Environmental Accounts in the Czech Statistics

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Abstract

European environmental economic accounts are built in the Czech Republic by the Czech Statistical Office (CSO). This article summarizes the work which has been performed by the CSO over the last decade to provide necessary data for environmental economic accounts. The work was commenced in 2003, when the Environmental protection expenditure project was carried out. This was followed by NAMEA air emissions and Material flow accounts projects in 2005, and by Environmental goods and services sector and Environmental taxes projects, finished in 2011. The article describes data sources and methods that were used to provide indicators of above mentioned accounts. Some examples of the use of data are presented in the form of charts or tables.

Keywords

Environmental economic accounts, statistics, indicators

JEL code

Z19

INTRODUCTION

Activities in the field of sustainable development raised the need to measure the environmental impacts of people activities through the environmental accounts. Environmental accounts (EA) track the links between the environment and the economy (at EU, national, sector and industry level), measure what impacts the economy has on the environment (e.g. pollution) and how the environment contributes to the economy (e.g. use of raw materials, resource efficiency, etc.) by using the accounting framework and concepts of the national accounts. EA list of variables, in quantifiable terms, for example, the amount of pollution produced by different industries, may in turn be compared with employment and the value of output produced by these industries (EUROSTAT, 2012).

Efforts to introduce environmental economic accounts into practice resulted in the adoption of Regulation No 691/2011 of the European Parliament and the Council on European Environmental Economic Accounts. The aim of this paper is to describe methods used in the Czech Republic to meet the requirements of this Regulation.

1 EUROPEAN ENVIRONMENTAL ECONOMIC ACCOUNTS

In its Communication of 20 August 2009 entitled 'GDP and beyond: Measuring progress in a changing world', the Commission recognised the need to supplement the existing indicators with data incorporating environmental and social aspects in order to allow for more coherent and comprehensive policy making. To that end, environmental economic accounts offer a tool to monitore the pressures

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exerted by the economy on the environment and of exploring how these might be abated. Environmental economic accounts show the interaction between economic, household and environmental factors and, consequently, are more informative than national accounts alone (TOŠOVSKÁ at al., 2010). They provide a significant source of data for environmental decisions and the Commission should consult them when drawing up impact assessments. In line with the tenets of sustainable development and the drive to achieve a resource-efficient and low-pollution economy, embedded in the Europe 2020 Strategy and various major initiatives, developing a data framework that consistently includes environmental issues along with economic ones becomes all the more imperative (EEA, 2006).

The European System of Accounts (ESA), set up by Council Regulation (EC) No 2223/96 of 25 June 1996 on the European system of national and regional accounts in the Community (ESA 95), consistent with the System of National Accounts (SNA), adopted by the United Nations Statistical Commission in February 1993, is the main tool behind the Union's economic statistics as well as many economic indicators (including GDP). The ESA framework can be used to analyse and evaluate various aspects of the economy (e.g. its structure, specific parts, development over time) yet for some specific data needs, such as analysis of the interaction between the environment and the economy, the best solution is to draw up separate satellite accounts. Satellite accounts allow the analytical capacity of national accounting to be expanded for selected areas of social concern, such as pressures on the environment stemming from human activity, in a flexible manner, without overburdening or disrupting the central system. Satellite accounts should be made available to the public regularly and in comprehensible form. The system of integrated environmental economic accounts (SEEA), developed collectively by the United Nations, the European Commission, the International Monetary Fund, the Organisation for Economic Cooperation and Development and the World Bank, is a satellite system of the SNA. It brings together economic and environmental information in a common framework to measure the contribution of the environment to the economy and the impact of the economy on the environment. It provides policy-makers with indicators and descriptive statistics to monitor these interactions as well as a database for strategic planning and policy analysis to identify more sustainable paths of development (REGULATION, 2011).

