Annex 5: Methodology tables for energy efficiency measures (by sector)

Buildings sector

Measure	**1.1.1.**		**Title of measure:**		**Improvements in the thermal performance of buildings – Single-family buildings (SFB)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks, government premiums
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	46 %	11 %	0 %	43 %	2016 survey by the Slovak Innovation and Energy Agency

Characteristics of the measure (including eligible activities)	Major renovation of single-family buildings.
	Nature of measure: (b) fiscal stimuli – government premiums as part of building society saving schemes; (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are established on a par with minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.
	Supported/eligible activities are mainly focused on: (a) improvements in the thermal performance of buildings; (b) improvements in the technical properties of building technical systems.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[1] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;
Detailed description of the method to calculate energy savings	Savings are determined by reference to the energy certificates database (source: INFOREG IS) as the difference in the building's energy requirements in its original condition and after renovation, according to the energy performance certificate.
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings, the average energy requirements applicable to the building in its original condition (based on the year of construction and the technical standards applicable to the given building category at the time) will be used. The average figure for the original condition of the building is a value corresponding to the upper limit of energy class D (Implementing Decree of the Ministry of Transport and Construction No 364/2012). Estimates need to be used as no data on the original condition of renovated buildings is available and additional surveying of energy consumption data is demanding and unreasonably costly. In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – via the INFOREG information system. Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from the INFOREG system to the energy efficiency monitoring system (MSEE).

[1] EED – Directive 2012/27/EU on energy efficiency

	Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten energy classes used for expert estimates under Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	There is a potential overlap with measures 1.1.2.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by excluding energy savings indicated for the Single-family Building Insulation Support Programme (Measure 1.1.2.) from Measure 1.1.1. The duplication of the energy savings made by overlapping measures is prevented by processing energy savings identified for individual buildings on a project-by-project basis, i.e. for each single-family building. Savings are included in only one of the measures, according to the above-mentioned priorities.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Under the Act on Building Society Savings Schemes (Act No 310/1992), Slovakia grants government premiums for building society savings schemes, with funding earmarked annually in the central government budget. Compliance with the conditions of building society savings schemes is supervised by the Ministry of Finance. In implementing measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in single-family buildings, publications have been issued and disseminated, such as 'Insulation and Window Replacement in Single-family Buildings' and 'How to Reduce Household Electricity Consumption'. It is only through these State-initiated synergic support measures that investment activities in the renovation and construction of buildings and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The savings made by this measure are only included if a major renovation is performed under an issued energy performance certificate that the owners would not have carried out had the State not intervened, i.e. they would only have dealt with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement). The measure takes into account total energy savings, representing the difference between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Any savings made by replacing existing light sources are not included among energy savings based on energy performance certificate data because the point of lighting consumption is not assessed in single-family buildings. Potential savings that can be achieved by replacing an existing heat source with a new, more modern one to which the Ecodesign Directive might apply are not individually identifiable from available energy performance certificate data and, according to expert estimates, are negligible compared with the energy savings achievable by means of insulation.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the

	preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.1.1**	**Title of measure:**	**Improvements in the thermal performance of buildings – Single-family buildings**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks, government premiums

$$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$$

where

$\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – average energy requirement for the original condition of the building [kWh/(m^2.a)];

P_{po} – energy requirement for the building after renovation, by reference to energy performance certificate data [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**1.1.2**		**Title of measure:**		**Improvements in the thermal performance of buildings – Single-family buildings (SFB)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		Single-family Building Insulation Support Programme
Measure lasting from: (year)	2016		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	46 %	11 %	0 %	43 %	2016 survey by the Slovak Innovation and Energy Agency

Characteristics of the measure (including eligible activities)	Renovation of single-family buildings.
	Nature of measure: (b) funding schemes – grant from the Single-family Building Insulation Support Programme via the Ministry of Transport, Construction and Regional Development. A grant is awarded for up to 30 % of the eligible costs of thermal insulation, up to a maximum of EUR 6 000 per single-family building. An allowance of up to EUR 500 is also granted for the production of design documentation and an energy performance certificate. The programme budget is EUR 30 million.
	Supported/eligible activities are mainly focused on: (a) improvements in the thermal performance of buildings.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[2] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;
Detailed description of the method to calculate energy savings	The energy saving is the difference between the heat required for space heating in the original condition of the building and the heat required for space heating after its renovation, as set out in the renovation project (improvement in the building's thermal performance). Data on heat required for space heating annually prior to the implementation of the renovation project and the planned heat required for space heating after renovation is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application.
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring is carried out by the provider of the allowance and via the INFOREG information system after the energy performance certificate has been issued. Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from the INFOREG system to the energy efficiency monitoring system (MSEE). Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten energy classes used for expert estimates under Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activity carried out by the administrator of the Single-family Building Insulation Support Programme (the Ministry of Transport and Construction) is demonstrably material, particularly the provision of financial resources and the management of the process for the use of those

[2] EED – Directive 2012/27/EU on energy efficiency

	funds.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. Not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The programme complies with the relevant provisions of Act No 555/2005 on the energy performance of buildings and amending certain laws, as amended, and Implementing Decree of the Ministry of Transport, Construction and Regional Development of the Slovak Republic No 342/2015 on details of the amount of the allowance for the insulation of a single-family building and on the requirements of an application for an allowance for the insulation of a single-family building.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) They are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.1.2**	**Title of measure:**	**Improvements in the thermal performance of buildings – Single-family buildings**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks, government premiums

$$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$$

where

$\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – heat required for the space heating of a building prior to renovation – standardised heat requirement for the original condition of the building [kWh/(m^2.a)];

P_{po} – energy required for a building after renovation – standardised heat requirement for space heating in light of the post-renovation condition of the building [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Note: If the energy saving is provided by the programme administrator as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**1.2.1**		**Title of measure:**		**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:	**State Housing Development Fund**				
Sector:	**Buildings**		Financial mechanism:		SHDF
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Major renovation of apartment buildings with a minimum 35 % saving in the heat required for space heating. Nature of measure: (b) funding scheme – soft loans with reduced interest, granted by the State Housing Development Fund for the renovation of buildings resulting in a 35 % reduction in the heat required for space heating compared to the original condition. Supported/eligible activities are mainly focused on: a) improvements in the thermal performance of buildings The State Housing Development Fund was established in 1996 under Act No 124/1996 on the State Housing Development Fund. It provides support for the expansion and modernisation of housing stock, particularly in the form of long-term loans with lower interest rates than commercial banks. It provides support for the renovation of apartment buildings in accordance with Act No 150/2013 on the State Housing Development Fund, as amended by Act No 276/2015 and Implementing Decree of the Ministry of Transport and Construction No 284/2013 on details of the amount of support granted from the State Housing Development Fund, the general terms and conditions for the granting of support, and the content of an application, as amended by Implementing Decree No 341/2015, in the form of a loan covering up to 75 % of the eligible expenditure on the insulation of a building's external structures, where appropriate in combination with the modernisation of the building's communal technical systems. The maximum interest rate is 2 %. It is reduced when multiple renovation activities are combined for a building. Loans are repayable over 20 years. Financial resources are provided from Slovakia's central government budget. If the prescribed conditions are met, it is possible to forgo repayment of up to 10 % of the loan principal if the heat required for the space heating of an apartment building or multipurpose building is lower than or equal to 28.0 kWh/(m^2.a). The State Housing Development Fund also grants other soft loans that are not included in this measure.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[3] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a)* *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; *(b)* *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts;
Detailed description of the method to calculate energy savings	The energy saving is the difference between the heat required for space heating in the original condition of the apartment building and the heat required for space heating after its renovation, as set out in the renovation project. Only apartment buildings that have actually undergone and completed insulation in a given year are counted towards the savings target for that calendar year. Buildings that have signed a loan agreement or draw on a loan during renovation but do not complete renovation are not counted.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements and for activity (a), the average day degrees applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the MSEE system via a data link between the State Housing Development Fund and the Slovak Innovation and Energy Agency, or by the Agency's specialist staff. The quality of data on energy requirements before and after renovation is the responsibility of the professionally competent persons who drew up

