



**Statistical Office of the Slovak Republic**

**FINAL REPORT ON IMPLEMENTATION OF THE ACTION**

August 2016

**Experimental Compilation of the PEFA for Slovakia**

Grant Agreement No. 05121.2014.001-2014.298

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# 1. A brief description of all activities conducted, with an overview of the results and the deliverables provided

## 1.1 Introduction

Physical Energy Flow Accounts (PEFA) is one of the new modules included in the EU Regulation No 538/2014 amending EU Regulation No 691/2011 on European environmental economic accounts. Slovak Republic represented by the Statistical Office of the SR is obliged to implement the amended regulation on environmental accounts and regularly submit data on PEFA and two other new modules to Eurostat. It is necessary to prepare properly for this obligation.

Statistical Office of the SR decided to apply for Eurostat subvention grants for 2014, Objective: 5.1. Environmental Accounts in order to develop and implement PEFA module for Slovakia. The pilot study entitled *Experimental compilation of the Physical Energy Flow Accounts for Slovakia* was carried out on the basis of Grant agreement **No. 05121.2014.001-2014.298** between European Commission and the Statistical Office of the SR and was financially supported by European Commission/Eurostat.

The general objectives of the pilot study were the following:

- Experimental compilation of PEFA physical supply and use tables of energy flows (tables A, B, C) for reference year 2014 for Slovakia.
- Starting the national implementation of the PEFA module that is included in the Regulation on environmental accounts.

Concerning the methodology applied for the compilation exercise, the latest version of the Eurostat PEFA manual (version 2014) was the main methodological basis. The Eurostat PEFA Questionnaire version 2015 and the IT tool PEFA Builder, version 2.7 were used for compiling PEFA tables.

## 1.2 Description of the action

Project activities were carried out over the period of **12 months**. The start of the project was in **July 2015** and project activities ended in **June 2016**.

### Activities and tasks conducted in the project:

Start of the project	1 July 2015
Preparatory works; Specification of the project outputs; Exploration of possible internal data sources (national energy statistics, SBS) and external data sources (Slovak National Emission Information System - NEIS, Slovak Innovation and Energy Agency - SIEA); Analysis data from internal and external data sources	July – September 2015
Meeting and consultations with experts from the SIEA	August 2015
Studying PEFA manual and other available materials on PEFA methodology; Studying pilot studies on PEFA of other countries	continuously during the project
Internal consultations of the project team	continuously during the project
Studying available materials on IT tool PEFA Builder; Testing IT tool PEFA-Builder – experimentally filling it with data from energy questionnaires	October – December 2015
Meeting and consultations with national experts for GHG and air pollutants inventories	January 2016
Processing, checking and analysis data on supply and use of material and energy by CPA codes from SBS (data in monetary units); Comparison of energy statistics data with SBS data	January – March 2016
Meeting and consultations with experts from the SIEA in Banska Bystrica	April 2016
Compiling PEFA table A for year 2014 using PEFA-Builder and information from national energy statistics; Compiling PEFA table B for year 2014 using PEFA-Builder and distributing use of energy products within services sector on the basis of data from external data sources (NEIS, SIEA); Compiling PEFA table C for year 2014 by excluding use of energy flows that do not generate air emissions	April – June 2016
Checking and validating the compiled data in PEFA Questionnaire (tables A, B and C)	June 2016
Elaboration of the report on methodology for compilation of PEFA tables	June 2016
Assessment of the compilation exercise and identification of problematic issues regarding implementation of PEFA	June 2016
End of the project	30 June 2016
Elaboration of the final report on implementation of the action and final financial statement	July – August 2016 (60 days following the closing date of the action)

## Meeting with the national experts for GHG and air pollutants inventories

Meeting with national experts in charge of the national inventories for GHG and air pollutants from the Slovak Hydrometeorological Institute (SHMI) and Slovak University of Technology was held in January 2016. The purpose of the meeting was to inform them about PEFA project and discuss issues regarding PEFA methodology and also potential data sources. Important output of the meeting was that SHMI agreed to provide us with data relevant for the project from their data sources (specifically data on use of energy products in NACE divisions 45 – 96 from NEIS, non-energy use of energy products which they exclude from their calculations of air emissions. Meeting minutes is available in project documentation (in Slovak).

## Meetings with experts from the Slovak Innovation and Energy Agency (SIEA)

**The first meeting** with experts from the SIEA was held in August 2015 in Bratislava. Purpose of the meeting was to consult the availability of data in SIEA database which could be used in PEFA. It was agreed that it would be more useful if we would at first specify our data requirements and then visit the SIEA Office in Banska Bystrica. There we could explore the SIEA database in person and decide if it would be necessary to ask for additional data.