2 ENVIRONMENTAL ECONOMIC ACCOUNTS IN THE CZECH REPUBLIC

The Czech Statistical Office is responsible body for the compilation of environmental economic accounts tables for the Czech Republic. Three priority areas, NAMEA for air emissions, Economy-Wide Material Flow Accounts and Environmental Protection Expenditure Accounts, were established as basic modules by ESEA Task Force in 2000 (KOLAR, O'CONNOR, 2001). All these topics were carried out by the CSO, environmental statistics department within the PHARE Multi-beneficiary Statistical Co-operation Programme in years 2004–2005. Standard methods have been developed for data acquisition according to SEEA (UN Handbook of Integrated Environmental and Economic Accounting) as the main methodology support. Nowadays the data sets are produced to fill in Eurostat standard tables. The area of environmental accounts is constantly being developed by the CSO. In 2008 the environmental department applied for Eurostat grants to develop methods to compile tables for another environmental accounts – the Environmental Goods and Services Sector and the Environmental Taxes. Projects have been successfully finished and the development of methods for gathering data is constantly working, administrative sources are prevailing data source.

2.1 NAMEA for air emissions

The principle of NAMEA consists of the joining of information on emissions of pollutants with economic information for individual economic activities and households as private consumers. The economic data from national accounts were included in Eurostat tables in 2005 when the project was solved (CSO, 2005), currently only air emissions data are filled in. Within the framework of NAMEA for air emis-

sions compilation, close cooperation with the Czech Hydrometeorological Institute (CHMI) has been initiated. CHMI is the state institution of the Czech Republic which was established by the Ministry of the Environment. It prepares annually air emissions balances for national and international purposes and it is responsible for national air emission pollutant database.

2.1.1 Categories of monitored sources

Data on air pollution sources are recorded by the source operators or are calculated from statistical records. The records are mainly for the purpose of fees for released emissions and for inspection of observation of emissions limits. They are also used for determining the total amount of individual pollutants released into the air, i.e. for building up emissions inventory. Basic statistical data and detailed technical data on incinerating and technological equipment are contained in the so-called Register of Emissions and Air-Pollution Sources (REZZO).[2]

Stationary sources of air pollution are divided into three basic categories with respect to their size, type and environmental risk. The categories and their descriptions are shown in Table 1.

Table 1 Categorization of Stationary Air Pollution Sources

	Extra large and large pollution sources	Medium pollution sources	Small pollution sources
Contains	Stationary facilities for burning fuels with a heat output greater than 5 MW and facilities with especially substantial technological processes.	Stationary facilities for burning fuels with a heat output between 0.2 and 5 MW, facilities with substantial technological processes, coal mines and areas with a risk of burning or the escape of polluting dust or vapors.	Stationary facilities for burning fuels with a heat output less than 0.2 MW, facilities with technological processes not classified as large or medium sources, areas where work is done that could cause air pollution, storage of fuel, raw materials, products and waste and collected air pollutants and other structures, facilities and activities causing significant air pollution.
Character of source	Point source	Point source	Area source
Method of record-keeping	Sources monitored individually	Sources monitored individually	Sources monitored collectively

Source: CHMI, Register of Emissions and Air Polluters

Mobile sources, then, are a separate category, monitored collectively as linear sources, constituting the category REZZO 4. This group of sources includes the separately monitored sources of road, railroad, water and air transport, the operation of agricultural and forestry machinery and the operation of other vehicles and machines (the emissions balances are made by calculations from data on consumed fuel).

From a historical standpoint, the beginning of collection of data on pollutant emissions and complementary technical data on sources goes back to the end of the 1970s. The data was first collected and evaluated for REZZO 1 for 1980, and then after some adjustments for 1982, 1984 and annually thereafter. Updating emissions balances of small and mobile sources was done in a five-year cycle until mid 1990s. Since 1995 it has been done annually. Since 1991, data on emissions and basic technical data from the operation of large and medium sources have been gathered by the Czech Environmental Inspectorate (CEI), and by district and municipal governments. By law, the CHMI expert laboratory receives and processes that data.

[2] From the Czech expression "Registr emisí a zdrojů znečišťování ovzduší".

Data on emissions of small sources are administered by local authorities and are not regularly gathered in electronic form, nor are they forwarded for further processing. The specific methodology was developed by CHMI for modeling the evaluation of data based on the Population and Housing Census. The outcome is data on the structure of home heating and consumption of basic types of fuel burned in households. The data are updated annually in cooperation with regional fuel and energy suppliers. Data on mobile source emissions are calculated from documentation on the transport performance of individual groups of mobile sources, from data on fuel consumption, the breakdown and operation of vehicles and relevant emissions factors.