[3] EED – Directive 2012/27/EU on energy efficiency

	the renovation project. The Slovak Innovation and Energy Agency also runs checks further to its mandate under an agreement on cooperation between the Agency and the State Housing Development Fund and under the loan agreement between the Fund and the support applicant. Checks are also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	This measure includes the monitoring of the actual saving achieved and comparisons with the savings planned, covering the three years after the thermal insulation has been installed. The measure will continue in the coming period. The State Housing Development Fund is preparing not only new soft loans and procedures, but also an expansion in the monitoring of energy consumption, e.g. to include rental apartments.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	The duplication of energy savings is generally prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each apartment building. Savings are included in only one of the relevant measures.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activities of the State Housing Development Fund, as an institution established by the State (which contributes to its activities) are demonstrably material, particularly in the provision of financial resources and the management of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The use of support follows the procedure laid down in Act No 150/2013 on the State Housing Development Fund, as amended by Act No 276/2015 and Implementing Decree of the Ministry of Transport, Construction and Regional Development No 284/2013 on details of the amount of support granted from the State Housing Development Fund, the general terms and conditions for the granting of support, and the content of an application, as amended by Implementing Decree No 341/2015. When renovating a building, it is necessary to demonstrate minimum energy savings of 35 % for space heating. If renovation is carried out on the basis of a building permit, the applicant must submit an energy performance certificate after the actual completion of insulation as part of the final approval process.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.2.1**	**Title of measure:**	**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:	**State Housing Development Fund**		
Sector:	**Buildings**	Financial mechanism:	SHDF

$$ÚS_{i\_plán} = (P_{pred} - P_{po}) \bullet CPP$$

Where:

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Measure	**1.2.2**		**Title of measure:**		**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:	**JESSICAI, JESSICAII, JESSICAIII**				
Sector:	**Buildings**		Financial mechanism:		State Housing Development Fund – JESSICA I, II, III,
Measure lasting from: (year)	2013		to: (year)		2017 (2015+2)
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Major renovation of apartment buildings with a minimum 20 %, or 35 %, saving in the heat required for space heating. Nature of measure: (b) funding scheme – soft loans with reduced interest, granted by the State Housing Development Fund for the renovation of buildings resulting in a 20 %, or 35 %, reduction in the heat required for space heating compared to the original condition. Supported/eligible activities are mainly focused on: (a) improvements in the thermal performance of buildings The State Housing Development Fund was established in 1996 under Act No 124/1996 on the State Housing Development Fund. It provides support for the expansion and modernisation of housing stock, particularly in the form of long-term loans with lower interest rates than commercial banks. This measure only includes apartment buildings that are granted insulation-related loans sourced from EU funds in the 2007-2013 programming period, i.e. they are resources planned in the Regional Operational Programme (ROP) and the Operational Programme Bratislava Region (OPBK), as well as additional resources from the transfer of unspent funds under the operational programmes ROP, OPBK, and the Operational Programme Competitiveness and Economic Growth (OP KaHR). These financial resources are provided for this purpose via the innovative JESSICA financial instrument, with a separate block of finance being set up for the implementation of this instrument under the State Housing Development Fund. The State Housing Development Fund may grant a loan of up to 75 % of the total cost of the renovation of apartment buildings. If the prescribed conditions are met, it is possible to forgo repayment of up to 10 % of the loan principal if the heat required for the space heating of an apartment building or multipurpose building is lower than or equal to 28.0 kWh/(m^2.a). These financial resources are provided exclusively from the central government budget. The State Housing Development Fund also grants other soft loans that are not included in this measure.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[4] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a)* *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; *(b)* *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts;
Detailed description of the method to calculate energy savings	The energy saving is the difference between the heat required for space heating in the original condition of the apartment building and the heat required for space heating after its renovation, as set out in the renovation project. Only apartment buildings that have actually undergone and completed insulation in a given year are counted towards the savings target for that calendar year. Buildings that have signed a loan agreement or draw on a loan during renovation but do not complete renovation are not counted.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements and for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the MSEE system via a data link between the State Housing Development Fund and the Slovak Innovation and Energy Agency, or by the Agency's specialist staff. The quality of data on energy requirements before

[4] EED – Directive 2012/27/EU on energy efficiency

	and after renovation is the responsibility of the professionally competent persons who drew up the renovation project. The Slovak Innovation and Energy Agency also runs checks further to its mandate under an agreement on cooperation between the Agency and the State Housing Development Fund and under the loan agreement between the Fund and the support applicant. Checks are also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	This measure is tied to the 2007-2013 programming period, but additional resources from the Operational Programme Competitiveness and Economic Growth and the Operational Programme Bratislava Region were allocated under the JESSICA III project that can be used up in a future period. This measure is continued after 2014 in the form of Measure 1.2.3.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	The duplication of energy savings is generally prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each apartment building. Savings are included in only one of the relevant measures.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activities of the State Housing Development Fund, as an institution established by the State (which contributes to its activities) are demonstrably material, particularly in the provision of financial resources and the management of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The use of support follows the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund, the rules of the JESSICA financial mechanism and State aid rules. Quality control and sanctions are set out in specific loan agreements. If renovation is carried out on the basis of a building permit, the applicant must submit an energy performance certificate after the actual completion of insulation as part of the final approval process.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.2.2**	**Title of measure:**	**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:	**JESSICAI, JESSICAII, JESSICAIII**		
Sector:	**Buildings**	Financial mechanism:	State Housing Development Fund – JESSICA I, II, III
$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$			
where:			

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Measure	**1.2.3**		**Title of measure:**		**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:	**ŠFRB2017, ŠFRB2018, ŠFRB2019, ŠFRB2020**				
Sector:	**Buildings**		Financial mechanism:		IROP 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Major renovation of apartment buildings with a minimum 35 % saving in the heat required for space heating. Nature of measure: (b) funding scheme – soft loans with reduced interest, granted by the State Housing Development Fund for the renovation of buildings resulting in a 35 % reduction in the heat required for space heating compared to the original condition. Supported/eligible activities are mainly focused on: (a) improvements in the thermal performance of buildings The State Housing Development Fund was established in 1996 under Act No 124/1996 on the State Housing Development Fund. It provides support for the expansion and modernisation of housing stock, particularly in the form of long-term loans with lower interest rates than commercial banks. This measure only includes apartment buildings that are granted insulation-related loans sourced from EU funds in the 2007-2013 programming period, i.e. they are resources planned in the Integrated Regional Operational Programme (IROP). The State Housing Development Fund may grant a loan of up to 75 % of the total cost of the renovation of apartment buildings. If the prescribed conditions are met, it is possible to forgo repayment of up to 10 % of the loan principal if the heat required for the space heating of an apartment building or multipurpose building is lower than or equal to 28.0 kWh/(m^2.a). These financial resources are provided exclusively from the central government budget. The State Housing Development Fund also grants other soft loans that are not included in this measure.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[5] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a) ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; *(b) ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts;
Detailed description of the method to calculate energy savings	The energy saving is the difference between the heat required for space heating in the original condition of the apartment building and the heat required for space heating after its renovation, as set out in the renovation project. Only apartment buildings that have actually undergone and completed insulation in a given year are counted towards the savings target for that calendar year. Buildings that have signed a loan agreement or draw on a loan during renovation but do not complete renovation are not counted.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements and for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the MSEE system via a data link between the State Housing Development Fund and the Slovak Innovation and Energy Agency, or by the Agency's specialist staff. The quality of data on energy requirements before and after renovation is the responsibility of the professionally competent persons who drew up the renovation project. The Slovak Innovation and Energy Agency also runs checks further to its mandate under an agreement on cooperation between the Agency and the State Housing Development Fund and under the loan agreement between the Fund and the support applicant. Checks are also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a

[5] EED – Directive 2012/27/EU on energy efficiency

	statistically significant share of measures to be checked.
Overall evaluation and way forward	By the end of 2016, no projects had been implemented under this measure. The signing of the first loan agreements and project implementation are expected in 2017.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	The duplication of energy savings is generally prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each apartment building. Savings are included in only one of the relevant measures.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Complementarity is not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Complementarity of the measure	Complementarity is not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The use of support follows the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2014-2020 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific loan agreements. If renovation is carried out on the basis of a building permit, the applicant must submit an energy performance certificate after the actual completion of insulation as part of the final approval process.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures and compliance with the trajectory for the energy savings target under Article 7 up to 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) – *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.2.3**	**Title of measure:**	**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:	**ŠFRB2017, ŠFRB2018, ŠFRB2019, ŠFRB2020**		
Sector:	**Buildings**	Financial mechanism:	– IROP 2014-2020

$$ÚS_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$$

where:

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Measure	**1.2.4**		**Title of measure:**		**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, government premiums, commercial banks
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014
Characteristics of the measure (including eligible activities)	Major renovation of apartment buildings, reducing the heat required for space heating and other energy efficiency measures, e.g. involving building technical systems, financed mainly with the renovator's own funds and building society savings schemes.				
	Nature of measure: (b) fiscal stimuli – government premiums as part of building society saving schemes; (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are set at the level of minimum requirements for new buildings, the hydronic balancing of heat and hot water distribution, the insulation of hot water distribution systems, and the obligation to comply with normative heat consumption under Act No 657/2004 on thermal energy for selected building systems supplied with district heating); (f) training, education – consulting, seminars, conferences and information campaigns.				
	The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings (energy performance certificates – INFOREG data); and other energy efficiency measures (MSEE data): (b) hydronic balancing of space heating, including thermostatic valves; (c) hydronic balancing and insulation of hot water distribution systems; (d) measures deriving from the Thermal Energy Act in connection with the obligation to comply with normative heat consumption for selected building systems supplied with district heating.				
Evaluation of the measure	Bottom-up, via individual projects				
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[6] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings for activities under point (a): (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; Methods for the calculation of energy savings for activities under points (a) to (d): (c) *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts;				
Detailed description of the method to calculate energy savings	The energy saving for improvements in the thermal performance of buildings (activity (a) – insurance) is determined as the difference in the apartment building's energy requirements in its original condition and after renovation, according to the energy performance certificate. Energy savings from other activities, such as a major renovation of a building under the previous point, are determined by the actual energy consumption, established by measurements before and after the implementation of the energy efficiency EE measure. Energy consumption data is provided by apartment building owners/managers to the MSEE in accordance with Section 11(2) of Act No 321/2014 on energy efficiency. Savings are calculated as the difference between average energy consumption over the three years prior to the implementation of the energy efficiency measure and energy consumption in the year following the implementation of the measure. If energy savings calculated in this way are at least 5 % and not more than 20 %, the full amount is counted towards the target under Article 7 of the Directive. In the calculation of energy savings, climate impacts are taken into account via degree days. Energy savings of less than 5 % are considered to be savings achieved by user behaviour and are not counted towards the target under Article 7 of the Directive. Energy savings of more than 20 % are generally achievable by the major renovation of a building and, in order to avoid duplication with savings determined by energy certification, they are also not counted towards the target under Article 7 of the Directive.				

[6] EED – Directive 2012/27/EU on energy efficiency

Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings, the average energy requirements applicable to the building in its original condition (based on the year of construction and the technical standards applicable to the given building category at the time) will be used. The average figure for the original condition of the building is a value corresponding to the upper limit of energy class D (Implementing Decree of the Ministry of Transport and Construction No 364/2012). Estimates need to be used as no data on the original condition of renovated buildings is available and additional surveying of energy consumption data is demanding and unreasonably costly. In the calculation of energy requirements and for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used. In the calculation of energy savings according to actual consumption (activities (b) to (d)), the value of degree days for the district to which the building specifically belongs is used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Actual energy consumption data is entered in the MSEE by the apartment building owner/manager. Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from the INFOREG system to the energy efficiency monitoring system (MSEE). Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	There is a potential overlap with measures 1.2.1 to 1.2.3.
Method to avoid duplication	This measure (1.2.4) also takes into account the results for measures 1.8, 1.9, 1.10 and 1.11, taken together, which are not quantified separately in order to avoid duplication. In the identification of savings for apartment buildings with an allowance from the State Housing Development Fund, the relevant saving is included in measures 1.2.1 to 1.2.3 due to the quite specific source of funding. The duplication of the energy savings made by overlapping measures is prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each apartment building. Savings are included in only one of the measures, according to the above-mentioned priorities.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Under the Act on Building Society Savings Schemes (Act No 310/1992), Slovakia grants government premiums for building society savings schemes, with funding earmarked annually in the central government budget. Compliance with the conditions of building society savings schemes is supervised by the Ministry of Finance. The hydronic balancing of space heating and hot water distribution systems and the installation of appropriate thermal insulation for heat and hot water distribution systems are obligations laid down by Act No 321/2014 on energy efficiency for buildings with a total floor area of more than 1 000 m^2, to be fulfilled by the end of 2015 and 2017, respectively. Act No 657/2004 on thermal energy (Article 25(1)) establishes the obligation for the final heat customer to comply with normative heat consumption values according to a special regulation (Annex 2 to the Implementing Decree of the Regulatory Office for Network Industries No 328/2005). To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in single-family buildings, publications have been issued and disseminated, such as 'Insulation and Window Replacement in Single-family Buildings' and 'How to Reduce Household Electricity Consumption'. Cost breakdown of heat and hot water in apartment buildings. It is only through these State-initiated synergic support measures that investment activities in the renovation and construction of buildings and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The savings made by this measure are included if a major renovation is performed under an issued energy performance certificate that the owners would not have carried out had the

	State not intervened, i.e. they would only have dealt with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement). The measure takes into account total energy savings, representing the difference between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Any savings made by replacing existing light sources are not included among energy savings based on energy performance certificate data because the point of lighting consumption is not assessed in apartment buildings. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply are not individually identifiable from available energy performance certificate data and, according to expert estimates, are negligible compared with the energy savings achievable by means of insulation.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If the renovation of an apartment building is carried out on the basis of a building permit, the applicant must submit an energy performance certificate after the actual completion of insulation as part of the final approval process. If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued. The implementation of energy efficiency measures by means of the hydronic balancing of space heating and hot water distribution systems, and by fitting heat and hot water distribution systems with appropriate thermal insulation in accordance with Act No 321/2014 on energy efficiency is checked by the Slovak Trade Inspectorate, which imposes the sanctions provided for by this Act if the obligation is not fulfilled.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS and INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.2.4**	**Title of measure:**	**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, government premiums, commercial banks

$$ÚS_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$$

where, for the calculation of savings under activities referred to in point (a) (thermal insulation – energy performance certificates):

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

$\acute{U}S_{i\_skut} = (S_{pred} - S_{po})$	
where, for the calculation of savings under activities referred to in points (b) to (d):	
ÚS $_{i\_skut}$ –	actual energy saving (final energy consumption) after a year of implementation of the energy efficiency measure [kWh/a];
S_{pred} –	average annual energy consumption (typically over three years) for the building before the implementation of energy efficiency measures – energy consumption measured for the original condition [kWh/a];
S_{po} –	annual energy consumption for the building after the implementation of energy efficiency measures – energy consumption measured for the condition after the implementation of energy efficiency measures, corrected for degree days, typically for at least one year after the implementation of the energy efficiency measures [kWh/a]

Measure	**1.2.5**		**Title of measure:**		**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		SlovSEFF II
Measure lasting from: (year)	2010		to: (year)		2016
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	The minimum energy saving, determined as the difference in the total energy supplied before and after the renovation (reconstruction) of the building, that needs to be achieved is 15 % of the total energy supplied prior to renovation
	Nature of measure: (a) funding scheme – SlovSEFF II, SlovSEFF, a means for financing sustainable energy projects, has been developed by the European Bank for Reconstruction and Development (EBRD). SlovSEFF was launched with a value of EUR 60 million and was extended in 2010 with additional funding sources of EUR 90 million from the EBRD, intended for local banks. The funding source for grants and technical assistance was the Bohunice International Decommissioning Support Fund (BIDSF). The contribution takes the form of a loan via contracted commercial banks. If the required level of energy savings is achieved, the grant is up to 10 %. If the level of energy savings achieved is 15 %, the grant is up to 25 %. If the level of energy savings achieved is more than 25 %, the grant is up to 15 %.
	Supported/eligible activities are mainly focused on: — improvement in the thermal insulating properties of building cladding, investments in building boiler rooms, exchanger stations or microcogeneration, the regulation of central and local heating systems, secondary heat measurement, insulation of energy distribution systems in the building, efficient heating bodies, energy efficient hot water production in buildings, the use of alternative energy sources in buildings
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[7] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a) ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; *(b) ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts;
Detailed description of the method to calculate energy savings	The energy saving is the difference between the heat required for space heating in the original condition of the apartment building and the heat required for space heating after its renovation, as set out in the renovation project. Only apartment buildings that have actually undergone and completed insulation in a given year are counted towards the savings target for that calendar year. Buildings that have signed a loan agreement or draw on a loan during renovation but do not complete renovation are not counted.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements and for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). The building manager/owner provides the MSEE operator with energy consumption data for five years. Checks are also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	An additional benefit for applicants is free technical assistance, including the production of an energy audit by the design consultant. The SlovSEFF II measure will be replaced by a very similar measure, SlovSEFF III (1.2.6).
Projected overlapping with another measure –	None foreseen.

