

# Compilation of Physical Supply and Use Tables as a Tool for Increasing Analytical Potential of Economy-Wide Material Flow Analysis and Indicators

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## Abstract

The study described in this article presents the first physical supply and use tables (PSUT) ever based on the recently published methodological standard for System of Environmental-Economic Accounting (SEEA). The tables were compiled for the Czech Republic for 2014 and can be used for increasing analytical potential of the economy wide material flow analysis and indicators. The subsequent compilation procedure was described in detail so that it can serve as a source of inspiration and a benchmark for other researchers and/or statisticians. The major shortcoming of the PSUT is that not all needed data was readily available in physical units and required estimations based on proxies. Some parts of the tables are therefore burdened with a degree of uncertainty.

## Keywords

*System of environmental-economic accounting (SEEA), economy-wide material flow analysis (EW-MFA), material flow indicators, physical supply and use tables (PSUT), Czech Republic*

## JEL code

Q56

## INTRODUCTION

The overall environmental pressure and impact caused by human societies is to a large extent induced by the consumption of energy and materials (e.g. Ayres and Simonis, 1994; Weizsäcker et al., 2009; Fischer-Kowalski et al., 2011). The relevant pressures and impacts include structural landscape changes, loss of biodiversity, acidification, eutrophication, global climate change and others (Giljum et al., 2005). In order to measure material and energy flows and to mitigate the related problems, material flow analysis has been developed. The aim of this accounting and analytical approach is to monitor material and energy flows at various levels of detail,

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and to provide indicators which contribute to the management of resource use and output emission flows from both economic and environmental points of view (OECD, 2008). As convenient measures of sustainability, material flow indicators focusing mostly on an economy-wide level have been compiled for a range of both developed and developing countries (e.g. Adriaanse et al., 1997; Matthews, 2000; Giljum, 2004; Eurostat, 2015; Schandl and West, 2012; Gonzalez-Martinez and Schandl, 2008).

The economy-wide material flow analysis (EW-MFA) treats the economy as a black-box devoted exclusively to monitoring overall input and output flows while inter-industry physical flows are neglected. In order to increase the analytical potential of this tool, it is advisable to construct a physical input-output table (PIOT) which shows the input of raw materials and products by industries, inter-industry deliveries of products and a breakdown of output products and waste residues by industries. Data from PIOT can be used to analyse physical flows, considering the economic activities and structural changes that lie behind these flows, and to construct industry-specific waste or material accounts based on the material balance principle. They can further be used to generate information on the raw material equivalents of final demand; to analyse technological change, material substitution, shifts in consumption and to assess the effectiveness of policies targeting sustainable consumption and production (OECD, 2008). The implementation of PIOT is a labour-intensive task involving many data entries. This is the reason why it has only been compiled for a few countries so far including Denmark (Mulalic, 2007), Finland (Mäenpää, 2004), Germany (Stahmer et al., 1997), Italy (Nebbia, 2000), New Zealand (McDonald and Patterson, 2006), Spain (Gasco et al., 2005), the Netherlands (Hoekstra and Van den Bergh, 2006) and the EU (Giljum and Hubacek, 2004). Moreover, as no standardized approach for PIOT compilation was available until 2014, the above studies use different approaches and the resulting PIOTs thus have different formats and are not fully comparable.

The aim of this article is to compile physical supply and use tables (PSUT) for the Czech Republic for 2014 with the use of recently published methodological standard for System of Environmental-Economic Accounting (SEEA) (United Nations et al., 2014). These PSUT can be transformed to any type of PIOT by standard procedures prescribed by Eurostat (2008). As far as we know no PSUT based on SEEA have been published yet. The compilation of PSUT can be understood as an extension of and addition to the compilation of supply and use tables and input-output tables in monetary units which has had a long tradition at the Czech Statistical Office. The tables in monetary units are regularly published at: <http://apl.czso.cz/pll/rocenka/rocenka.indexnu> (Czech Statistical Office, various years-a).

The rest of the article is structured as follows: section 1 describes in detail the procedure of compilation of PSUT which might serve as an inspiration and methodological benchmark for other countries. This section is the core part of the article. Section 2 presents results for PSUT while section 3 discusses the benefits and shortcomings of their compilation. Last section concludes with lessons learnt.