2.1.2 Emission balances

From the annually updated data on extra large and large pollution sources, medium pollution sources and relevant data on emissions from small and mobile sources, the annual emissions balance of the Czech Republic is being compiled by the Czech Hydrometeorological Institute. Data are available on the CHMI web pages (www.chmi.cz). Major reduction of emissions was recorded in connection with legislative changes brought about by the Air Protection Act (Act No 309/1991 Sb.,) and subsequent implementing regulations, by 31 December 1998, the majority of large and medium air pollution sources had been brought into compliance with air quality limits. This manifested itself in a great improvement of air quality and some relief from the inversions, especially from the 1997/98 heating season until the present (Final Report, 2005).

Table 2 Emissions of main air pollutant (REZZO 1–3) in the Czech Republic (thousand tonnes / year)

Year	Solids	SO_2 Sulphur dioxide	NO_x Nitrogen oxides	CO Carbon Monoxide
1993	441.3	1 418.6	364.1	756.2
1994	346.7	1 270.1	235.4	741.0
1995	194.3	1 083.6	219.0	607.6
1996	169.2	937.8	205.3	594.5
1997	118.3	690.9	187.3	529.1
1998	75.7	432.0	164.2	397.9
1999	57.8	261.7	155.8	353.0
2000	38.6	222.3	153.7	240.6
2001	38.4	224.8	160.5	240.5
2002	37.8	225.8	159.1	246.2
2003	39.2	219.9	158.3	256.7
2004	34.6	216.4	158.2	256.9
2005	33.9	216.8	154.2	241.2
2006	33.2	210.2	153.3	238.8
2007	36.8	215.9	155.4	263.4
2008	35.4	176.4	139.8	222.5
2009	31.4	174.0	130.4	208.0
2010	33.4	169.7	131.3	234.7

Source: CHMI

Since the time when the Phare project was completed, the Eurostat requirements have been extended to new pollutants and to the measurement data by NACE Rev. 2. The new requirements are fulfilled thanks to cooperation with CHMI.

2.2 Material flow accounts

Most environmental problems are directly or indirectly related to the flows of materials in the economy. The goal of compiling economy-wide material flows accounts is the quantification of the overall demands

of an economic system on materials. These demands can be expressed as input of materials into an economic system, their consumption or the overall waste flow arising from the economic system back into the environment.

The need to devise indicator systems, based on economy-wide material flow analysis concerns not only developed countries but especially rapidly industrializing economies (AOKI-SUZUKI, BENGTSSON, HOTTA, 2012).

2.2.1 Building of data collection

The Charles University Environment Centre (CUEC) compiled economy-wide material flow accounts for the first time within the framework of the Environment Ministry project in 2000–2001. The CSO followed up on the experience of the CUEC by the Eurostat project realized in 2004–2005 (CSO, 2005). Methods for detecting data source for compiling the material flow accounts were developed within this project. Eurostat methodology was used as the base for indicators compilation (EUROSTAT, 2001). The Czech Statistical Office focused on compilation of indicators of material input and material consumption. These are the best developed ones from the methodological point of view and are based on available data (Czech Statistical Office, Ministry of Industry and Trade).

2.2.2 Indicators of material flows

Direct material input (DMI) measures the input of used materials in the economy, i.e. all materials that have an economic value and are used for production and consumption. DMI is domestic used extraction (extracted raw materials, grown biomass) plus import. Direct (used) material inputs includes all solid, liquid and gaseous substances that enter the economy for further use in the manufacturing process or consumption. Water and atmosphere are excluded except those parts contained in materials. Indicators of material inputs are derived from the material balance, it is possible, though, to derive them from individual material flow accounts (MFA) without having to set up a total material balance and introduce adjusting items.

Domestic material consumption (DMC) measures the total amount of materials directly used in the economy, without hidden flows. DMC is calculated as DMI minus export.

Physical trade balance (PTB) measures the surplus or deficit of the physical foreign trade of the economy. It is calculated as physical imports minus physical exports.