[7] EED – Directive 2012/27/EU on energy efficiency

duplication	
Method to avoid duplication	The duplication of energy savings is generally prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each apartment building. Savings are included in only one of the relevant measures.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Activity carried out by the Ministry of Economy, as the BIDSF administrator, is demonstrably material, particularly the provision of financial resources and the control of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Projects are implemented in accordance with SlovSEFF II conditions. The minimum energy saving that needs to be achieved is 15 % of the total energy supplied, as established prior to renovation; this is determined as the difference in the total energy supplied before and after the renovation (reconstruction) of the building. If energy savings of 15-20 % are achieved, a grant of 10 % of the loan can be claimed. If energy savings of 25 % are achieved, a grant of 15 % of the loan can be claimed. Eligibility for a grant is confirmed by the design consultant.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V to the EED. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at programme level (design and verification consultant) and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.2.5**	**Title of measure:**	**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	SlovSEFF II

$$\text{ÚS}_{i\_plán} = P_{pred} - P_{po}$$

where:

$\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building reconstruction [kWh/a];

P_{pred} – energy requirement for the building prior to reconstruction – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy requirement for the building prior to reconstruction – standardised energy requirement for the new condition of the building [kWh/a];

Note: If the energy saving is provided by the programme consultant as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**1.2.6**		**Title of measure:**		**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		SlovSEFF III
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	The minimum energy saving that needs to be achieved is 30 % of the total energy supplied, evaluated as the difference between the amount before and after the reconstruction. Nature of measure: — funding schemes – SlovSEFF III is a loan-based instrument for the financing of sustainable energy projects developed by the European Bank for Reconstruction and Development (EBRD) in cooperation with the Ministry of the Environment of the Slovak Republic and the Ministry of Agriculture, Food and the Environment of Spain, which finance programme grants and technical assistance. The EBRD provided EUR 40 million for loan financing. The Spanish government provided EUR 5 693 800 for grants and another EUR 2 million for technical assistance (consulting, energy auditing arrangements, etc.). Of this, about 20 % is intended for apartment buildings. The loan is granted by contracted commercial banks and the applicant is entitled to a grant upon reaching the required level of energy savings. Grants are funded from the profits of innovative emission credit transactions between the Slovak and Spanish governments. Under the terms of the contract, Slovakia allocated profits from the sale of permits to projects aimed at reducing additional greenhouse gas emissions in Slovakia. Only private sector entities, including housing companies and cooperatives, are eligible applicants. Supported/eligible activities are mainly focused on: — improvements in the thermal performance of apartment buildings, consisting of the thermal insulation of the external skin (perimeter walls, roofs, cellars), with other measures such as: highly efficient ventilation with heat recovery, efficient boilers, micro-cogeneration, heat transfer stations and heat meters, heating system regulation, individual heat consumption measurement systems, new energy-efficient windows (in all of the building's apartments), new energy-efficient radiators and other units for space heating, the insulation of heat and hot water distribution systems —
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[8] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a)* *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; *(b)* *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts;
Detailed description of the method to calculate energy savings	The energy saving is the difference between the heat required for space heating in the original condition of the apartment building and the heat required for space heating after its renovation, as set out in the renovation project. Only apartment buildings that have actually undergone and completed insulation in a given year are counted towards the savings target for that calendar year. Buildings that have signed a loan agreement or draw on a loan during renovation but do not complete renovation are not counted.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements and for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). The building manager/owner provides the MSEE operator with energy consumption data for five years. Checks are also conducted as part of the preparation of action plans and the annual report. As

[8] EED – Directive 2012/27/EU on energy efficiency

	measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	The duplication of energy savings is generally prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each apartment building. Savings are included in only one of the relevant measures.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activity of the Ministry of the Environment, as the ministry responsible for the sale of emission permits, from the proceeds of which grants are financed under the funding scheme in question, is demonstrably material, in particular by securing financial resources and controlling the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Projects are implemented in accordance with SlovSEFF III conditions. The minimum energy saving that needs to be achieved is 30 % of the total energy supplied, as established prior to renovation; this is determined as the difference in the total energy supplied before and after the renovation (reconstruction) of the building. If energy savings of 30-40 % are achieved, a grant of 10 % of the loan can be claimed. If energy savings of 40 % are achieved, a grant of 15 % of the loan can be claimed. Eligibility for a grant is confirmed by the verification consultant (ALLPLAN).
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of the Environment. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at programme level (design and verification consultant) and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.2.6**	**Title of measure:**	**Improvements in the thermal performance of buildings – Apartment buildings**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	SlovSEFF III

$$\text{ÚS}_{i\_plán} = P_{pred} - P_{po}$$

where:

$\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building reconstruction [kWh/a];

P_{pred} – energy requirement for the building prior to reconstruction – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy requirement for the building prior to reconstruction – standardised energy requirement for the new condition of the building [kWh/a];

Note: If the energy saving is provided by the programme consultant as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**1.2.7**		**Title of measure:**		**Improvements in the thermal performance of buildings (apartment buildings)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		MunSEFF
Measure lasting from: (year)	2011		to: (year)		2015
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	The main objective of the programme is to stimulate the energy-efficient renovation of municipal infrastructure, especially in cases where there is high potential to achieve savings in the residential buildings sector
	Nature of measure: (b) funding schemes – credit line to support the development of energy efficiency and renewable energy sources among towns and municipalities in Slovakia;
	Supported/eligible activities are mainly focused on: — eligible MunSEFF projects for component 2 – energy efficiency projects for apartment buildings – heat production for space heating and water heating, replacement of windows and transparent parts of the building envelope, thermal insulation of the external skin
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[9] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a)* *ex ante* – projected savings – to determine the original condition of the building according to the year of construction and the technical standards applicable at the time, and the new condition of the building, using a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing thermal performance of the building *(b)* *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts;
Detailed description of the method to calculate energy savings	Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is part of the grant application. Grant eligibility depends on minimum energy savings of 30 % compared to the original energy consumption.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by reference to knowledge on the current state of the art and the projected developments in science and technology.
Monitoring, control and verification of the energy savings made	The verification consultant (ALLPLAN) monitors the achievement of the planned energy consumption. Data for the energy efficiency monitoring system operator is provided by the design consultant (ENVIROS/ESG). Checks are also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure was completed in 2015. Replacement with SlovSEFF III is relevant to apartment buildings.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	The duplication of energy savings is generally prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each apartment building. Savings are included in only one of the relevant measures.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The MunSEFF support providers are the European Bank for Reconstruction and Development and the European Commission. The programme implementers are Slovenská sporiteľňa a.s. and Všeobecná úverová banka a.s. For projects to improve the energy efficiency of apartment buildings, the design consultant (ESG/ENVIROS) conducts an energy audit. If the client already has a clearly defined project

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	scope presented in the appropriate form, the design consultant proceeds directly to the production of a Rational Energy Utilisation Plan (REUP), which includes the results of the energy audit, and describes the financing plan and timetable for implementation. It also incorporates proposed measures related to the investor's plan, as well as compliance with environmental standards. If required, the design consultant assists the client when applying for a loan. The activities of these entities are demonstrably material to the achievement of the planned energy savings.
Complementarity of the measure	Complementarity is not applicable. The measure would not be implemented without a funding scheme. Were it not for intervention by the EBRD and the Commission, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Grant levels relative to the loan principal are set according to the components of each project: component 2 – the grant level ranges from 10 % to 15 % of the loan principal
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at programme level (design and verification consultant) and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.2.7**	**Title of measure:**	**Improvements in the thermal performance of buildings (apartment buildings)**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	MunSEFF

$$\text{ÚS}_{i\_plán} = P_{pred} - P_{po}$$

where:

ÚS $_{i\_plán}$ – planned energy saving (final energy consumption) in the year in which improvements are made to the energy efficiency of an apartment building [GJ/a];

P_{pred} – energy requirement for the project prior to renovation – for the original condition [GJ/a];

P_{po} – energy requirement for the project after renovation – for the new condition [GJ/a];

Note: The energy saving is provided by the programme consultant as a resultant value in GJ. After conversion to a unified physical unit, that value is used in the pursuit of the target under Article 7 of the Directive

Measure	**1.3.1**		**Title of measure:**		**Improvements in the thermal performance of buildings – Office buildings (OB)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Renovation of office buildings
	Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are established on a par with minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.
	The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[10] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;
Detailed description of the method to calculate energy savings	The energy saving for improvements in the thermal performance of buildings is determined as the difference in the heat required for space heating in the building's original condition and after renovation, according to the energy performance certificate. The INFOREG IS operated by the Ministry of Transport, Construction and Regional Development is used as a data source.
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings, the average heat requirements for space heating applicable to the building in its original condition (based on the year of construction and the technical standards applicable to the given building category at the time) will be used. The average figure for the original condition of the office building is a value corresponding to the upper limit of energy class D (Implementing Decree of the Ministry of Transport and Construction No 364/2012). Estimates need to be used as no data on the original condition of renovated office buildings is available and additional surveying of energy consumption data is demanding and unreasonably costly. In the calculation of heat required for space heating, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the INFOREG and MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from INFOREG to MSEE. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with	There is a potential overlap with measures funded from the 2007-2013 Structural Funds, the

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another measure – duplication	2014-2020 ESIF and EPC for public sector office buildings.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for identifiable financial mechanisms (public sector measures) and related to office buildings are deducted in full from the savings determined for this measure (1.3.1).
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that owners are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in buildings, publications have been issued and disseminated, such as Insulation and Window Replacement in Office Buildings. It is only through these State-initiated synergic support measures that investment activities in the renovation and construction of office buildings and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The savings made by improvements in the thermal performance of buildings are only included if a major renovation is performed under an issued energy performance certificate that the owners would not have carried out to the required extent had the State not intervened, i.e. they would only have dealt with energy-saving measures with a short payback period (e.g. window replacement). The measure takes into account energy savings, representing the difference in the heat required for space heating between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS and INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.3.1**	**Title of measure:**	**Improvements in the thermal performance of buildings – Office buildings**
MSEE ID:			

Sector:	Buildings	Financial mechanism:	own funds, commercial banks
$\acute{U}S_{i\_plán} = (P_{pred} - P_{po}) \bullet CPP$			
where ÚS $_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a]; P_{pred} – heat required for the space heating of a building prior to renovation – average heat required for space heating in the original condition condition [kWh/(m^2.a)]; P_{po} – heat required for space heating in the building after renovation, by reference to energy performance certificate data [kWh/(m^2.a)]; CPP – total floor area of the building, as per the energy performance certificate [m^2].			