## 1 METHODS AND DATA COMPILATION

### 1.1 General description of physical supply and use tables

SEEA (United Nations et al., 2014) focuses on the compilation of physical supply and use tables (PSUT) which are the building stones of PIOT rather than on the compilation of PIOT itself. The reason for this is that there is a standard procedure for transforming PSUT into any type of PIOT (product-by-product, sector-by-sector) (Eurostat, 2008) while the procedure for PSUT compilation has not been standardized yet.

PSUT are composed of a sequence of detailed tables. Their structure is shown in Figure 1.

**Figure 1** Structure of physical supply and use tables (PSUT)

Supply table						
	Production; Generation of residuals		Accumulation	Flows from the rest of the world	Flows from the environment	Total
	Production; Generation of residuals by industries	Generation of residuals by households	Industries			
Natural inputs					A. Flows from the environment	Total supply of natural inputs
Products	C. Output			D. Imports of products		Total supply of products
Residuals	I1. Residuals generated by industry I2. Residuals generated following treatment	J. Residuals generated by households	K1. Residuals from scrapping and demolition of produced assets K2. Emissions from controlled landfill sites	L. Residuals received from the rest of the world	M. Residuals recovered from the environment	Total supply of residuals
Total supply						
Supply table						
	Intermediate consumption of products; Use of natural inputs; Collection of residuals	Final consumption	Accumulation	Flows to the rest of the world	Flows to the environment	Total
	Industries	Households	Industries			
Natural inputs	B1. Extraction of natural inputs used in production B2. Extraction of natural resource residuals					Total use of natural inputs
Products	E. Intermediate consumption	F. Household final consumption	G. Gross capital formation (including fixed assets and inventories)	H. Exports of products		Total use of products
Residuals	N. Collection and treatment of residuals		O. Accumulation of waste in controlled landfill sites	P. Residuals sent to the rest of the world	Q1. Direct residual flows from industry and households	0.166
Total use						

Source: United Nations et al., 2014

PSUT contains several categories of flows in the rows: Flows from the environment into the economy are natural inputs, flows within the economy consist of either products or residuals, and flows from the economy to the environment are residuals. Natural inputs which are not used in production such as mining overburden are called natural resource residuals. They correspond to unused extraction in EW-MFA (Eurostat, 2001).

The columns of the PSUT are structured to reflect both the activity underlying the flows and the economic units involved. The second column covers the use of natural inputs, the production and intermediate consumption of products, and the generation and receipt of residuals by all enterprises in the economy. The third column covers the consumption of products by households and the generation of residuals from this consumption. The activity of households in extracting and collecting natural inputs from the environment for their own consumption is a productive activity and is recorded in the second column under a relevant industry class. Unlike the monetary supply and use table, no entries in physical terms are made in relation to government final consumption expenditure and final consumption expenditure of non-profit organizations. All physical flows related to the intermediate consumption and generation of residuals by governments and non-profit organizations are recorded in the first column under the relevant industry class (commonly, public administration). The fourth column covers changes in the stock of materials in the economy. From a supply perspective, this column records reductions in the physical stock of produced assets through demolition or scrapping. From a use perspective, the accumulation column records additions to the physical stock of produced assets (gross capital formation). The fifth column recognizes the exchanges between national economies in the form of imports and exports of products and flows of residuals. Residuals received from the rest of the world and residuals sent to the rest of the world primarily relate to the movement of solid waste between different economies. The sixth column is a significant addition to the monetary supply and use table structure and records flows to and from the environment. The incorporation of the environmental column allows a full accounting for flows of natural inputs and residuals which would otherwise not be possible (United Nations et al., 2014).

The PSUT contains a range of accounting and balancing identities. The two most important identities include supply and use identity which indicates that the total supply of products (i.e. the sum of Tables C and D) is equal to the total use of products (sum of Tables E, F, G and H). The input-output identity implies that flows of materials into an economy (sum of Tables A, D, L and M) are equal to the flows of materials out of an economy (sum of tables Q, H, P) plus any net additions to stock in the economy (sum of Tables G and O minus Table K) (United Nations et al., 2014). The above identities are very useful when compiling PSUT. When some underlying data are missing, these identities can be used for their estimation.

## 1.2 Procedure of compilation of PSUT for the Czech Republic

The Czech PSUT were compiled for 2014 and on the level of NACErev2/CPA<sup>2</sup> for 88 industries and product groups (see Supplementary Information 1 for the full list of the industries and product groups – Annex 1). The resulting tables are shown in section 2 while this section describes in detail the procedure of PSUT compilation. The selection of year 2014 was driven by the fact that data needed for the compilation is available with 2–3 year delay.