**The second meeting** took place in April 2016 in the SIEA Office in Banska Bystrica. The meeting was attended by three members of the project team. The main purpose of this meeting was to explore the data sources available in the SIEA, specifically the Monitoring system for efficiency in energy use. Experts from the SIEA presented the whole system of data collecting in the SIEA monitoring system and informed about obtained indicators. We also consulted usability of data from the SIEA monitoring system for PEFA compilation. SIEA agreed to provide us with data on selected indicators relevant for PEFA on regular basis.

Study visit to the Austrian Statistical Office was planned within the project however it was not realized. Instead we decided to visit the SIEA in Banska Bystrica. The meeting is described above.

## 1.3 Project organization

The project team consisted of 7 statisticians (including the project leader) from Cross-sectional Statistics Department which is part of Business Statistics Directorate of the Statistical Office of the SR. The top project manager was not directly involved in the project team. External experts did not participate in the project.

### Project organization – human resources

- Top project manager – Libuša Kolesárová, Head of Business Statistics Directorate, was responsible for supervising and monitoring of the project.
- Project leader – Eva Šmelková, Senior Statistician specializing in environmental statistics and accounts, was responsible for management of the project and its execution.

- Other 6 members of the project team were responsible for carrying out particular project activities related to their expertise. The project team consisted of experts in **energy statistics** and **environmental statistics**.

### Subcontracts

No subcontracts were concluded within the project.

## 1.4 Outputs and deliverables

Experimental compilation of PEFA module for Slovakia, specifically PEFA tables A, B and C for reference year 2014 in compliance with the annex VI of the regulation on environmental accounts was the main objective of this pilot study. Based on the experience from this exercise, the national system for compiling PEFA module was set up.

### Outputs of the pilot study delivered to Eurostat:

- Compiled physical supply and use tables of energy flows in PEFA Questionnaire for reference year 2014 for Slovakia – **Annex II.** of the report:
  - Table A. Physical Supply Table for Energy Flows
  - Table B. Physical Use Table for Energy Flows
  - Table C. Physical Use Table of Emission-relevant Use of Energy Flows
  - Table D. Vectors of Key Energy Indicators
- Short methodological report on PEFA compilation exercise – **Annex I.** of the report

## 1.5 Sustainability of the action

Development of PEFA module for Slovakia will continue also after the end of the project. Focus will be mainly at solving the problematic issues identified during the project and developing the remaining parts of PEFA not included in the project (table E). We expect the full implementation of PEFA module by the end of 2017 when we are obliged to submit data under amended regulation on environmental accounts for the first time. From 2017 onwards, PEFA data for the SR will be regularly compiled and submitted to Eurostat. This will secure the sustainability of the project's achievements.

## 2. Information needed to justify the eligible costs declared

Actually incurred costs of the action are specified in Annex III. (Excel file). The file contains summary project budget, detailed project budget, calculation of staff costs (project worked hours/days and daily rates) and detailed calculations of hourly/daily personnel rate for each expert. Our Request for Payment (Annex III bis) fully completed and signed, is also attached.

## 2.1 Costs of staff assigned to the action

The total number of days estimated for project activities was 390 days during 12 months of project duration. Actual work on the project was done in 380.6 days by 7 project team members - permanent staff of the Statistical office of the SR. External staff outside of the statistical office was not involved in the project.

The number of worked days of each member of the project team is summarized in the following table:

<b>Expert</b>	Z1	Z2	Z3	Z4	Z5	Z6	Z7	<b>Total</b>
<b>Person/Days</b>	72,7	44,3	80,0	40,0	68,7	34,9	40,0	<b>380,6</b>

Estimated costs of the staff assigned to the action were 28 185.40 €. Actually incurred costs of the staff involved in the project are 29 202.45 € which is about 3% higher than estimated costs. This slight difference between estimated and real costs is due to increase of salary of employees of the Statistical office of the SR in the period between the start and the end of the project.

## 2.2 Total costs of the action

Estimated total costs of the action were 37 316.02 €. Actual total project costs are **37 963.19 €** of which 29 202.45 € are project direct costs and 8 760.74 € are project indirect costs (30% of total staff costs). Project direct costs consist only of expenditure on staff involved in the project. There are no other project expenditures.

Financial contribution requested from the Commission is **26 120.00 €** which is the maximum amount of grant specified in article 1.3 of the grant agreement. Our own financial contribution is 11 843.19 €.