Measure MSEE ID:	1.3.4a				Title of measure:	Improvements in the thermal performance of buildings – Hotels and restaurants
Sector:	Buildings				Financial mechanism:	own funds, commercial banks
Measure lasting from: (year)	2014				to: (year)	2020
Responsible:	Ministry of Transport and Construction				Measure to comply with Article 7 of Directive 2012/27/EU:	Yes
					Policy measure classification:	Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7				Compliance with Article 7(10)	Yes
Form of energy:	Natural gas	Electricity	Heat	Other:		
Breakdown (%) by form of energy	40.02 %	42.84 %	4.91 %	12.22 %		Statistical Office, Slovstat
Characteristics of the measure (including eligible activities)	Renovation of hotels and restaurants.					
	Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are established on a par with minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.					
	The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings.					
Evaluation of the measure	Bottom-up, via individual projects					
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[11] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;					
Detailed description of the method to calculate energy savings	The energy saving for improvements in the thermal performance of buildings is determined as the difference in the heat required for space heating in the building's original condition and after renovation, according to the energy performance certificate. The INFOREG IS operated by the Ministry of Transport, Construction and Regional Development is used as a data source.					
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings, the average heat requirements for space heating applicable to the building in its original condition (based on the year of construction and the technical standards applicable to the given building category at the time) will be used. The average figure for the original condition of hotels and restaurants is a value corresponding to the upper limit of energy class D (Implementing Decree of the Ministry of Transport and Construction No 364/2012). Estimates need to be used as no data on the original condition of renovated hotels and restaurants is available and additional surveying of energy consumption data is demanding and unreasonably costly. In the calculation of heat required for space heating, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.					
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the INFOREG and MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from INFOREG to					

[11] EED – Directive 2012/27/EU on energy efficiency

	MSEE. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	There is a potential overlap with measures 3.9 to 3.14.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for individual financial mechanisms (in particular public sector measures financed via the Environmental Fund, EkoFond, MunSEFF and the EBRD) and relating to hotels and restaurants are calculated separately on the basis of data from the individual administrators of relevant funds, and are deducted in full from savings identified in the INFOREG database by the procedure specified in this method sheet.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that owners are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). It is only through these State-initiated synergic support measures that investment activities in the renovation and construction of hotels and restaurants and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The savings made by improvements in the thermal performance of buildings are only included if a major renovation is performed under an issued energy performance certificate that the owners would not have carried out to the required extent had the State not intervened, i.e. they would only have dealt with energy-saving measures with a short payback period (e.g. window replacement). The measure takes into account energy savings, representing the difference in the heat required for space heating between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS and INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking

	was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.3.4a**	**Title of measure:**	**Improvements in the thermal performance of buildings – Hotels and restaurants**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks
$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$			
where: ÚS $_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a]; P_{pred} – heat required for the space heating of a building prior to renovation – average heat required for space heating for the original condition of the building [kWh/(m^2.a)]; P_{po} – heat required for space heating in the building after renovation, by reference to energy performance certificate data [kWh/(m^2.a)]; CPP – total floor area of the building, as per the energy performance certificate [m^2].			

Measure	**1.3.5**		**Title of measure:**		**Improvements in the thermal performance of buildings – Retail and wholesale**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	40.02 %	42.84 %	4.91 %	12.22 %	Statistical Office, Slovstat

Characteristics of the measure (including eligible activities)	Renovation of retail and wholesale buildings.
	Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are established on a par with minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.
	The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[12] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building
Detailed description of the method to calculate energy savings	The energy saving for improvements in the thermal performance of buildings is determined as the difference in the heat required for space heating in the building's original condition and after renovation, according to the energy performance certificate. The INFOREG IS operated by the Ministry of Transport, Construction and Regional Development is used as a data source.
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings, the average heat requirements for space heating applicable to the building in its original condition (based on the year of construction and the technical standards applicable to the given building category at the time) will be used. The average figure for the original condition of retail and wholesale buildings is a value corresponding to the upper limit of energy class D (Implementing Decree of the Ministry of Transport and Construction No 364/2012). Estimates need to be used as no data on the original condition of renovated retail and wholesale buildings is available and additional surveying of energy consumption data is demanding and unreasonably costly. In the calculation of heat required for space heating, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the INFOREG and MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from INFOREG to MSEE. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten energy classes used for expert estimates under Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	There is a potential overlap with measures 3.9 to 3.14.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for individual financial mechanisms (in particular public sector

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	measures financed via the Environmental Fund, EkoFond, MunSEFF and the EBRD) and relating to retail and wholesale buildings are calculated separately on the basis of data from the individual administrators of relevant funds, and are deducted in full from savings identified in the INFOREG database by the procedure specified in this method sheet.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that owners are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). It is only through these State-initiated synergic support measures that investment activities in the renovation and construction of retail and wholesale buildings and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The savings made by improvements in the thermal performance of buildings are only included if a major renovation is performed under an issued energy performance certificate that the owners would not have carried out to the required extent had the State not intervened, i.e. they would only have dealt with energy-saving measures with a short payback period (e.g. window replacement). The measure takes into account energy savings, representing the difference in the heat required for space heating between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.3.5**	**Title of measure:**	**Improvements in the thermal performance of buildings – Retail and wholesale**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks
$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$			

where
$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];
P_{pred} – heat required for the space heating of a building prior to renovation – average heat required for space heating for the original condition of the building [kWh/(m^2.a)];
P_{po} – heat required for space heating in the building after renovation, by reference to energy performance certificate data [kWh/(m^2.a)];
CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**1.3.6**		**Title of measure:**		**Improvements in the thermal performance of buildings – Sports halls and other buildings intended for sport**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	57.37 %	7.28 %	35.05 %	0.31 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Renovation of sports halls and other buildings intended for sport.
	Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are established on a par with minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.
	The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[13] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building
Detailed description of the method to calculate energy savings	The energy saving for improvements in the thermal performance of buildings is determined as the difference in the heat required for space heating in the building's original condition and after renovation, according to the energy performance certificate. The INFOREG IS operated by the Ministry of Transport, Construction and Regional Development is used as a data source.
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings, the average heat requirements for space heating applicable to the building in its original condition (based on the year of construction and the technical standards applicable to the given building category at the time) will be used. The average figure for the original condition of sports halls and other buildings intended for sport is a value corresponding to the upper limit of energy class D (Implementing Decree of the Ministry of Transport and Construction No 364/2012). Estimates need to be used as no data on the original condition of renovated sports halls and other buildings intended for sport is available and additional surveying of energy consumption data is demanding and unreasonably costly. In the calculation of heat required for space heating, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the INFOREG and MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from INFOREG to MSEE. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten energy classes used for expert estimates under Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	There is a potential overlap with measures funded from the 2007-2013 Structural Funds, the 2014-2020 ESIF and EPC for public sector sports halls and other buildings intended for sport.