The aim of the project was to base PSUT on the economy-wide material flow accounts currently available in the Czech Republic (Kovanda et al., 2010; Czech Statistical Office, 2017; Kovanda, 2018). This required some adjustments of the SEEA framework. For instance, landfilled wastes were considered flows out of the economy, which led to inclusion of landfilled wastes in Table Q and skipping Tables K2 and O. The Czech EW-MFA system is fully balanced. It means that it includes so called balancing items such as the oxygen needed for the combustion of fossil fuels by industries and households or water vapor from combustion (Eurostat, 2001). In order to balance PSUT these balancing items had to be included as well.

<sup>2</sup> NACE: statistical classification of economic activities in the European Community; CPA: classification of products by activity.

They were ranked among natural inputs and residuals as other natural inputs and other residuals and incorporated into Tables A, I, J, B and Q. The Tables further included natural resource residuals (unused extraction) which were incorporated into Tables A, I, B and Q.

The procedure of compilation of PSUT was as follows:

### *1) Compilation of data readily available from statistics*

Data from statistics was readily available for Tables A. Flows from the environment, D. Imports of products, J. Residuals generated by final household final consumption, L. Residuals received from the rest of the world, M. Residuals recovered from the environment, H. Export of products, N. Collection and treatment of residuals, P. Residuals sent to the rest of the world and Q. Residual flows to the environment. Major sources of data were the database on full economy-wide material flow accounts for the Czech Republic (Kovanda, 2018), Czech Statistical Office and its datasets on extraction of raw materials (Czech Statistical Office, 2017), foreign trade (Czech Statistical Office, various years-b), waste management (Czech Statistical Office, 2015a) and emissions to water (Czech Statistical Office, 2015c). Other sources included the Czech Hydrometeorological Institute and its data on emissions to air (Czech Hydrometeorological Institute, various years) and the Czech Geological Survey with data on natural resource residuals (Czech Geological Survey, 2015). Table M. was set equal to zero, as no residuals are recovered from the environment in the Czech Republic (Czech Statistical Office, 2015a).

### *2) Table C. Output of products*

The estimation of Table C. Output of products comprised the following steps:

#### a) Data on production of industrial products

The Czech Statistical Office maintains a dataset on the production of industrial products by industries (Czech Statistical Office, 2015b). Various entries, however, are not expressed in physical units, but in monetary units. These entries were transformed into physical units using unit prices in CZK per tonne calculated with the help of export statistics which are available both in physical and monetary units.

#### b) Data on production of agriculture product

This data was taken from the Czech Statistical Office datasets on extraction of raw materials (Czech Statistical Office, 2017) and attributed to their native industries, i.e. NACE 01-03.

#### c) Data on the production of buildings and transport infrastructures

No data was found which would give any leads to the production of buildings and transport infrastructures in physical units. We calculated this item later on in step 6 under the assumption that all these infrastructures go to accumulation (Table G).

### *3) Table B. Extraction of natural inputs*

Extraction of natural inputs used in production was set equal to the production of natural inputs in Table C (NACE 01-08) assuming no losses between extraction and the production of natural inputs for further use. The accompanying natural resource residuals such as overburden from mining were disaggregated by sectors proportionally to the extraction of corresponding natural inputs. Disaggregation of other natural inputs was straightforward for items such as consumption of oxygen and water by livestock which was attributed to NACE 01 Agriculture. Consumption of oxygen and nitrogen for combustion was disaggregated according to the combustion of fuels by particular industries provided by Ministry of Industry and Trade (Ministry of Industry and Trade, 2015).

### *4) Tables I. Residuals generated by industries and following treatment*

Waste and emissions generated by industries and following treatment were available from waste, water emission and air emission statistics, but on a lower level of sectoral disaggregation than needed. The detailed disaggregation of data into 88 industries was achieved with the use of relationships from

Table C for industrial products and detailed monetary supply tables for services (Musil, 2017). Natural resource residuals by industries were set equal to consumption of natural resource residuals in Table B, as they are only extracted by particular sectors and then returned back to the environment without entering the production and consumption processes of other sectors. Other residuals generated by sectors were disaggregated using similar approaches to the disaggregation of other natural inputs in Table B.

