintenance service activities'. A second restriction is the lack of experience in observing turnover data on product level. Apart from that countries should be able to provide turnover data on detailed industry level. For collecting turnover data less attention needs to be paid on the specifics of the different service sectors in contrast to SPPIs. The suggested methods of turnover collection (inclusive advantages and disadvantages) are also suitable for N 813 'Landscape care and maintenance service activities'.

It would be more interesting to observe the experiences of turnover collection on product level because there is a wide range of heterogeneous service products summarized by Division 81 'Services to buildings and landscape activities' (ISIC Rev. 4). Some enterprises are operating in several subsectors of Division 81.

In general, turnover data is collected by the NSIs using surveys (e.g. Structural Business Statistics (SBS), Short Term Statistics (STS), etc.) and/or administrative sources (e.g. accounts from tax authorities, company reports, VAT-register, etc.). There are advantages and disadvantages regarding the different types of surveys and administrative sources. The choice for using one rather than another mainly depends on the resources available and the institutional circumstances (e.g. existence of good administrative data).

Table 2: Advantages and Disadvantages of Turnover Data Collection

Turnover data	Advantages	Disadvantages
Survey instruments	 Precise turnover data can be defined and collected The desired periodicity (monthly, quarterly or annually, etc.) can be defined Sample can vary in size (random or census) Sample can vary in complexity (industries and turnover by product) 	 High costs of running surveys Respondent burden is high
Administrative data	 No additional burden on respondents Normally much cheaper than any survey 	 They can be less precise in terms of the level of detail Revenues may include service categories not under examination Administrative data may not be available sub-annually Estimation procedures and data processing facilities have to be developed and put in place

Four European countries (Germany, Norway, The Netherlands and Austria) have presented the surveys SBS and STS at the VBG-meeting in Vienna (2010). SBS (Structural Business Statistics) is an annual statistic whereby turnover and other variables are collected from respondents. STS (Short Term Statistics) is another statistic collecting turnover data but for short term analyses. According to the progress reports, presented in Vienna 2010 from Mark Wallace, only a very limited number of countries are producing turnover data on product level.

In addition to surveys some administrative data is available for the NSIs to lower the response burden for smaller enterprises. On the one hand this data can be qualified for reducing the differences which emerge by the surveys of STS and SBS. On the other hand the administrative data may contain errors like 'time gaps in registration', 'incorrectly

identified unit characteristics', 'wrong classification of enterprises', 'incorrect turnover data' and 'uncertainty in the breakdown of turnover to establishments' mentioned in the mini presentation (Vienna, 2010) on turnover from Norway.

There are only minor differences regarding survey practices (SBS and STS) in the above-mentioned countries. In 2010, there was no turnover information available from The Netherlands for facilities services (NACE 8110) because the new classification NACE Rev. 2 was introduced only for a short period of time in front of the VBG-meeting 2010. Germany mentioned that turnover of facilities services is only collected by SBS and not by STS due to legislation requirements. The NSI of Norway is producing and publishing short-term statistics on turnover also for facilities services. The four-digit level code 'Landscape service activities' (NACE 8130) was not treated by the mini-presentations.

The Netherlands mentioned additional statistical information sources. There are two surveys (Business Tendency Survey, Working Population Survey) collecting data on cleaning activities. In the Business Tendency Survey entrepreneurs give their opinions on different variables (e.g. orders, economic climate, etc.) and recent developments and expectation also on turnover and again on other statistical relevant issues. The second one (Working Population Survey) is a yearly survey on jobs of employees in the cleaning service sector.

Table 3 provides an overview of best, good and minimum practices for the observation of turnover data. There are different choices for developing turnover statistics but the belowmentioned options (e.g. data source and method of collection, etc.) do not depend too much on special characteristics of service sectors. Therefore, the basis for this table is taken from an old revisited sector paper concerning air transport services.