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Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for identifiable financial mechanisms (public sector measures) and related to sports halls and other buildings intended for sport are deducted in full from the savings determined for this measure (1.3.6).
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that owners are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). It is only through these State-initiated synergic support measures that investment activities in the renovation and construction of sports halls and other buildings intended for sport and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The savings made by improvements in the thermal performance of buildings are only included if a major renovation is performed under an issued energy performance certificate that the owners would not have carried out to the required extent had the State not intervened, i.e. they would only have dealt with energy-saving measures with a short payback period (e.g. window replacement). The measure takes into account energy savings, representing the difference in the heat required for space heating between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.3.6**	**Title of measure:**	**Improvements in the thermal performance of buildings – Sports halls and other buildings intended for sport**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks

$$ÚS_{i\_plán} = (P_{pred} - P_{po}) \bullet CPP$$

where

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – heat required for the space heating of a building prior to renovation – average heat required for space heating for the original condition of the building [kWh/(m^2.a)];

P_{po} – heat required for space heating in the building after renovation, by reference to energy performance certificate data [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**1.4.1**		**Title of measure:**		**New construction to a low-energy standard – Single-family buildings (RD-B)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks, government premiums
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	48 %	21 %	0 %	27 %	Expert estimate by the Slovak Innovation and Energy Agency 2016

Characteristics of the measure (including eligible activities)	Construction of new single-family buildings to a low-energy standard
	Nature of measure: (b) fiscal stimuli – government premiums as part of building society saving schemes; (c) legislative regulations – (energy performance of buildings – minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.
	The activities evaluated focused on: (a) the achievement of better energy performance than the minimum requirements for new single-family buildings under legislation of general application.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[14] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the new condition of a building is determined on the basis of a project evaluation of the overall energy required by the building, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the proposed thermal performance of the building.
Detailed description of the method to calculate energy savings	The basic data is from the energy performance certificates of new single-family buildings collected in the INFOREG information system operated by the Ministry of Transport, Construction and Regional Development. The energy saving is determined as the difference between the total energy requirement for a single-family building according to the minimum requirements at the time the building permit was issued and the actual energy requirement according to the energy performance certificate issued for final building approval. Note: For building permits issued up to 31 December 2015, the minimum requirements are at the level of the upper limit of energy class B.
Application of expert estimates and assumptions in the calculation of energy savings	Yes. In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – via the INFOREG information system. Data is entered in INFOREG by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from the INFOREG system to the energy efficiency monitoring system (MSEE). Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way	The measure will continue in the coming period. This change will tighten minimum

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forward	requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	Potential overlaps are only possible when evaluating the new construction of a single-family building under this measure and under measures 1.5 and 1.6.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by processing energy savings identified for individual single-family buildings on a project-by-project basis, i.e. for each building. Savings are only counted towards one of the possible measures (1.4, 1.5 or 1.6) according to the level of energy class achieved, which establishes a low energy, ultra-low energy or nearly zero-energy level of construction.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Under the Act on Building Society Savings Schemes (Act No 310/1992), Slovakia grants government premiums for building society savings schemes, with funding earmarked annually in the central government budget. Compliance with the conditions of building society savings schemes is supervised by the Ministry of Finance. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). It is only through these State-initiated synergic support measures that investment activities in the construction of buildings have also focused considerably on the energy efficiency of buildings.
Complementarity of the measure	Complementarity is relevant. For the purposes of Article 7 of the Directive, only energy savings that are achieved beyond the minimum requirements of Directive 2010/31/EU on the energy performance of buildings and Act No 555/2005 on the energy efficiency of buildings are counted.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	In the construction of a new building, at least the minimum energy performance requirements in accordance with Act No 555/2005 on the energy performance of buildings and Implementing Decree of the Ministry of Transport and Construction No 364/2012 must be attained. This is checked as part of the building permit and final approval procedure by the competent building authority.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.4.1**	**Title of measure:**	**New construction to a low-energy standard – Single-family buildings**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks, government premiums
$\text{ÚS}_{i\_plán} = (P_{norm} - P_{po}) \bullet CPP$			
where: $\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building construction [kWh/a];			

P_{norm} – energy required for a building according to the minimum requirement for a newbuild (the limit for a building permit to be issued in the given year) [kWh/(m^2.a)];

P_{po} – energy required for a building on completion of a newbuild, by reference to energy performance certificate data [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**1.4.2**		**Title of measure:**		**New construction to a low-energy standard – Apartment buildings (BD-B)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks, government premiums
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(b) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014
Characteristics of the measure (including eligible activities)	Construction of new apartment buildings to a low-energy standard				
	Nature of measure: (b) fiscal stimuli – government premiums as part of building society saving schemes; (c) legislative regulations – (energy performance of buildings – minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.				
	The activities evaluated focused on: (a) the achievement of better energy performance than the minimum requirements for new apartment buildings under legislation of general application.				
Evaluation of the measure	Bottom-up, via individual projects				
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[15] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the new condition of a building is determined on the basis of a project evaluation of the overall energy required by the building, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the proposed thermal performance of the building.				
Detailed description of the method to calculate energy savings	The basic data is from the energy performance certificates of new single-family buildings collected in the INFOREG information system operated by the Ministry of Transport, Construction and Regional Development. The energy saving is determined as the difference between the total energy requirement for an apartment building according to the minimum requirements at the time the building permit was issued and the actual energy requirement according to the energy performance certificate issued for final building approval. Note: For building permits issued up to 31 December 2015, the minimum requirements are at the level of the upper limit of energy class B.				
Application of expert estimates and assumptions in the calculation of energy savings	Yes. In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.				
Monitoring, control and verification of the energy savings made	Monitoring – via the INFOREG information system. Data is entered in INFOREG by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from the INFOREG system to the energy efficiency monitoring system (MSEE). Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.				
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.				
Projected overlapping with another measure – duplication	Potential overlaps are only possible when evaluating the new construction of an apartment building under this measure and under measures 1.5 and 1.6.				
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by processing energy savings identified for individual apartment buildings on a project-by-project basis, i.e. for each building. Savings are only counted towards one of the possible measures (1.4, 1.5 or 1.6) according to the level of energy class achieved, which establishes a low energy, ultra-low energy or nearly zero-energy level of construction.				
Information for the purposes of Article 7 of Directive 2012/27/EU					

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Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Under the Act on Building Society Savings Schemes (Act No 310/1992), Slovakia grants government premiums for building society savings schemes, with funding earmarked annually in the central government budget. Compliance with the conditions of building society savings schemes is supervised by the Ministry of Finance. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). It is only through these State-initiated synergic support measures that investment activities in the construction of buildings have also focused considerably on the energy efficiency of buildings.
Complementarity of the measure	Complementarity is relevant. For the purposes of Article 7 of the Directive, only energy savings that are achieved beyond the minimum requirements of Directive 2010/31/EU on the energy performance of buildings and Act No 555/2005 on the energy efficiency of buildings are counted.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	In the construction of a new building, at least the minimum energy performance requirements in accordance with Act No 555/2005 on the energy performance of buildings and Implementing Decree of the Ministry of Transport and Construction No 364/2012 must be attained. This is checked as part of the building permit and final approval procedure by the competent building authority.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.4.2**	**Title of measure:**	**New construction to a low-energy standard – Apartment buildings (RD-B)**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks, government premiums

$$\acute{U}S_{i\_plán} = \left(P_{norm} - P_{po}\right) \bullet CPP$$

where

$\acute{U}S_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building construction [kWh/a];

P_{norm} – energy required for a building according to the minimum requirement for a newbuild (the limit for a building permit to be issued in the given year) [kWh/(m^2.a)];

P_{po} – energy required for a building on completion of a newbuild, by reference to energy performance certificate data [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**1.5**		**Title of measure:**		**New construction to an ultra-low-energy standard – Single-family and apartment buildings (RDBD-A1)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks, government premiums
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	43 %	30 %	1 %	26 %	Expert estimate by the Slovak Innovation and Energy Agency 2016

Characteristics of the measure (including eligible activities)	Construction of new single-family and apartment buildings to an ultra-low-energy standard
	Nature of measure: (b) fiscal stimuli – government premiums as part of building society saving schemes; (c) legislative regulations – (energy performance of buildings – minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.
	The activities evaluated focused on: (a) the achievement of better energy performance than the minimum requirements for new single-family/apartment buildings under legislation of general application.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[16] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the new condition of a building is determined on the basis of a project evaluation of the overall energy required by the building, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the proposed thermal performance of the building.
Detailed description of the method to calculate energy savings	The basic data is from the energy performance certificates of new single-family/apartment buildings collected in the INFOREG information system operated by the Ministry of Transport, Construction and Regional Development. The energy saving is determined as the difference between the total energy requirement for a single-family/apartment building according to the minimum requirements at the time the building permit was issued and the actual energy requirement according to the energy performance certificate issued for final building approval. Note: For building permits issued up to 1 January 2016, the minimum requirements are at the level of the upper limit of energy class A1.
Application of expert estimates and assumptions in the calculation of energy savings	Yes. In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – via the INFOREG information system. Data is entered in INFOREG by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from the INFOREG system to the energy efficiency monitoring system (MSEE). Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	Potential overlaps are only possible when evaluating the new construction of a single-family/apartment building under this measure and under measures 1.4 and 1.6.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by processing energy savings identified for individual single-family/apartment buildings on a project-by-project basis, i.e. for each building. Savings are only counted towards one of the possible measures (1.4, 1.5 or 1.6) according to the level of energy class achieved, which establishes a low energy, ultra-low energy or nearly zero-energy level of construction.