Indicators of material flow accounts of the Czech Republic mentioned above were divided into following categories:

- Biomass (raw materials, semi-manufactured and final products from biomass);
- Fossil fuels (raw materials, semi-manufactured and final products from fossil fuels);
- Metal ores (raw materials, semi-manufactured and final products from metal ores);
- Non-metallic minerals (raw materials, semi-manufactured and final products from industrial and construction minerals);
- Other unspecified products;
- Waste.

For the calculation of these indicators, two basic material flow accounts were developed:

- Domestic used extraction account – contains extraction of raw materials and biomass harvest from domestic territory;
- Foreign trade account – covers physical import and physical export.

Further, indicators of economic performance can be related to the input and output indicators of material flows. For example GDP per unit DMI or DMC indicates direct material productivity of the economy. On the other hand, if we relate the input indicator to GDP, we get material intensity of the economy (CSO, 2011b).

Table 3 Domestic material consumption by material categories

	2005	2006	2007	2008	2009	2010
Domestic material consumption (in tonnes)						
Total	**187 906 724**	**193 804 728**	**196 650 120**	**193 447 937**	**176 530 403**	**167 718 172**
Biomass	24 619 198	23 551 364	24 221 822	22 134 879	22 771 405	20 779 000
Fossil fuels	72 917 174	73 251 084	72 708 056	71 112 629	67 163 906	66 485 771
Metal ores	4 123 777	5 846 020	4 410 982	6 057 817	3 123 657	4 773 993
Non metallic minerals	86 071 740	90 841 245	94 780 188	94 124 360	83 236 203	75 478 056
Other unspecified products	174 834	315 799	532 593	23 200	237 365	203 102
Waste	–	–783.34	–3 521	–4 948	–2 133	–1 751
Material intensity – DMC per GDP (in Kg / CZK 1 000)						
Total	**71.44**	**68.99**	**65.96**	**63.33**	**60.28**	**55.96**
Biomass	9.36	8.38	8.12	7.25	7.78	6.93
Fossil fuels	27.72	26.07	24.39	23.28	22.94	22.18
Metal ores	1.57	2.08	1.48	1.98	1.07	1.59
Non metallic minerals	32.72	32.34	31.79	30.81	28.42	25.18
Other unspecified products	0.07	0.11	0.18	0.01	0.08	0.07

Source: CSO Material Flow Accounts

Table 4 Physical trade balance account by material categories (in tonnes)

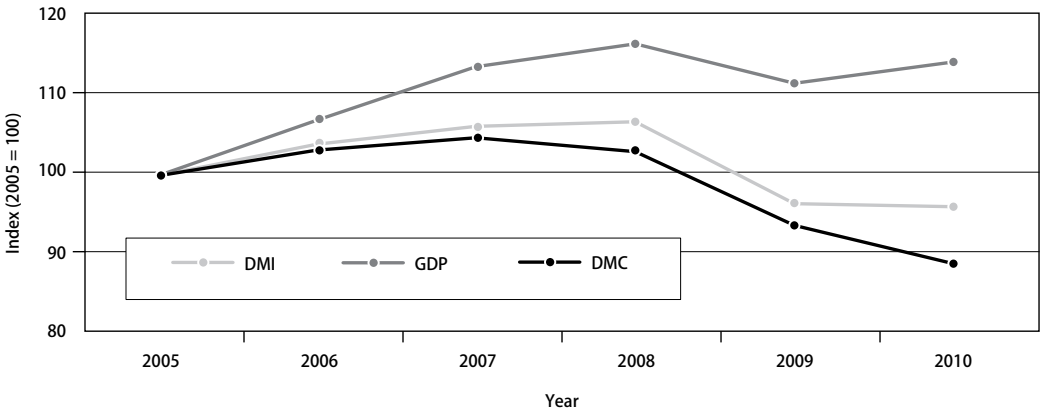
	2005	2006	2007	2008	2009	2010
Total	**6 513 063**	**8 846 073**	**6 779 697**	**5 189 816**	**3 572 534**	**4 685 934**
Biomass	–8 609 630	–8 380 587	–8 834 085	–11 531 008	–10 078 643	–11 104 343
Fossil fuels	10 420 374	10 478 264	10 311 836	10 669 829	10 561 766	11 023 431
Metal ores	4 041 777	5 725 020	4 292 982	5 940 817	2 990 657	4 632 993
Non metallic minerals	485 707	708 362	479 892	91 926	–136 477	–67 499
Other unspecified products	174 834	315 799	532 593	23 200	237 365	203 102
Waste	-	–783	–3 521	–4 948	–2 133	–1 751