Table 3: Options for Developing Turnover Statistics

Category	Data source and method of collection	List of detail collected	Frequency	Advantages	Disadvantages
Best	Surveys - One or many - Different frequency May include Economic Census	Industry detail (ISIC, NACE, NAICS, ANZSIC) and Product detail (CPC, NAPCS, CPA)	Annual and sub-annual (quarterly or monthly)	Turnover data on a detailed level can be collected Timely data	High costs High response burden
Good	One or many survey(s)	Industry detail only	Annual and sub-annual (quarterly or monthly)	Turnover data on a detailed level can be collected Timely data	High costs High response burden Product detail may be necessary for e.g. National Accounts
Minimum	Administrative data	Industry detail only	Annually, quarterly, monthly	Low costs Little or low response burden Large coverage	Product detail may be necessary for e.g. National Accounts Timely data may be necessary Difficulty to check incomplete or wrong data with the respondent

The probably best choice is a combination of both (survey instruments and administrative data) due to quality reasons. In general, NSIs can impose a higher response burden on large-sized enterprises. Therefore, survey instruments are more qualified for enterprises with

a significant role in the respective service sector. Administrative data should be used for small-sized enterprises due to lower their response burden. As mentioned in the table above additional estimation procedures and data processing facilities have to be developed and put in place together with the administrative data. It is obvious that administrative data has to be prepared for turnover statistics because of specific needs (e.g. revenues may include service categories not under examination, etc.).

3.1 Other considerations

In Germany, there is a discussion about household-related services. Cleaning, laundry services or gardening are also offered by private individuals. The difficulty hereby is to determine this turnover or to classify all household-related services in a single branch on the basis of a classification concept organized by economic activities. Nonetheless, household-related services are important activities because of the demographic trends (ageing society and the growing of women's employment) in many countries raising the demand for these services.

Another issue, mentioned at the VBG-meeting in Vienna (2010), concerns illegal employment by cleaning enterprises. In Norway, a trade organization has estimated that the black economy in the country concerning N 812 'Cleaning services', NACE Rev. 2 and ISIC Rev. 4 accounts for 10 - 20 percent of the total turnover. If this is true and the Norwegian figures are representative for other countries then probably the level of turnover is systematically and considerably larger than reported by the NSIs. There could be several reasons for an extensive black economy. The cleaning service sector is highly competitive and laborintensive. The pressure on costs for enterprises in the (non-specialized) general cleaning service sector may be higher than for some other branches with the effect of higher illegal employment and/or higher illegal earnings.

4. Service Producer Price Index (SPPI)

In the OECD/Eurostat 'Methodological guide for developing producer price indices for services' two main pricing methods are suggested for the survey of cleaning services. However, because of the wide range of heterogeneous 'Services to buildings and landscape activities' (Division 81; ISIC Rev. 4) other pricing methods should also be taken into consideration. There is a lack of experience in N 811 'Combined facilities support activities' and N 813 'Landscape care and maintenance service activities'. These services are not covered by the documents which are providing the basis for this sector paper. They only provide information for N 812 'Cleaning activities'.

Nonetheless, it is possible to draw conclusions from the development of cleaning service SPPIs for the three-digit level code N 811 'Combined facilities support services' because of some identical or similar services in this group. The group N 813 'Landscape care and maintenance service activities', also included in Division 81; ISIC Rev.4, comprises rather separate services.

Contract pricing

Contract pricing is one of the pricing methods using real transaction prices. It is important to get prices every quarter for the same contracts. When price determining factors change, corrections or quality adjustments have to be done. Normally, control variables/price determining factors are transmitted to the NSIs to evaluate a change in the price as real price change and/or service change. Examples of control variables or price determining factors are 'quality of the service' or 'time of balancing the bill'. It should be noted that it is a very

⁹ http://www.oecd.org/document/43/0,3746,en_2649_34355_2727403_1_1_1_1,00.html

complex/complicated task to manage the great number of price determining factors as well as changes of them typical for this service sector.

One problem with this pricing method is the difficulty to determine the service quality. It is not always possible to formulate the transacted services in every way. In practice, the quality of the service can change due to quality requirements for a building after having formulated the cleaning contract. Moreover, not all price determining factors (e.g. time of balancing the bill, etc.) have to be expressed in the contract. For instance, in the cleaning service sector enterprises may provide tender documents to obtain an order but adoptions will likely be applied afterwards. There are also changes during contract periods. Contract pricing requires much time for both, NSIs and respondents, and the necessity for the NSIs to stay in close contact with the respondents.