[16] EED – Directive 2012/27/EU on energy efficiency

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Under the Act on Building Society Savings Schemes (Act No 310/1992), Slovakia grants government premiums for building society savings schemes, with funding earmarked annually in the central government budget. Compliance with the conditions of building society savings schemes is supervised by the Ministry of Finance. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). It is only through these State-initiated synergic support measures that investment activities in the construction of buildings have also focused considerably on the energy efficiency of buildings.
Complementarity of the measure	Complementarity is relevant. For the purposes of Article 7 of the Directive, only energy savings that are achieved beyond the minimum requirements of Directive 2010/31/EU on the energy performance of buildings and Act No 555/2005 on the energy efficiency of buildings are counted.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	In the construction of a new building, at least the minimum energy performance requirements in accordance with Act No 555/2005 on the energy performance of buildings and Implementing Decree of the Ministry of Transport and Construction No 364/2012 must be attained. This is checked as part of the building permit and final approval procedure by the competent building authority.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.5**	**Title of measure:**	**New construction to an ultra-low-energy standard – Single-family and apartment buildings (RDBD-A1)**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks, government premiums

$$\acute{U}S_{i\_plán} = \left(P_{norm} - P_{po}\right) \bullet CPP$$

where

$\acute{U}S_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building construction [kWh/a];

P_{norm} – energy required for a building according to the minimum requirement for a newbuild (the limit for a building permit to be issued in the given year) [kWh/(m^2.a)];

P_{po} – energy required for a building on completion of a newbuild, by reference to energy performance certificate data [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**1.6**		**Title of measure:**		**New construction to a nearly zero-energy – Single-family and apartment buildings (RDBD-A0)**
MSEE ID:					
Sector:	**Buildings**		Financial mechanism:		own funds, commercial banks, government premiums
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	34 %	39 %	2 %	25 %	Expert estimate by the Slovak Innovation and Energy Agency 2016

Characteristics of the measure (including eligible activities)	Construction of mew nearly zero-energy single-family and apartment buildings
	Nature of measure: (b) fiscal stimuli – government premiums as part of building society saving schemes; (c) legislative regulations – (energy performance of buildings – minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns.
	The activities evaluated focused on: (a) the achievement of better energy performance than the minimum requirements for new single-family/apartment buildings under legislation of general application.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[17] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the new condition of a building is determined on the basis of a project evaluation of the overall energy required by the building, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the proposed thermal performance of the building.
Detailed description of the method to calculate energy savings	The basic data is from the energy performance certificates of new single-family/apartment buildings collected in the INFOREG information system operated by the Ministry of Transport, Construction and Regional Development. The energy saving is determined as the difference between the total energy requirement for a single-family/apartment building according to the minimum requirements at the time the building permit was issued and the actual energy requirement according to the energy performance certificate issued for final building approval. Note: For building permits issued up to 1 January 2016, the minimum requirements are at the level of the upper limit of energy class A1.
Application of expert estimates and assumptions in the calculation of energy savings	Yes. In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – via the INFOREG information system. Data is entered in INFOREG by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from the INFOREG system to the energy efficiency monitoring system (MSEE). Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	Potential overlaps are only possible when evaluating the new construction of a single-family/apartment building under this measure and under measures 1.4 and 1.5.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by processing energy savings identified for individual single-family/apartment buildings on a project-by-project basis, i.e. for each building. Savings are only counted towards one of the possible measures (1.4, 1.5 or 1.6) according to the level of energy class achieved, which establishes a low energy, ultra-low energy or nearly zero-energy level of construction.

[17] EED – Directive 2012/27/EU on energy efficiency

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Under the Act on Building Society Savings Schemes (Act No 310/1992), Slovakia grants government premiums for building society savings schemes, with funding earmarked annually in the central government budget. Compliance with the conditions of building society savings schemes is supervised by the Ministry of Finance. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). It is only through these State-initiated synergic support measures that investment activities in the construction of buildings have also focused considerably on the energy efficiency of buildings.
Complementarity of the measure	Complementarity is relevant. For the purposes of Article 7 of the Directive, only energy savings that are achieved beyond the minimum requirements of Directive 2010/31/EU on the energy performance of buildings and Act No 555/2005 on the energy efficiency of buildings are counted.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	In the construction of a new building, at least the minimum energy performance requirements in accordance with Act No 555/2005 on the energy performance of buildings and Implementing Decree of the Ministry of Transport and Construction No 364/2012 must be attained. This is checked as part of the building permit and final approval procedure by the competent building authority.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.6**	**Title of measure:**	**New construction to a nearly zero-energy – Single-family and apartment buildings (RDBD-A0)**
MSEE ID:			
Sector:	**Buildings**	Financial mechanism:	own funds, commercial banks, government premiums

$$ÚS_{i\_plán} = \left(P_{norm} - P_{po}\right) \bullet CPP$$

where:

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building construction [kWh/a];

P_{norm} – energy required for a building according to the minimum requirement for a newbuild (the limit for a building permit to be issued in the given year) [kWh/(m^2.a)];

P_{po} – energy required for a building on completion of a newbuild, by reference to energy performance certificate data [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**1.7**		**Title of measure:**		**Provision of energy services in buildings**
MSEE ID:	**GES**				
Sector:	**Buildings**		Source of financing:		Providers of guaranteed energy services (GES), recipients of GES
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(a) to (f)
Lifetime of measure (years):	Indicate in accordance with Implementing Decree No 327/2015.		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	53.13 %	21.66 %	21.91 %	3.30 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Reduction in energy consumption by engaging in EPC projects, implemented by an energy service provider (ESCO) under an energy efficiency contract with guaranteed energy saving. The investment is expected to be repaid from sources that the GES beneficiary would use to cover the cost of energy in the future.
	Nature of measure: (c) legislative regulations – Act No 321/2014 on energy efficiency (framework for the provision of guaranteed energy services); (f) training and education – professional competence required for providers of guaranteed energy services (test followed by mandatory participation in refresher training courses arranged by the Ministry of Economy via the Slovak Innovation and Energy Agency)
	Eligible activities are: - measures to reduce final energy consumption, e.g. in apartment buildings and buildings for the provision of commercial services, in particular: o reconstruction and modernisation of the space heating system, including boiler replacement or the installation of a compact heat transfer station; o the reconstruction and modernisation of lighting; o the hydronic balancing of hot water distribution systems, including the provision of suitable thermal insulation for hot water distribution systems; the installation of equipment for the monitoring and control of energy consumption
Evaluation of the measure	- Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[18] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – expected savings on the basis of previous independently monitored energy efficiency measures by an energy service provider or by the operator of the Energy Efficiency Monitoring System (MSEE), i.e. the Slovak Innovation and Energy Agency; (b) *ex post* – energy savings achieved annually are verified by the GES provider in the form of measurements
Detailed description of the method to calculate energy savings	1. The energy saving is determined individually depending on the proposed energy efficiency measures and comprises the difference between the measurement or calculation of the energy consumption determined before the implementation of energy efficiency measures and the energy consumption calculated after the introduction of energy efficiency measures. 2. In the calculation of energy savings, the average final energy consumption for a minimum of three years prior to the implementation of energy efficiency measures is typically taken into account. 3. A calculation of energy savings, including the specific calculation methodology, carried out by a professionally competent person (professional competence as set forth in Section 19 of Act No 321/2014), is part of each GES provision contract. 4. The actual energy savings achieved are evaluated annually according to the methodology set out in the GES provision contract.
Application of expert estimates and assumptions in the calculation of energy savings	Yes The use of expert estimates and assumptions for the energy saving calculation depends on each case and is stated in the GES provision contract as part of the methodology for the calculation of energy savings. -
Monitoring, control and verification of the energy savings made	Energy savings are monitored via the provision of data to the MSEE operator, which is mandatory under Sections 16 and 19 of Act No 321/20104 on energy efficiency. The dataset contains the sum of energy savings from each energy service provider for the previous calendar year, which evaluates the savings on a project-by-project basis and provides them as a package of projects. The provision of data on a project-by-project basis is voluntary.
Overall evaluation and way	The provision of energy services is a mechanism that represents an effective way of