Summary of actual project budget is in the following table:

<b>A - EXPENDITURE/COSTS OF THE ACTION</b>	
<b>Total costs of the action</b>	<b>37 963.19 €</b>
Total direct costs	29 202.45 €
<i>Staff costs</i>	29 202.45 €
<i>Other costs</i>	0.00 €
Eligible indirect costs	8 760.74 €
<b>B - SOURCES OF FUNDING</b>	
Contribution requested from the Commission	26 120.00 €
Own contribution by beneficiary	11 843.19 €

## ANNEX I

### Methodology for compilation of PEFA tables for Slovakia

The IT tool PEFA-Builder was used for compiling tables A and B within PEFA Questionnaire for Slovakia. The coefficients for net calorific values in PEFA Builder were adjusted according to the national energy statistics. This way it was easier to analyze data compiled in tables A and B and compare and check them with our national energy balances. It allowed us to understand better how the PEFA Builder works and how the particular items/cells in tables A and B are linked with 5 Annual Energy Questionnaires (energy balances).

In-depth analyses of data experimentally filled in PEFA tables A and B revealed some errors (bugs) in PEFA Builder. Identified errors were verified and corrected on the basis of data from national energy statistics. Unclear issues regarding how PEFA Builder allocates data from Annual Energy Questionnaires to some items in PEFA tables were consulted with Eurostat.

Nuclear energy was recorded in PEFA Questionnaire by applying approach recommended by Eurostat – allocation of the supply of nuclear fuel (P22) to the domestic mining industry (nuclear fuels are considered as natural inputs extracted from domestic environment).

#### NACE detailing in PEFA tables

##### Table A - Physical supply table for energy flows

Allocation of supplies of energy flows into NACE activities was automatically performed by PEFA Builder (on the basis of defined algorithms for allocating element/cells from five Annual Energy Questionnaires to rows and columns in PEFA table A). It was necessary to make some changes in table A which was generated by PEFA Builder and relocate production of some specific energy products to another NACE category on the basis of information from national energy statistics (e.g. supply of natural gas to refinery).

##### Table B - Physical use table for energy flows

Allocation of use of energy flows into NACE A – F was automatically performed by PEFA Builder. Afterwards some additional adjustments were made on the basis of national energy statistics. Distribution of use of energy products into NACE divisions within services sector was made on the basis of information from two different data sources. Data on consumption of selected energy products are from the external data source – Slovak National Emission Information System (SK NEIS) managed by Slovak Hydrometeorological Institute. Quality of NEIS data for particular energy products differs, that's why only data on selected energy products from NEIS that are of high quality were used in table B. Distribution of use of other energy products into NACE divisions within services sector was estimated by applying distribution keys/shares that were calculated on the basis of data on use of energy products in monetary units from national SBS – Annual statistical survey on business statistics, module 184 – Specification of consumption/use of supplies of materials and energy.

NACE division O84 "Public administration" is not covered in the statistical survey on business statistics. Information on use of energy products in NACE O84 (municipalities and central



government institutions) were obtained from the external data source – Monitoring system for efficiency in energy use managed by the Slovak Innovation and Energy Agency (SIEA).

Estimation of the share of electricity and natural gas use for heating and other activities in households (HH) was based on data reported under Directive 2008/92/EC of the European Parliament and of the Council concerning a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users (recast).

Data on use of transport diesel and gasoline by NACE categories presented in table B are PEFA Builder calculations on the basis of defined algorithms. These automatically calculated data were not further adjusted.

### Sources of data reported in 5 Annual Energy Questionnaires:

<p><b>Energ 2-01</b> Annual statistical survey on production of liquid oil fuels</p>	<p><u>Collected data:</u> data on the process of production of liquid oil fuels <u>Responding units:</u> refinery</p>
<p><b>Energ 3-01</b> Annual statistical survey on renewable fuel and energy resources</p>	<p><u>Collected data:</u> data on production and consumption of renewable fuels and data on production of electricity and heat from renewable resources <u>Responding units:</u> all producers and users of renewable energy resources</p>
<p><b>Energ 4-01</b> Annual statistical survey on production of electricity and heat</p>	<p><u>Collected data:</u> data on production of electricity and heat, data on number and type of generating units including their installed capacity and data on number of boilers including their output <u>Responding units:</u> producers of heat if they operate at least one source with an installed capacity of 0,35 MW and higher, producers of combined heat and power generation if they operate at least one cogeneration plant with an installed electrical capacity of 0,10 MW and higher, producers of electricity, electricity and heat sellers and operators of distribution and transmission networks for electricity and heat</p>
<p><b>Energ 5-01</b> Annual statistical survey on retail trade with solid fuels</p>	<p><u>Collected data:</u> data on trade and supplies of solid fuels in retail network <u>Responding units:</u> enterprises registered in the Business Register of the Statistical Office of the SR (regardless of the number of employees) with the primary NACE activity 47.78 - Other retail sale of new goods in specialised stores</p>
<p><b>Energ 6-01</b> Annual statistical survey on resources and distribution of fuels and energy</p>	<p><u>Collected data:</u> data regarding resources, demands and distribution of fuels and energy <u>Responding units:</u> enterprises registered in the Business Register of the Statistical Office of the SR with 20 and more employees and their primary NACE activity is: 01 –</p>