*5) Tables E. Intermediate consumption, F. Household final consumption and G. Gross capital formation*

Data on intermediate consumption, household final consumption and gross capital formation was not available in physical units at all. The attribution of produced and imported commodities (Tables C and D) to industries, households and accumulation was therefore based on relationships in the monetary use tables. Detailed use tables compiled separately for domestic production and imports and disaggregated by 204 industries and product groups (Musil, 2017) were used for this attribution. The detailed results were then aggregated back into a single table broken down by 88 industries and product groups. The use of detailed tables addressed the inhomogeneity issue mentioned in the Introduction at least in part. It was assumed that this approach would produce quite severe inhomogeneity on the level of 88 industries and product groups, as e.g. crude oil and natural gas or industrial non-metallic minerals and construction non-metallic minerals composed one product group. On the other hand, they were treated separately in the detailed tables.

After this calculation step, Table G did not contain accumulation of buildings and transport infrastructures, as their production was not shown in Table C (see step 2c).

*6) Accumulation of buildings and transport infrastructures in Table G and production of buildings and transport infrastructures in Table C*

An estimation of these entries was based on the overall input-output balance. Flows of materials into and out of the economy (Tables A, D, L, M, Q, H and P) were compiled in step 1 while total K1 was available from the Czech and Eurostat trade statistics (Czech Statistical Office, 2015a; Eurostat, various years). Table G was compiled in step 5, but it did not contain accumulation of building and transport infrastructures: the missing part of Table G was thus calculated from the overall input-output balance. Under the assumption that total production of building and transport infrastructures is assigned to accumulation, the calculated figure had to be equal to the total production of building and transport infrastructures in Table C as well. This total production was further split by CPA 41 and 42 and particular industries in Table C with the use of relationships in detailed monetary supply tables (Musil, 2017).

*7) Table K1. Residuals from scrapping and demolition of produced assets*

This data was available on a lower level of disaggregation than that necessary in Czech and Eurostat waste statistics (Czech Statistical Office, 2015a; Eurostat, various years). We based the further disaggregation on accumulation figures (Table G. Gross capital formation) assuming that the higher accumulation is, the higher the volume of discarded infrastructures also is, because accumulation replaces discarded infrastructures and equipment.

After this last step, the full sequence of physical supply and use tables as prescribed by SEEA framework (United Nations et al., 2014) was available for the Czech Republic and the tables contained both supply and use and input-output identities. The presence of these identities was caused by the calculation methods of Tables E, F and G and buildings and transport infrastructures in Table C.

## 2 RESULTS

Tables 1 and 2 show aggregated physical supply and use tables for the Czech Republic for 2014. The full PSUT in tonnes are shown in Supplementary Information 2 (Annex 2 is available

**Table 1** Physical supply table (million tonnes), Czech Republic, 2014

Particular tables		Production; Generation of residuals					Accumulation	Flows from the rest of the world	Flows from the environment	Total
		NACE 01-36	NACE 37-39	NACE 41-43	NACE 45-99	Households				
1	Natural inputs							559.8	559.8	
A	Flows from the environment							559.8	559.8	
A1	Natural resource inputs							157.7	157.7	
A2	Natural resource residuals							257.5	257.5	
A3	Other natural inputs							144.7	144.7	
2	Products	323.6	5.7	60.7	15.9		71.9		477.8	
C	Output of products	323.6	5.7	60.7	15.9				405.8	
D	Imports of products						71.9		71.9	
3	Residuals	392.4	10.2	19.2	23.5	48.0	4.6	1.4	0	499.3
I	Residuals generated by industries and following treatment	392.4	10.2	19.2	23.5					445.3
I1	Residuals generated by industries	106.0	3.2	1.7	17.7					128.6
I2	Residuals generated following treatment		7							6.5
I3	Natural resource residuals generated by industries	240.0	0.4	16.9	0.2					257.5
I4	Other residuals generated by industries	46.4	0.2	0.6	5.5					52.7
J	Residuals generated by household final consumption					48.0				48.0
J1	Wastes generated by household final consumption					19.3				19.3
J2	Other residuals generated by household final consumption					28.7				28.7
K	Residuals from scrapping and demolition of produced assets						4.6			4.6
L	Residuals received from rest of the world							1.4		1.4
M	Residuals recovered from the environment								0	0
4	Total supply	716.0	15.9	79.9	39.3	48.0	4.6	73.4	559.8	

Source: Own calculation

at the webpage of *Statistika: Statistics and Economy Journal*, see the online version of No. 3/2018 (Excel file) at: [http://www.czso.cz/statistika\\_journal](http://www.czso.cz/statistika_journal).