Another time-consuming activity is to ensure representativeness of the sample in terms of timing and length of contract periods. A typical cleaning contract (e.g. interior cleaning of an office building) is characterized by a long term agreement with an automatic adjustment clause. In some countries trade associations negotiate collective agreements for the cleaning service sector or enterprises negotiate other automatic adjustment mechanisms (e.g. CPI adjustment, wage indexation, etc.) with their clients. Enterprises also using short term contracts for cleaning services. An example could be the order for 'end of construction cleaning' of an office building.

That is why the timing of contracts, short term and/or long term contracts, have to be taken into consideration for the sample of contracts. Enterprises are providing services on a regular and/or sporadic basis and/or once only. They have different customers concerning their size and volume of orders. All of them can influence the price development of the service provider in a certain way. Basically, the sample of contracts should be representing all different types of contracts. Model pricing is an alternative for short term contracts that can only be observed once/infrequently.

NSIs are using this pricing method for N 812 'Cleaning activities' (ISIC Rev. 4). In **Israel**, contract pricing is the main pricing method for this industry. **Germany** for example is using contract pricing for 8121 'General cleaning services' and 8129 'Other cleaning activities' (NACE Rev. 2).

Norway has chosen contract pricing since 2005 onwards but the respective trade association mistrusted the accuracy of the results. That is why the NSI additionally calculates a unit value approach and after at least six quarters there should be a final decision on the pricing method. The Norwegian trade association has started the data collection (using the new method) 2010. It will be interesting whether unit values could be another alternative pricing method despite the difficulties of inhomogeneous services in the cleaning sector.

In **Austria**, contract pricing is only used as alternative to model pricing/direct use of prices of repeated services for N 812 'Cleaning activities' (ISIC Rev. 4). The respective Austrian trade association suggested not using contract pricing because cleaning enterprises would not be willing to do the time-consuming work to select a representative sample out of many contracts with the additional work to state all changes with them.

Model pricing

Model pricing is the second suggested main pricing method in the OECD/Eurostat guide, especially for unique activities like services to buildings and landscape activities. Models should represent different services (e.g. interior cleaning of an office building, etc.) and different types of services (e.g. maintenance cleaning/basic cleaning, etc.). Moreover, this pricing method is also suitable for furnace and chimney cleaning services, a rather complicated/separated service sector in Division 81; ISIC Rev. 4.

Some NSIs (The Netherlands and Austria) have employed model pricing respectively a combination of model pricing/direct use of prices of repeated services as main pricing

methods for surveying service producer prices in the cleaning service sector. **Germany** is using model pricing for chimney cleaning services. The NSI in **The Netherlands** sets up models in correspondence with the enterprises of the sample. Originally, existing contracts are the basis for the price survey but changes of the chosen contracts are not taken into account for the continuing price survey. There are examples of models from **The Netherlands** and **Austria** in the appendix.

In contrast to contract pricing models of services to buildings and landscape activities have to be prepared for/with the respondents. Models can change without any loss of information for the NSIs. The information asymmetry, between the NSIs and the respondents, is rather a problem due to contract pricing. Examples are 'price determining factors not expressed in contracts' or 'substitution of contracts'. Models of services don't cause such problems but model prices are not based on observed market transactions.

4.1 Main issues with the measurement of price indices

The structure and market conditions are different between the subsectors and even among subsectors of Division 81 'Services to buildings and landscape activities' (ISIC Rev. 4). All three subgroups of this division have their own characteristics. Some services in N 811 'Combined facilities support activities' are similar to N 812 'Cleaning activities' but the price development of service bundles may be different to single services. N 813 'Landscape care and maintenance service activities' are rather not comparable with other services in this division.

There is strong heterogeneity of services even within a subsector. The Central Product Classification identifies service sectors (e.g. window cleaning services, general cleaning services) characterized by low entry barriers and many competing enterprises. Contrary to this, specialized knowledge is necessary for some niche markets (e.g. disinfecting and exterminating services). In some countries (e.g. Austria, Germany) 'furnace and chimney cleaning services' are strongly regulated by law. The Austrian laws regulate rate ceilings for certain and characteristic 'furnace and chimney cleaning services' for all households and business units. In Germany, these services are regulated by a monopoly regulation of the state and determined by a fee regulation. A further other group of services (e.g. sweeping and snow removal services) are seasonal activities.