	<p>03 Agriculture, forestry and fishing; 05 – 09 Mining and quarrying; 10 – 33 Manufacturing, 36 – 39 Water supply; sewerage, waste management and remediation activities; 41 – 43 Construction; 45 – 47 Wholesale and retail trade; repair of motor vehicles and motorcycles; 49 – 52 Transport and storage; and all organizations (regardless of the number of employees) with the primary NACE activity: 35 Electricity, gas, steam and air conditioning supply, 46.12 Agents involved in the sale of fuels, ores, metals and industrial chemicals, 46.71 Wholesale of solid, liquid and gaseous fuels and related products</p>
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### Sources of data used for distribution of consumption of energy products into service sector divisions

#### Internal data sources

<p><b>Roc 1-01</b> Annual statistical survey on business statistics, <b>module 184</b> Specification of consumption/use of supplies of materials and energy</p>	<p><u>Collected data:</u> data on use of purchased materials and energy and on stock level of materials and energy (in monetary units)</p> <p><u>Responding units:</u> enterprises registered in the Business Register of the Statistical Office of the SR with 20 and more employees or enterprises with 0 - 19 employees which have annual turnover 5 mil. EUR and more and their primary NACE activity is 01 – 96 except 64, 65, 66 and 84</p>
<p><b>Pen 5-01</b> <b>Poi 5-01</b> Annual statistical survey in banking and non-banking financial institutions Annual statistical survey in insurance business, <b>module 671</b> <b>module 671a</b> Specification of selected items of intermediate consumption, acquisition of fixed assets and supplies</p>	<p><u>Collected data:</u> data on use of materials and energy, consumption of services, acquisition and sale of fixed assets and on stock level of materials and goods (in monetary units)</p> <p><u>Responding units:</u> enterprises registered in the Business Register of the Statistical Office of the SR (regardless of the number of employees) with the primary NACE activity: 64 Financial service activities, except insurance and pension funding, 66.1 Activities auxiliary to financial services, except insurance and pension funding, 66.3 Fund management activities (for Pen 5-01) and with primary NACE activity: 65 Insurance, reinsurance and pension funding, except compulsory social security and 66.2 Activities auxiliary to insurance and pension funding (for Poi 5-01)</p>

Use of materials and energy products is recorded in modules 184, 671 and 671a according to CPA codes. The following CPA codes are specific for energy products:

CPA code	Label
022014	Fuel wood
051000	Hard coal
052000	Lignite
061000	Crude Oil
062000	Natural gas
161023	Woodchips
191010	Coke and semi-coke from hard coal, brown coal or peat; retort carbon
191020	Tar distilled from hard coal, brown coal or peat; other mineral tars
191030	Pitch and pitch coke
192011	Briquettes, ovoids and similar solid fuels manufactured from coal
192012	Briquettes, ovoids and similar solid fuels manufactured from brown coal
192013	Briquettes, ovoids and similar solid fuels manufactured from peat
192021	Motor spirit, including aviation gasoline
192022	Gasoline type jet fuel
192023	Light petroleum/mineral oils, light preparations n.e.c
192024	Kerosene
192025	Kerosene - jet fuel
192026	Gas oils
192027	Medium heavy petroleum/mineral oils, medium heavy preparations n.e.c
192028	Fuel oils
192029	Lubricating petroleum oils; heavy preparations n.e.c.
192031	Propane and butane, liquefied
192032	Ethylene, propylene, butylene, butadiene and other petroleum gases or gaseous hydrocarbons, except natural gas
192041	Vaseline, paraffin, petroleum wax, other waxes,
192042	Petroleum coke; petroleum bitumen and other residues of mineral oils
201472	Charcoal
201473	Oils and other products of the distillation of high temperature coal tars; similar products
201480	Residual lyes from the manufacture of wood pulp, excluding tall oil
205941	Lubricating preparations
351100	Electrical energy
352100	Manufactured gas
353011	Steam and hot water
353080	Steam and cooled air supply (except steam and cooled air supply for residential buildings and houses)
353090	Steam and cooled air supply for residential buildings and houses