Source: CSO Material Flow Accounts

2.2.3 Use of material flow indicators

Material flow analysis is considered a useful method for assessing the environmental performance of socio-economic systems. It is assumed that the volume of material inputs into the economy and material output emitted back to the nature is related to pressures exerted by humans on the environment (KOVANDA, WEINZETTEL, 2008). The human society recorded an unprecedented growth in annual material and energy inputs and outputs over the 20th century, which was also accompanied with the growth of environmental pressure. Developed countries within their strategies of sustainable development therefore adopted a goal to break the relation between pressure exerted on the environment and economic growth, i.e. to meet human needs and improve the standard of living. This phenomenon is shortly called decoupling (from longer "decoupling of environmental pressure from economic growth") (OECD, 2002). DMI and DMC indicators together with GDP were used in the next chart to express the environmental pressure. An index value of 100 is attributed to all indicators for the starting year and their percentage change is shown for the following years. By 2008, it is a relative decoupling, when GDP grows faster than DMI and DMC. Since 2009, we can talk about absolute decoupling, when there is a growth in GDP and an absolute decrease in DMI and DMC.

Figure 1 Trend of the DMI and the DMC indicators (in %)



Source: CSO, Material Flow Accounts

2.3 Environmental protection expenditure statistics

Data on environmental protection investment have been collected since 1986 by the CSO Investments reports, but new demand on non-investment expenditure data led to establish new independent statistical survey.

The statistical survey on the investment and non-investment environmental protection expenditures established in 2003 was the first step to build up the environmental protection expenditure account in the Czech Republic.

According to the definition, Environmental protection expenditures are expenditures on the acquisition of fixed assets for environmental protection (technologies, processes, equipment or parts thereof) and environmental protection non-investment expenditures related to environmental protection activities, where the main purpose is to collect, treat, monitor, control, reduce, prevent, or eliminate pollutants and pollution or any other degradation of the environment, resulting from the operating activity of enterprises (CSO, 2011a).

2.3.1 Structure of the survey

Statistical survey on the environmental protection expenditures includes environmental protection investments, environmental non-investment expenditure and economic benefit from the environmental protection activities (which include revenues from the sale of services for the environmental protection, revenues from the sale of by-products and savings from the use of by-products).

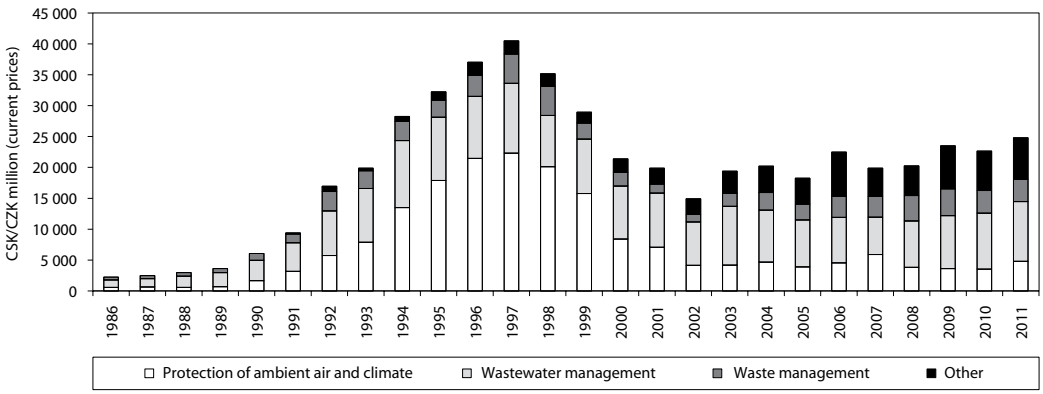
Environmental protection investments and environmental non-investment expenditures are collected by the environment pollution control domains – Air pollution control and climate protection, Wastewater management, Waste management, Landscape and biodiversity protection, Soil, groundwater and surface water protection and remediation, Vibration and noise abatement, Radiological protection, Research and development and Other activities. In addition, we distinguish for environmental protection investments breakdown by type of technology (end of pipe or integrated), by source of finance and by sector (business or public). Environmental protection non-investment expenditures are divided into internal and external one, viewed from the angle of the enterprise.