Generally, a few large cleaning enterprises provide many different kinds of cleaning and facilities services. This was confirmed by the different countries which provide the basis for this sector paper. Germany mentioned this trend towards the provision of service bundles explicitly to do the complete facility management for a client. It can be assumed that a building owner would prefer one enterprise offering all services instead of many enterprises offering several parts. This would influence pricing methods because the service will rise in complexity and therefore is more cost intensive. Another problem could be to determine the price for a single service (e.g. interior cleaning of an office building) when several other services (e.g. guard and security, planting/care and maintenance of parks and gardens for industrial and commercial buildings, etc.) are carried out for a client.

It is a complicated task to apply appropriate pricing methods for all of the different cleaning services. Further examination is needed by the NSIs to give suggestions on best practice methods for the different subsectors of the cleaning service sector. This mixture of different subsectors probably generates further problems concerning the identification and survey of services. For instance, a special cleaning service (N 8129; ISIC Rev. 4) provided by enterprises of class N 8121 'General cleaning of buildings' (ISIC Rev. 4) may be require other pricing methods. There could be a difference whether the service is offered by completely specialized cleaning enterprises or market leaders of the 'general cleaning of buildings' service sector. Prices and price developments may change due to a change of the service provider classified under different subsectors.

Despite these difficulties to observe prices in this industry, there is the possibility to compare the development of the price index for cleaning services with the development of labor costs. Wage costs are an important part of the service price. Thus, the development of collective wage agreements or other data concerning the development of wages in the cleaning service industry could provide an indication/control for the SPPI. At the last VBG-meeting in Vienna (2010) Israel presented a figure that displays a correlation between changes in price and changes in the minimum wage of this service sector.

Table 4 describes different categories of pricing methods and some of their important characteristics. There are three categories (Best, Good and Minimum) to value the alternatives. Other variables are data type in the survey and frequency, quality and accuracy and cost. It is important to note that some pricing methods (Prices of repeated services, Hourly charge-out rates) could also be category 'Best' for subsectors of Division 81, ISIC Rev. 4. There are niche markets (e.g. disinfection and exterminating services, etc.) that may require neither contract pricing nor model pricing but such an allocation of pricing methods to subsectors of this division does not exist at the moment.

Table 4: Choices for Developing SPPI Statistics

Category	Pricing method	Data type in the survey and frequency	Quality and Accuracy	Cost
Best	Contract pricing Model pricing Model pricing/Prices of repeated services	Data is based on real transaction prices (no difficulties concerning complex and simple services)	Advantages: Resulting price index is based on real transaction prices Disadvantages: Hard to manage variables/price determining factors (especially for contract pricing)	High Time- consuming activity for NSIs and respondents Close contact between NSIs and respondents is required
Good	Prices of repeated services Hourly charge-out rates	Data is based on real transaction prices (difficulties concerning complex services)	Advantages: Relatively simple pricing method for NSIs and respondents Disadvantages: Rather applicable for simple services only	Relatively low
Minimum	List prices	List prices without additional information on discounts and surcharges	Advantages: Relatively simple pricing method for NSIs and respondents Disadvantages: No real transaction prices	Low

Not surprisingly, contract pricing, model pricing and a combination of model pricing/prices of repeated services are category best. Data is based on real transaction prices and these methods are suitable also for complex services. Prices of repeated services and hourly charge-out rates are rather applicable for simple services only. Another disadvantage of hourly charge-out rates is the standard issue that changes in efficiency (if any) are not captured in the index. List prices are category 'Minimum' because they capture neither productivity changes nor discounts and surcharges.

Quality adjustment

In principle, service products can change over two periods with regard to the price and/or the price determining factors. There is no biased price index as long as only 'pure' price changes are observed by the NSIs. For example, characteristics of a contract for the interior cleaning of an office building may be constant over two periods but the client has to pay more for the same service.

It is more complicated when the service product changes due to missing products, sampling issues or new products being introduced. First, it is necessary to prove the shift in characteristics for quality adjustment. It is not clear if any change of a cleaning service (e.g. training the cleaning personnel, Ecolabel orientated cleaning, etc.) requires a quality adjustment.