**Table 2** Physical use table (million tonnes), Czech Republic, 2014

Particular tables		Intermediate consumption of products; Use of natural inputs; Collection of residuals				Final consumption	Accumulation	Flows from the rest of the world	Flows from the environment	Total
		NACE 01-36	NACE 37-39	NACE 41-43	NACE 45-99	Households				
1	Natural inputs	524.2	1.1	18.5	16.0	31.0				590.8
B	Extraction of natural inputs	524.2	1.1	18.5	16.0					559.8
B1	Extraction of natural inputs used in production	157.6	0.1	0.0	0.0					157.7
B2	Extraction of natural resource residuals	240.0	0.4	16.9	0.2					257.5
B3	Extraction of other natural inputs	126.6	0.7	1.6	15.8					144.7
2	Products	210.8	7.4	49.9	26.2	31.0	85.7	66.7		477.8
E	Intermediate consumption	210.8	7.4	49.9	26.2					294.4
F	Household final consumption					31.0				31.0
G	Gross capital formation						85.7			85.7
H	Exports of products							66.7		66.7
3	Residuals		20.4					4.0	481.4	505.7
N	Collection and treatment of residuals		20.4							20.4
P	Residuals sent to the rest of the world							4.0		4.0
Q	Residual flows to the environment								481.4	481.4
Q1	Direct flows of residuals								136.0	136.0
Q2	Flows of residuals following treatment								6.5	6.5
Q3	Flows of natural resource residuals								257.5	257.5
Q4	Flows of other residuals								81.4	81.4
4	Total use	735.1	28.9	68.4	42.2	61.9	85.7	70.7	481.4	

Source: Own calculation



Total supply of products to the Czech economy was 477.8 million tonnes in 2014 (Table C + Table D) which was equal to total use of products (sum of Tables E, F, G and H). The total input of materials into the economy was 633.2 million tonnes (sum of Tables A, D, L and M) which was equal to the total output of materials (sum of Tables Q, H, P and G minus table K1).

### 3 DISCUSSION

The compilation of physical supply and use tables increased the analytical potential of the Czech EW-MFA accounts by breaking down the input and output material flows by industries. Other benefits which were not available from the original EW-MFA include the data in physical units on output of products, on intermediate consumption and distinguishing between residuals generated by industries and after treatment and between residuals from production and from scrapping and demolition. A significant advantage of the physical supply and use tables is their compatibility with accounts in monetary units. This allows for calculation of indicators which combine physical and monetary values such as material intensities and productivities of particular sectors. Last but not least the PSUT can be used for calculation of materials embodied in foreign trade and RMI and RMC indicators.

The major shortcoming of the PSUT compiled for the Czech Republic is that by far not all the necessary data was readily available in physical units and required estimations based on proxies. The most prominent examples are Tables E, F and G on intermediate consumption, final consumption of households and gross capital formation. These Tables were estimated with the use of detailed monetary use tables and it can be expected that the results will be burdened by some uncertainties. This is because even on the detailed level of 204 sectors and product groups the particular product groups were not fully homogenous and thus did not fully fulfil the requirement for homogenous sectoral prices of commodity outputs, imports and exports. Other data which was not available at all were production of buildings and transport infrastructures and their accumulation. These data were estimated with the use of overall input-output balance which has both advantages and shortcomings. The major advantage is that the whole system is balanced thanks to the calculation procedure. The shortcoming is that all inaccuracies present in the tables which compose the balance are propagated in the Tables used for the final balancing.

The full sectoral breakdowns were not available for some other Tables, namely Tables I and K1. Here at least the values for total economy and partial sectoral disaggregation were available before applying proxies for full disaggregation. It can therefore be expected that these Tables are affected by smaller uncertainties compared to Tables E, F and G and data on the production of buildings and transport infrastructures.