Generally, data could be further divided by NACE activities, by type of ownership, by regions NUTS2, NUTS3 etc.

2.3.2 Data usage

Due to the fact that the exact methodology of expenditure account is not yet determined, the data from the survey are used to fill the OCD – Eurostat joint questionnaire (JQ on Environmental Protection and revenues) and to analyze the development of investment and non-investment expenditures in the country. It is expected that after completion of the methodology of the expenditure account it will be necessary to make changes in the survey to completely cover the expenditure account by data.

Figure 2 Environmental protection investment in the Czech Republic



Source: CSO, Environmental Protection Expenditure

2.4 Environmental goods and services sector

Another one of upcoming environmental accounts is an account of environmental goods and services sector (EGSS). The Eurostat project was carried out in collaboration with the University J. E. Purkyně, in the years 2010–2011 to discover possibilities for getting data to fulfill Eurostat standard tables (RITSCHELOVÁ et al., 2011).

2.4.1 Description of methodology

The environmental goods and services sector consists of a heterogeneous set of producers of technologies, goods and services that:

- measure, control, restore, prevent, treat, minimise, research and sensitise environmental damages to air, water and soil as well as problems related to waste, noise, biodiversity and landscapes. This includes „cleaner technologies, goods and services that prevent or minimise pollution.
- measure, control, restore, prevent, minimise, research and sensitise resource depletion. This results mainly in resource-efficient technologies, goods and services that minimise the use of natural resources.

As one can see in addition to industry itself, EGSS includes administrative activities, education, training, information and communication activities as well as research and development activities.

Only goods, services and technologies that have environmental end-purpose (i.e. environmental protection or resource management) are considered. Environmental purpose may be defined according either to technical nature of the activity (e.g. through the fact that waste management services producers may or may not have intention to protect environment, waste management is a part of EGSS since it removes waste from the environment) or the producer's intention, i.e. regardless of the intention of the users (e.g. low emission vehicles). Eurostat in the Standard Tables demands quantification of the following variables:

- Turnover;
- Value added;
- Employment;
- Exports.

All these variables are demanded broken down by NACE (2-digit level), by the Classification of Environmental Protection Activities (CEPA), by the Classification of Resource Management Activities (CReMA), by the type of producer (General government, Corporations), by the price setting (Market activities, Non-market activities), by the economic significance of environmental purpose activities (Principal activities, Secondary activities and Ancillary activities).

2.4.2 Project design

The first step of methodology preparation subsisted in the EGSS list definition. The list of EG and ES chosen within a project is a result of compilation of German and French EG and ES lists based on PRODCOM as well as on the list of WTO adjusted by Eurostat based on Combined Nomenclature. The list containing 242 EGSS items has been drawn up. The research team decided to use existing statistical survey for data compilation which is based on PRODCOM classification. The survey Prum 2-01 was suitable, because it provides the detailed information on manufacture of industrial products as well as structural information on production of industrial enterprises (RITSCHELOVÁ et al., 2011, p. 55). The questionnaire Prum 2-01 covers following indicators:

- Total production, which is defined as production produced during the reference period and sold, put in stock or used for production of other product.
- Production sold, which represents production carried at certain time and sold (invoiced) by producing enterprise during the reference period.
- Stocks of finished goods.

Production sold is further surveyed in more detailed breakdowns:

- Production of own products and contract processing.
- Production for direct and indirect export.