If a quality change is necessary (e.g. client requires a higher frequency of window cleaning) then NSIs have to choose an appropriate quality adjustment method. The quality adjustment method depends on the conditions of the quality change and whether a valuation of the difference in quality is made or not. Basically, the PPI Manual (Producer Price Index Manual, Theory and Practice, ILO/IMF/OECD/UNECE/World Bank 2004¹⁰) identifies two groups of quality adjustment methods:

Implicit methods

- Overlap
- Overall mean/targeted mean imputation
- Class mean imputation
- Comparable replacement
- Linked to show no change

Explicit methods

- Expert judgement
- Quantity adjustment
- Differences in production/option costs
- Hedonic approach

The SPPI manual suggests explicit quality adjustment methods for this service sector when specifications of the repeated service change. In a cleaning contract (e.g. interior cleaning of an office building) the frequency of window cleaning may be modified due to requirements of a client. Expert judgement could be a simple method for NSIs to estimate the 'pure' price change of such a modification.

Another example is targeted mean imputation when a substitution of an old contract is necessary and new items enter the index. In practice this could be a difficult task because normally comprehensive service descriptions are negotiated with clients. Additionally, close contact (if possible) is required with the cleaning enterprise.

At the last VBG-meeting in Vienna (2010) there was a discussion about 'cleaning and sustainability' and if sustainability is incorporated in the quality. Cleaning enterprises may work with biodegradable products, and so on due to reasons of sustainability. The client does not necessarily notice the change to these products when the price for the cleaning service remains constant over a certain period of time. But even when prices change the question arises if an improvement in sustainability should be considered as a quality change.

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¹⁰ http://www.imf.org/external/pubs/cat/longres.cfm?sk=16966.0

5. Summary and further suggestions

Division 81, ISIC Rev. 4 'Services to buildings and landscape activities' comprises activities which are important in modern economics because the demand continues for such services. The private and public sector have outsourced administrative and support service activities in the past and today enterprises of this service sector are providing a broad range of these services, sometimes the complete facility management for a client. Basically, the broad range of different services in Division 81 can cause difficulties from a statistical point of view. Beyond that, the surveys of turnover statistics and service producer prices don't cover all three three-digit level codes of this division. Most NSIs have turnover data and SPPI data only for N 812 'Cleaning activities' but not for N 811 'Combined facilities support activities' and N 813 'Landscape care and maintenance service activities'.

Turnover data is collected by the NSIs using surveys and/or administrative data. The advantages and disadvantages regarding the different types of surveys and administrative sources do not differ too much from one service sector to another. Table 3 'Options for Developing Turnover Statistics' provides an overview of best, good and minimum practices for the observation. The probably best choice is a combination of both. Surveys have the advantage to be able to get data on product detail but only a very limited number of countries are producing turnover data on this detailed level. The classification concept of the North American Product Classification System (NAPCS 1999), grouping products regardless of industry, would make it easier for NSIs to survey (not only) turnover data on product level.

SPPI data is collected by the NSIs using surveys. In this sector paper, two pricing methods are presented for N 812 'Cleaning activities' (ISIC Rev. 4). Contract pricing is one pricing method using real transaction prices. This pricing method requires much time for NSIs and respondents to manage the great number of price determining factors as well as changes of them. Some price determining factors are easier to handle (e.g. time of the cleaning service) than other variables of a cleaning contract (e.g. quality of the cleaning service). Model pricing is the second main pricing method for cleaning activities. This pricing method is less costly in terms of time but model prices are not based on observed market transactions. That is why the information asymmetry between the NSIs and respondents is of less importance in contract pricing.

According to the documents and presentations used for this sector paper there are no significant experiences with quality adjustment for SPPIs concerning Division 81 'Services to buildings and landscape activities' (ISIC Rev. 4). At the last VBG-meeting in Austria (2010) 'cleaning and sustainability' was discussed but it is not sure if changes of cleaning enterprises in sustainability should be considered as quality changes.

6. Appendix

Overview of international progress

Due to the fact that country progress reports with regard to Division 81 'Services to buildings and landscape activities' (ISIC Rev. 4) have been prepared for the VBG-meeting in Vienna (2010), the following table provides an overview about countries having produced SPPIs and/or Turnover data. 20 countries reported progress of 31 countries attending by the survey of detailed industry scorecards.