### External/administrative data sources

<b>SK NEIS</b> National Emission Information System	It is a database containing selected data from operating records of stationary sources of air pollution. Operators of stationary sources are obliged to keep operating records and report data to the competent authority on yearly basis
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	according to the Act 137/2010 Coll. on Air. Data from reports are then gathered into the SK NEIS database. One of the mandatory items recorded in operating records and reported by operators of stationary sources is their consumption of fuels. Classification of fuels used in SK NEIS reporting is possible to link with Eurostat list of energy products.
<b>SEIA monitoring system</b> Monitoring system for efficiency in energy use	Purpose of SEIA monitoring system is to monitor primary and final energy consumption by sectors according to the Energy Efficiency Action Plans. All central government institutions, municipalities, higher territorial units and organizations under their authority and other obligatory subjects (suppliers of energy and heat, operators of distribution and transmission systems, owners of buildings with the floor area 1000 m <sup>2</sup> and more etc.) are the providers of data and information for SEIA monitoring. Obligation to report data into SEIA monitoring system is specified in the Act. 321/2014 Coll. on energy efficiency.

Sources of data used for estimation of share of electricity and natural gas use for heating and other activities in HH

<b>Energ 9-02</b> Semi-annual statistical survey on electricity prices for final consumers	<u>Collected data:</u> data on price of electricity for final consumers, consumption of electricity, number of consumers and indicators of mains load by categories of consumers <u>Responding units:</u> selected suppliers of electricity for final consumption
<b>Energ 10-02</b> Semi-annual statistical survey on natural gas prices for final consumers	<u>Collected data:</u> data on the average price of natural gas, number of consumers, annual consumption of natural gas and indicators of mains load by categories of consumers <u>Responding units:</u> selected suppliers of natural gas for final consumption

Table C - Table of emission-relevant use of energy flows

PEFA table C as “sub-layer” of PEFA table B, records only the use of energy flows which generate air emissions. Emission-relevant use of energy flows presented in table C was calculated by excluding the following use of energy flows:

- use of energy flows that is identified as non-energy use in Annual Energy Questionnaires,
- all use of electricity, heat and nuclear fuel,
- all use of crude oil and naphtha,
- use of energy flows as intake for production of another energy products (e.g. coking coal used for production of coke).

## Problematic Issues

Based on the experience from PEFA compilation exercise conducted within the project, the following problematic issues were identified:

- It was not clear when using PEFA Builder how exactly the tool works (how macros are defined) and how the particular cells in PEFA Questionnaire are linked with energy statistics data. Description of methodology that is more specific than in PEFA manual would be very helpful.
- The latest version of PEFA Builder (version 2.7) available in time when the project was running was used in the project compilation exercise. Analyses of data populated in PEFA tables by applying PEFA Builder v2.7 revealed some errors/bugs in this IT tool. It was necessary to verify and manually correct the errors on the basis of data from national energy statistics.
- Allocation of use of energy flows into NACE divisions within services sector in table B was estimated on the basis of information from two different data sources, which means that the quality is limited.
- Data in each cell of PEFA Questionnaire should be automatically rounded to fixed number of decimal places (2 or 3). It would eliminate problem with incorrect totals due to rounding (highlighted in red) after there are manually performed some changes/ revisions of data in tables.
- Lack of available information regarding proportion of use of energy products for heating and for other activities in households at national level. The only usable source of information for estimating the share are reports under Directive 2008/92/EC of the EP and of the Council concerning a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users.
- Lack of available detail information on transport necessary for adjustments for resident principle in PEFA table E - bridge table at national level. Elaboration of table E was not part of the project, but we plan to focus on compilation of this table in the near future since it is a mandatory table according the regulation.

### **Important notes:**

- We would like to point out that the main objective of the project is compilation of PEFA physical supply and use tables of energy flows (tables A, B and C) for Slovakia. The project doesn't deal with issues regarding adjustments for resident principle (PEFA bridge table E). We will focus on development of this part of PEFA in the future.
- The confidentiality of data compiled in PEFA Questionnaire (tables A, B and C) was not assessed within the project which means that confidential data are not identified in the submitted PEFA tables. Therefore, outputs of the project shall not be published.