The added value indicator demanded by Eurostat is not a part of Prum 2-01 survey. This indicator is surveyed based on yearly survey of economic agents from the chosen production branches P 5-01. For the project purposes the support databases were developed that enable dynamic access to Prum 2-01 and P 5-01 surveys data. Databases were designed in a way that after importing actual data the output indicators required for EGSS statistics preparation are generated. One of the outcomes of the project is a MS Access based environmental products database. The results were used to fulfill Eurostat tables, but only broken down by NACE, more detailed breakdown was not achieved.

2.4.3 Project results

During project preparation number of problems was identified, that need to be solved in order to support the EGSS statistics development in future. They include also the following:

- Number of experts mentions the fact that EGSS tables are too extensive while possibilities of their compilation are very limited.
- Number of experts mentions the fact that EGSS tables are too extensive while possibilities of their compilation are very limited.
- Too detailed data breakdown and small amount of units in number of cases cause problems of individual data with no option of publishing.
- Through the fact that a significant interest in EGSS statistics exists (at least in theory), experts find it difficult to precisely define users and ways of specific EGSS data use.

- With a view to an excessively general definition, as well as national priorities and different stakeholder interest national statistical offices may approach to EGSS statistics differently which gives birth to issues of comparability of data.
- Growth or decline of economic variables as a matter of fact says nothing about quality of technologies, goods and services neither of their impact on the environmental quality.
- Issues of time series comparability: How can one compare statistics from different time periods when some activities that are presently considered to be a part of EGSS either disappear or would be substituted by other activities? How can one interpret technological change or change in the level of costs? How often should producers and EGSS list items be revised?
- Eurostat classification does not allow the definite classification of goods and services within the certain environmental domains.
- EGSS framework contains number of non-systemic exclusions. What is primary environmental purpose and based on what criteria should it be defined (RITSCHELOVÁ et al., 2011).

2.5 Environmental tax account

The Regulation on European economic accounts of 6 July 2011 includes the annex of Module for environmentally related taxes by economic activity, and according to this annex Member States shall send data to Eurostat in 2013. The environmental statistics section of the CSO in preparing to that situation carried out in 2009–2011 the Eurostat project to find data sources for the sectoral breakdown of environmentally related taxes and fees which were proposed by the Eurostat Standard Tables.

2.5.1 Environmental taxes in the Czech Republic

Tax is defined as a mandatory uncompensated payment to the state (either monetary or in natura). Environmentally related tax means a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment, whereby only transactions identified by the national accounts as a tax are to be included. Environmental taxes include both taxes that were introduced with the specific environmental purpose, as well as taxes influencing the environmental quality whose introduction was motivated by fiscal rather than environmental purposes (e.g. road tax).

In some cases it is hard to make a distinction between taxes and fees introduced within the national tax system. This is also the case for the environmental taxes. For statistical purposes it is necessary to hold on to principles described in the SNA. The SNA 2008 describes the cases when an agent receives a value (e.g. a license or other certificate) against fee payment and issue of such licences involves little or no work on the part of government. In this case it is likely that the aim of the fee is to simply raise revenue into budget, and therefore this payment is rather a tax than a fee. However, if the government uses the issue of licences to exercise some proper regulatory function (e.g. checking the competence, checking the equipment etc.) the payments made should be treated as fees, i.e. as purchases of services from government.

For the practical reasons in order to provide SNA compatibility, consistency and international data comparability Regulation of the European Parliament and of the Council on European Environmental Economic Accounts includes only taxes identified in ESA 95 within the following categories (REGULATION EU No 691/2011):

- Taxes on production and imports (D.2),
- Current taxes on income, wealth, etc. (D5), and
- Capital taxes (D91).

The majority of environmental taxes make taxes on production and imports. One should also mention that category D.29 Other taxes on production explicitly include pollution taxes among others. These

include taxes levied on emission or exhalation of polluting gases, liquids or other polluting substances into the environment (Final Technical Report, 2011).