Table 5: Summary Results presented at the Voorburg Group Meeting in Vienna (2010)

Category	Industry-level prices calculated (Number of countries)	Industry-level turnover collected (Number of countries)
Countries developing or producing SPPIs (I	SIC Rev. 4) / Turnover dat	a
Combined Facilities Support Services (8110)	2	15
General Cleaning of Buildings (8121)	18	17
Other Building and Ind. Cleaning (8129)	14	17
Landscape Care and Maintenance (8130)	1	15

SPPIs/Turnover details on the basis of CPC are mostly not available according to the above-mentioned report. On the product level, countries do not investing time and resources to be able to provide information for Division 81. None of the 20 NSIs will offer this information soon. That is why only Industry-level prices calculated and Industry-level turnover collected (for both: number of countries) are mentioned in table 5. There is much information available for N 812 'Cleaning activities'. 18 out of 20 reporting countries having calculated SPPIs for N 8121 'General cleaning of buildings' and 17 out of 20 countries having collected turnover data. Less countries having calculated SPPIs for N 8129 'Other building and Industrial Cleaning'. There are only 3 out of 20 countries producing SPPIs for N 811 'Combined facilities support services' and N 813 'Landscape care and maintenance'. These information gaps to be closed are future tasks/challenges for NSIs.

Examples of used models (Statistics Netherlands)

Models for 'General cleaning of buildings':

Model 1 (office building):

Total cleaning area: 4568 m2;

From which: 3198 m2 offices, 457 m2 committee rooms, 457 m2 toilets, 228 m2,

parking, 228 m2 canteen;

Frequency: parking: 156 days/year, committee rooms: 208 days/year, offices,

canteen and toilets: 260 days/year;

Amount of employees in building: 121;

Year of construction: 2005, Floor type: diverse;

Cleaning between: 09.00 hours and 17.00 hours;

Cleaning personnel consist of 15 percent youth.

Price for an existing customer

Model 2 (elementary school):

Total cleaning area: 2400 m2;

From which: 720 m2 lower grades classrooms, 840 m2 upper grades classrooms,

120 m2 committee rooms, 360 m2 toilets, 360 m2 parking;

Frequency: committee rooms and parking: 120 days/year, classrooms: 160

days/year, toilets: 200 days/year;

Amount of "employees": 230;

Year of construction: 1990, Floor type: diverse;

Cleaning between: 17.00 hours and 19.30 hours;

Cleaning personnel consist of 5 percent youth.

Price for a new customer

Model for 'Industrial cleaning services'

Model 3 (combined vehicle and personnel):

Type of Vehicle: Vortex Hi-lift ADR;

Pumpcapacity 5500 m3, tankvolume 12 m3;

Operated by an engine driver and a cleaner;

On working days and hours;

Price per hour

Price for a new customer

Example of used models (Statistics Austria)

Model for 'General cleaning of buildings'

Basic terms and conditions of cleaning an office building (large-sized and small-sized):

Cleaning during 6 a.m. - 8 p.m. (Monday - Friday)

The contractor is responsible for purchasing, providing and handling the cleaning equipment (cleaning machines, cleaning material, dispenser systems, bin liners and toilet paper)

Table: Characteristics of an office building used for the SPPI survey

Type of room	m2 PVC flooring	m2 Tiled floor	m2 Carpeted floor
Offices, staff rooms, (cleaning of 2 desks, 6			4875 m² (195 offices)
cupboards, 2 waste bins per room)			1950 m ² (78 offices)
Hallway stairages (alegains of E deeps and 4	975 m ²		
Hallway, staircase (cleaning of 5 doors and 1 cupboard, waste bin per floor)	390 m ²		
		300 m ²	
Toilets and wet area (cleaning of 1 urinal and 2 toilets, paper towel dispensers and 4 hand washbasins, mirrors per floor)			
minors per noory		120 m ²	
	195 m²		
Storage rooms	195 m²		

Offices, staff rooms (Daily work)

Cleaning of surfaces, desks, lamps and telephones

Cleaning of furniture, doors, light switches and windowsills

To empty the waste bins and to exchange bin liners

Disposal of sorted waste (glass, plastics, and so on)

Removal of cobwebs if required

Offices, staff rooms (Twice a week)