### CONCLUSIONS

In the study described in this article we compiled the first ever physical supply and use tables (PSUT) based on the recently published methodological standard for System of Environmental-Economic Accounting (SEEA) (United Nations et al., 2014). The tables were compiled for the Czech Republic for 2014 and can be used for increasing analytical potential of the economy wide material flow analysis and indicators such as allowing for depicting productivities of particular sectors and calculating materials embodied in foreign trade. We thoroughly described the procedure we followed so that it can serve as a source of inspiration and a benchmark for researchers and/or statisticians who would wish to compile PSUT for other countries. The major shortcoming of the PSUT is that by far not all needed data was readily available in physical units and thus required estimations based on proxies. For this reason some parts of the tables can be burdened by quite large uncertainties. The most significant examples include the Tables E, F and G on intermediate consumption, final demand of households and gross capital formation and production of buildings and transport infrastructures in Table C. The author of this study is in regular contact with statisticians at the Czech Statistical Office (CZSO) responsible for material flow accounting. We plan to hand over our findings from PSUT compilation to them so that they can be reflected in regular statistical

surveys arranged by CZSO. This should make the compilation of PSUT much easier in the future when new surveys on missing data are introduced.

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## SUPPLEMENTARY INFORMATION 1 – ANNEX 1

**Table A1** Industry and product groups used for PSUT compilation

NACE/CPA	Name
01	Products of agriculture, hunting and related services
02	Products of forestry, logging and related services
03	Fish and other fishing products; aquaculture products; support services to fishing
05	Coal and lignite
06	Crude petroleum and natural gas
07	Metal ores
08	Other mining and quarrying products
09	Mining support services
10	Food products
11	Beverages
12	Tobacco products
13	Textiles
14	Wearing apparel
15	Leather and related products
16	Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials
17	Paper and paper products
18	Printing and recording services
19	Coke and refined petroleum products

Table A1

(continuation)

NACE/CPA	Name
20	Chemicals and chemical products
21	Basic pharmaceutical products and pharmaceutical preparations
22	Rubber and plastics products
23	Other non-metallic mineral products
24	Basic metals
25	Fabricated metal products, except machinery and equipment
26	Computer, electronic and optical products
27	Electrical equipment
28	Machinery and equipment n.e.c.
29	Motor vehicles, trailers and semi-trailers
30	Other transport equipment
31	Furniture
32	Other manufactured goods
33	Repair and installation services of machinery and equipment
35	Electricity, gas, steam and air conditioning
36	Natural water; water treatment and supply services
37, 38, 39	Sewerage services; sewage sludge; waste collection, treatment and disposal services; materials recovery services; remediation services and other waste management services
41	Buildings and building construction works
42	Constructions and construction works for civil engineering
43	Specialised construction works
45	Wholesale and retail trade and repair services of motor vehicles and motorcycles
46, 47	Wholesale trade services, except of motor vehicles and motorcycles; retail trade services, except of motor vehicles and motorcycles
49	Land transport services and transport services via pipelines
50	Water transport services
51	Air transport services
52	Warehousing and support services for transportation
53	Postal and courier services

Table A1

(continuation)

NACE/CPA	Name
55	Accommodation services
56	Food and beverage serving services
58	Publishing services
59	Motion picture, video and television programme production services, sound recording and music publishing
60	Programming and broadcasting services
61	Telecommunications services
62	Computer programming, consultancy and related services
63	Information services
64	Financial services, except insurance and pension funding
65	Insurance, reinsurance and pension funding services, except compulsory social security
66	Services auxiliary to financial services and insurance services
68	Real estate services
69	Legal and accounting services
70	Services of head offices; management consulting services
71	Architectural and engineering services; technical testing and analysis services
72	Scientific research and development services
73	Advertising and market research services
74	Other professional, scientific and technical services
75	Veterinary services
77	Rental and leasing services
78	Employment services
79	Travel agency, tour operator and other reservation services and related services
80	Security and investigation services
81	Services to buildings and landscape
82	Office administrative, office support and other business support services
84	Public administration and defence services; compulsory social security services
85	Education services

Table A1

(continuation)

NACE/CPA	Name
86	Human health services
87	Residential care services
88	Social work services without accommodation
90	Creative, arts and entertainment services
91	Library, archive, museum and other cultural services
92	Gambling and betting services
93	Sporting services and amusement and recreation services
94	Services furnished by membership organisations
95	Repair services of computers and personal and household goods
96,97,98, 99	Other personal services; undifferentiated goods and services produced by private households for own use; services provided by extraterritorial organisations and bodies

Source: CZSO <<https://www.czso.cz/csu/czso/classifications>>

## SUPPLEMENTARY INFORMATION 2 – ANNEX 2

Annex 2 is available at the webpage of *Statistika: Statistics and Economy Journal*, see the online version of No. 3/2018 (Excel file) at: <[http://www.czso.cz/statistika\\_journal](http://www.czso.cz/statistika_journal)>.