2.5.2 Data collection

The first project work brings the establishment of the list of environmentally related taxes and fees. It was the result of close cooperation with the environmental law experts from the Charles University Environment Centre. Based on the definition of environmentally related taxes[3] these experts have identified all taxes and fees valid in 2006 that were related to the environment. After that they created the methodical lists for every tax and fee showing the following attributes: legal base of the tax or fee, taxpayer, tax collector, payment recipient, etc. Consequently the cooperation with national accounts department of the CSO was established. It was focused on designating environmentally related taxes and fees from the list within the public budget structure. The respective ESA 95 code was also verified since with a view to the system of national accounts' compatibility, consistency and international comparability it was decided to include into further processing only those taxes and fees that were designated under D.2, D.5 and D.91 codes within the public budget structure. As a result of these activities the set of 12 taxes and fees corresponding to environmentally related tax definition were identified. These taxes and fees broken down into categories are as follows:

Energy taxes

- Excise duty on mineral oils,
- Tax on natural gas and some other gases – since 1.1.2008,
- Tax on solid fuels – since 1.1.2008,
- Tax on electricity – since 1.1.2008.

Pollution taxes

- Air pollution fees,
- Fee for the discharge of waste water into surface water,
- Fee for the discharge of waste water into ground water,
- Fees for production and import of ozone depleting substances.

Resource taxes

- Charge for removal of land from the agricultural land fund,
- Fee for the withdrawal of forest land.

Transport taxes

- Road tax,
- Fee for entry to chosen places on motor vehicle.

Ad hoc data for filling in the pilot tables were obtained from the Ministry of Finance and the Customs Administration. The negotiations are still ongoing and the contract for regular transmission of data is in preparation.

[3] Environmentally related tax means a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment, whereby only transactions identified by the national accounts as a tax are to be included (see Proposal for Regulation of the European Parliament and of the Council on European Environmental Economic Accounts).

Table 5 Taxes and social contributions according to national classification (mil. CZK)

TRANS	Tax name according to national classification	1995	2000	2005	2006	2007	2008
D2122CA	Excise duty on hydrocarbon fuels and lubricants	15 173	21 032	20 489	22 151	21 875	22 143
D2122CF	Energy tax on electricity	M	M	M	M	M	307
D2122CG	Energy tax on natural gas	M	M	M	M	M	310
D2122CH	Energy tax on solid fuels	M	M	M	M	M	129
D214AA	Excise duty on hydrocarbon fuels and lubricants	18 710	25 966	53 825	54 731	59 730	59 027
D214AG	Energy tax on electricity	M	M	M	M	M	819
D214AH	Energy tax on natural gas	M	M	M	M	M	826
D214AI	Energy tax on solid fuels	M	M	M	M	M	344
D214CA	Levy on withdrawal of land from agriculture	366	532	351	360	360	352
D214CB	Levy on withdrawal of land from forestry	0	41	59	79	57	49
D29AB	Levy on temp. withdrawal of land from agriculture	22	76	62	64	46	40
D29AC	Levy on temp. withdrawal of land from forestry	0	8	10	14	6	5
D29AD	Motor vehicle entry fees	0	15	11	13	11	12
D29BA	Road tax	4 834	5 456	5 154	5 597	5 882	5 777
D29FA	Water pollution fee	2 494	529	383	304	403	242
D29FB	Air pollution fee	0	718	513	483	525	553
D29FC	Radioactive waste fee	0	642	1	0	0	0
D29FD	Underground water pollution fee	525	0	0	0	0	2
D29FE	Other environmental fees and levies	0	0	0	0	0	4
D29HA	Highway fee	668	1 227	M	M	M	M
D59DA	Highway fee	286	526	M	M	M	M
D59FB	Motor vehicle entry fees	21	13	11	13	13	12

Codes for specific entries: M – "not applicable / do not exist, transmitted", 0 – "exist but value is zero or considered as zero".
Source: Final Technical Report, Environmental Tax, CSO, March 2011

CONCLUSION

From this article one can conclude that the CSO has a responsible approach to the issue of environmental economic accounts. The CSO carries out methodological transformation of individual accounts into the conditions of the Czech Republic and explores possible data sources for the fulfillment of particular accounts tables. The CSO is able to compile modules of environmental accounts which are covered by the Regulation No 691/2011, these are NAMEA air emissions account, material flow account and environmental taxes.

The expansion of the Regulation on European environmental economic accounts by other modules is expected in the close future, and it will bring further innovation of the work of the CSO, Environmental statistics section.

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