To hoover the carpet

Cleaning of paintings, mirrors and exhibits

Hallway, staircase (Daily work)

Cleaning of furniture, doors and handrails

To empty the waste bins and to exchange bin liners

Clean the floor

Hallway, staircase (Twice a week)

Clean the floor on a two-step basis

Toilets and wet area (Daily work)

Cleaning of toilets and urinals with splash zone and hand washbasins, fittings and mirrors

Checking the toilet paper, paper towel dispensers and soap dispensers and refill them if necessary

Clean the wall tiles up to a high of 1,60 metres

Clean the tiled floor

Toilets and wet area (Each second week)

Clean the tiled wall up to a high of 2,15 metres

Storage rooms (Once a week)

Clean the floor on a two-step basis

Table 6: Overview of International Industry Classification

Classification	ons			
	ISIC Rev. 4 81 Services to buildings and landscape activities	NAICS 2007 5617 Services to buildings and dwellings	ANZSIC 2006 73 Building cleaning, pest control and other support services	NACE Rev. 2 81 Services to buildings and landscape activities
Definition	This division includes the provision of a number of general support services	This subsector comprises establishments primarily engaged in services to buildings and dwellings	This subdivision comprises establishments primarily engaged in building cleaning, pest control and other support services	This division includes the provision of a number of general support services
Inclusions	 Provision of a combination of support services within a client's facility General (non-specialized) cleaning of all types of buildings Exterior cleaning of buildings of all types Specialized cleaning activities for buildings Specialized cleaning activities Other building and industrial cleaning activities, n.e.c. Planting, care and maintenance of parks and gardens for certain cases Greenery for certain cases Maintenance of land in order to keep it in good ecological condition 	- Exterminating and controlling services - Fumigation services - Cleaning building interiors, interiors of transportation equipment, and/or windows - Landscape care and maintenance services and/or installing trees, and so on - Providing these services along with the design of landscape plans and/or the construction (i.e., installation) of walkways, and so on - Cleaning and dyeing used rugs, carpets, and upholstery - Other services to buildings and dwellings, except 561710, 561720, 561730 and 561740	- Interior cleaning of buildings or transportation equipment - Exterior cleaning of buildings - Other industrial cleaning services such as street cleaning or road sweeping - Commercial and domestic pest control services - Fumigation and weed control services - Units mainly engaged in providing gardening services only	- See ISIC Rev. 4
Exclusions	- Provision of only one of the support services, see the appropriate class according to the service provided	- Exterminating and controlling services for crop production and forestry production, see subsector 115	- Sand blasting or steam cleaning of building exteriors, see class 3299	- See ISIC Rev. 4
	management and operating staff for the complete operation of a	- Sandblasting building exteriors, see	laundry and dry-cleaning services, see	

client's establishment, see the class of the unit operated - Provision of on site management and operation of a client's computer systems and/or data processing facilities, see 6202 - Operation of correctional facilities on a contract or fee basis, see 8423 - Agriculture pest control, see 0161 - Cleaning of sewers and drains, see 3700 - Automobile cleaning, car wash, see 4520 - Commercial production and planting for commercial production of plants, trees, see divisions 01 and 02 - Tree nurseries (except forest tree nurseries), see 0130 - Maintenance of land to keep it in good condition for	industry 238990 Installing artificial turf or in constructing (i.e., installing) walkways, and so on, see sector 23 Planning and designing the development of land areas for projects, see industry 541320 Retailing landscaping materials and providing the installation and maintenance of these materials, see industry 444220 Rug repair associated with rug cleaning, see industry 811490 Reupholstering and repairing furniture, see 811420 Sandblasting building exteriors, see industry 238990	class 9531 - Units mainly engaged in providing agricultural or forestry pest control services, see subdivision 05 - Units mainly engaged in installing artificial turf or in constructing (i.e. installing) walkways, and so on, see class 3291 - Units mainly engaged in weed eradication services, see class 7312 or subdivision 05 - Units mainly engaged in owning and leasing pot plants, see 6639
planting for commercial production of plants, trees, see divisions 01 and 02 - Tree nurseries (except forest tree nurseries), see 0130 - Maintenance of land to keep it in good	see industry 811490 - Reupholstering and repairing furniture, see 811420 - Sandblasting building exteriors, see	engaged in owning and leasing pot plants, see

Table 7: Overview of International Product Classification

Classification	on					
	CPC Ver. 2 Class	Subclasses	NAPCS 1999 Output group	Subgroups	CPA 2008 Category	Subcategory
Inclusions	8531 – Disinfecting and exterminating services 8532 –	85310 – Disinfecting and exterminating services 85320 –	56171 – Pest extermination and control services	561711 – Pest extermination and control services, residential 561712 – Pest	81101 – Combined facilities support services 81211 –	811010 Combined facilities suppor services 812110 General
	Window cleaning services	Window cleaning services		extermination and control services, nonresidential	General cleaning services of buildings	cleaning services buildings
	8533 – General cleaning services	85330 – General cleaning services	56172 – Cleaning services	561721 – Residential interior cleaning	81221 – Industrial cleaning	812211 Window cleaning services
	8534 – Specialized cleaning services	85340 – Specialized cleaning services		services 561722 – General-purpose and	services	812212 Specialised cleaning services
	8597 – Landscape care and maintenance services	85970 – Landscape care and maintenance services		comprehensive commercial cleaning services		812213 Furnace an chimney cleaning services
	9451 – 94510 – Sweeping and snow removal services services		Cleaning services for window exteriors 561724 — Cleaning	81291 – Other cleaning services	812911 Disinfecting ar exterminating services	
	9459 – Other sanitation services	94590 – Other sanitation services		services for building exteriors		812912 Sweeping ar snow remove services
				561725 — Damage restoration and cleaning services		812913 Other sanitation services 812919 – Other
				561726 - Hard- surface floor care services	81301 –	cleaning services n.e.c. 813010
				561727 — Cleaning services for carpets, rugs and upholstery	Landscape services	Landscape services
				561729 – Other specialized cleaning services		
			56173 – Landscaping services	561731 – Residential landscaping services		
				561732 – Commercial landscaping services		
			56179 – Related	561791 – Reselling		

products services for cleaning products and related merchandise, retail
5617910 – Maintenance and repair services for household furniture
5617911 – Home inspection services
5617912 – Cleaning services for commercial and industrial machinery and equipment
5617913 – Snow removal services for parking lots and driveways
5617914 – Cleaning services for parking lots and driveways
5617915 – Cleaning services for aircraft, railcar, and ship interiors
561792 – Reselling services for plant materials, retail
561793 – Reselling services for construction materials, retail
561794 Reselling services for swimming pool supplies, retail
561795 — Off- site curtain and drape cleaning services
561796 – Landscape architectural services
561797 – Landscape construction services
561798 – Collection services for hazardous

	T	1	T		
				waste	
				561799 – Collection services for non- hazardous waste and recyclable material 5617999 – Other related products	
Factori		E4624			Coo 45 -
Exclusions		54631 — Maintenance services for central heating installations 54790 — Building exterior cleaning services when associated with building completion 86119 — Pest (including rabbit) control services in connection with agriculture 86121 — Cleaning of agricultural premises (hen houses, piggeries, etc.) 88311 — Timber impregnation services 97130 — Cleaning of carpets, upholstery, fabric, wall hangings, etc.			See the appropriate class according to the service provided — Provision services of only one of the support services See the class of the unit operated — Provision services of management and operating staff for the complete operation of a client's establishment, such as a hotel, and so on Section F — Construction works for landscaping purposes 01, 02 — Commercial production and planting services for commercial production of plants, trees 013010, 021020 — Tree nursery and forest tree nursery services 016110 — Pest control services (including rabbits) in connection with agriculture 016110 — Maintenance services of agricultural land in order to keep it in good agricultural and ecological condition
					016210 – Cleaning services for agricultural premises (hen

			houses, piggeries, etc.)
			161091 – Impregnation of timber services
			3900 – Cleaning services of oil spills and other pollutions in coastal areas
			3900 – Remediation and clean-up services
			390014 – Asbestos, lead, etc. abatement in buildings
			432212 – Maintenance services for central heating installations
			433919 – Building exterior cleaning services when associated with building completion
			452030 – Car cleaning services
			71114 – Landscape design and architecture services
			960119 – Cleaning of carpets, upholstery, fabric, wall hangings, etc.