[18] EED – Directive 2012/27/EU on energy efficiency

forward	designing, implementing and, in particular, evaluating energy efficiency measures. With significant support in raising the awareness of potential energy service recipients, it may be one of the most significant alternative measures to meet the target under Article 7 of the Energy Efficiency Directive.
Projected overlapping with another measure – duplication	Overlapping would be possible in the year following the implementation of energy efficiency measures if the building owner/manager provided information on energy consumption at the request of the MSEE operator and did not indicate that the measures were implemented via GES.
Method to avoid duplication	1. If, in MSEE, energy savings are identified further to a decrease in energy consumption in a building without reference to the measure implemented, the MSEE operator will email and, where appropriate, telephone the data provider to identify the specific instrument behind the energy savings ascertained. 2. If savings are identified as part of GES from a particular provider, building energy savings determined according to the data of the owner/manager of the building will not be counted.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The Ministry of Economy of the Slovak Republic, which maintains and updates the list of energy service providers (http://www.mhsr.sk/poskytovanie-energetickej-sluzby/145697s) is responsible for registering and issuing permits for energy service providers' activities. The Slovak Innovation and Energy Agency provides professional competence for providers of guaranteed energy services, as well as up-to-date training, from the resources of the central government budget. The Slovak Innovation and Energy Agency evaluates datasets from energy service providers.
Complementarity of the measure	Not applicable: (a) the measure would not be implemented without a supportive legislative framework;
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The measure is in accordance with Act No 321/2014 on energy efficiency. Supervision of compliance with the provisions of the Act is carried out by the Slovak Trade Inspectorate.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods. (d) Energy savings are shown in final energy consumption (if energy savings are only listed in primary energy consumption, they are not counted towards compliance with Article 7 of the Directive); (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is run at the MSEE operator. All summary datasets from each GES provider are checked. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**1.7**	**Title of measure:**	**Provision of energy services in buildings**
MSEE ID:	**GES**		
Sector:	**Buildings**	Source of financing:	Providers of guaranteed energy services (GES), recipients of GES
$\acute{U}S_{i_{GES}} = (P_{pred} - P_{po})$			
where: $\acute{U}Si_{\_GES}$ – planned/guaranteed annual energy savings (final energy consumption) after a year of implementation of energy efficiency measures [kWh]; P_{pred} – energy consumption for the building prior to the implementation of energy efficiency measures (typically the average			

energy consumption for the original condition over the past 3 years) [kWh];

P_{po} – building energy consumption after the implementation of energy efficiency measures [kWh];

Note: The calculation of $ÚSi_{\_GES}$ is only indicative. Energy savings are announced to the GES operator by a GES operator for all projects in the previous calendar year.

Industry sector

Measure	**5.1.1**		**Title of measure:**		**Innovation and technology transfers at industrial enterprises**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		2007-2013 Structural Funds, Operational Programme Competitiveness and Economic Growth, Measure 1.1
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Economy,		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Reductions in the energy intensity of production processes
	Nature of measure: (a) funding schemes – a grant from the 2007-2013 Structural Funds via the Operational Programme Competitiveness and Economic Growth for the implementation of projects outside the Bratislava Self-governing Region; the maximum aid intensity for undertakings is 40 % (West Slovakia) or 50 % (Central and Eastern Slovakia) of eligible expenditure;
	Supported/eligible activities are mainly focused on: (a) the modernisation of machinery, appliances and equipment to increase competitiveness by reducing the energy intensity of the production process.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[19] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after implementation of the measure); (c) relative savings drawing on technical estimates of savings.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of current and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	Monitoring is arranged in accordance with rules on the use of financial resources from Structural Funds for the 2007-2013 programming period. This entails the provision of data on the fulfilment of the impact indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Slovak Innovation and Energy Agency) monitors the fulfilment of the indicator (energy savings) and, if it is not being met, applies the sanction mechanisms specified in the grant agreement.

[19] EED – Directive 2012/27/EU on energy efficiency

Overall evaluation and way forward	1. The final deadline for the receipt of grant applications was 13 June 2013. Project implementation may take as long as 24 months, with a possible extension, but must be completed no later than 31 December 2015. 2. The overall evaluation of the effectiveness of the measure also includes the financial resources used to achieve energy savings. In this measure, it is impossible to separate financial resources directly linked to a reduction in the energy intensity of production processes from the total resources used to increase the competitiveness of an undertaking. The investment intensity per unit of energy savings may therefore report a significant deviation from other energy efficiency measures in industry.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Economy, is the managing authority of the Operational Programme Competitiveness and Economic Growth, which announces calls for grant applications. Project administration is carried out by the intermediate body, i.e. the Slovak Innovation and Energy Agency. The activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity is not applicable: The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods and by means of relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a), (b) and (c) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.1.1**	**Title of measure:**	**Innovation and technology transfers at industrial enterprises**
MSEE ID:			
Sector:	**Industry**	Financial mechanism:	2007-2013 Structural Funds, Operational Programme Competitiveness and Economic Growth, Measure 1.1

$$ÚS_i = \left(S_{pred} - S_{po}\right)$$

where:
$ÚS_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**5.1.2**		**Title of measure:**		**Innovation and technology transfers at industrial enterprises**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		Operational Programme Bratislava Region 2007-2013
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Support for the deployment and use of progressive technologies in SMEs
	Nature of measure: (a) funding schemes – grant from the 2007-2013 Structural Funds, via the Operational Programme Bratislava Region, maximum aid intensity of 95 % of eligible expenditure for the implementation of projects in the Bratislava Self-governing Region, with a maximum amount of aid per beneficiary not exceeding EUR 200 000 over a period of three fiscal years (the *de minimis* rule)
	Supported/eligible activities are mainly focused on: (a) the reconstruction and modernisation of existing energy sources based on fossil fuels, i.e. an increase in the efficiency of installations, an increase in the annual utilisation rate, a reduction in the captive consumption of energy and utilities, etc.; (b) support for investment in the construction of new more fuel-efficient installations for electricity or heat generation; (c) the reconstruction of existing thermal energy distribution systems (e.g. improvements in the insulation of distribution pipes, the reconstruction of heat transfer stations, etc.); (d) the reconstruction and modernisation of compressed air production and distribution systems; (e) the reconstruction and modernisation of energy intensive technology, or the replacement thereof with new less energy intensive technology.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[20] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after); (c) relative savings drawing on technical estimates of savings.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. In projects focusing exclusively on energy savings, the total energy savings referred to in point 1 and the total cost of project implementation are counted. 3. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 4. With combined projects focusing on the use of renewable sources of energy (RES) and on energy savings (EE), the total energy savings according to point 1, declared in the form of a measurable impact indicator, are counted. Of the investment costs, the part for RES is removed. This is calculated as the installed capacity of an installation for RES use multiplied by the average investment costs (Ni) per unit of installed capacity, determined according to previous projects, especially those under the Operational Programme Competitiveness and Economic Growth and SlovSEFF I and II, depending on the type of RES. 5. The accuracy of the data is then verified by comparing the investment intensity of each project with the average investment intensity of projects with a similar focus. If the difference is significant, the Slovak Innovation and Energy Agency contacts the beneficiaries, unless the credibility of the data is proven, the project is excluded, and the savings generated by it are not counted.

[20] EED – Directive 2012/27/EU on energy efficiency

Use of expert estimates and assumptions in the calculation of energy savings	Yes 1. In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology. 2. In combined RES/EE projects, the average investment costs per unit of installed capacity are used to divide financial resources between RES and energy savings, for example as follows: a. photovoltaic generation at EUR 1 110 per kW (figure based on an analysis of SlovSEFF I and II projects) b. utilisation of RES for heat generation at EUR 735 per kW (figure based on an analysis of Operational Programme Competitiveness and Economic Growth projects for biomass and heat pumps) c. reconstruction of a heat source at EUR 300 per kW (figure based on an analysis of Operational Programme Competitiveness and Economic Growth projects focusing on the reconstruction of biomass combustion sources). The average investment cost per unit of installed capacity may be changed and supplemented further to analyses of other implemented projects.
Monitoring, control and verification of the energy savings made	1. Monitoring is arranged in accordance with rules on the use of financial resources from Structural Funds for the 2007-2013 programming period. This entails the provision of data on the fulfilment of the impact indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Bratislava Region) monitors the fulfilment of the indicator (energy savings) and, if it is not being met, applies the sanction mechanisms specified in the grant agreement. 2. Checks are also conducted as part of the preparation of action plans and the annual report, based on the investment intensity of the individual projects.
Overall evaluation and way forward	The final deadline for the receipt of grant applications was 25 September 2015. Project implementation may last up to 31 December 2015.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Agriculture and Rural Development, is the managing authority of the Operational Programme Bratislava Region, which announces calls for grant applications. Project administration is carried out by the intermediate body, i.e. the Bratislava Self-governing Region. The activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity is not applicable: The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules (*de minimis* aid). Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) *ex ante* and method (d) relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.1.2**	**Title of measure:**	**Innovation and technology transfers at industrial enterprises**
MSEE ID:			
Sector:	**Industry**	Financial mechanism:	2007-2013 Structural Funds, Operational Programme Bratislava Region

$$\acute{U}S_i = (S_{pred} - S_{po})$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the grant application in [GJ/year] converted to [MWh/year].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**5.1.3**		**Title of measure:**		**Innovation and technology transfers at industrial enterprises**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		Operational Programme Research and Innovation 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014
Characteristics of the measure (including eligible activities)	Support to increase the efficiency and performance of the research, development and innovation system. Nature of measure: (a) funding scheme – grant from the 2014-220 ESIF via the Operational Programme Research and Innovation, a common programming document of the Ministry of Education, Science, Research and Sport of the Slovak Republic and the Ministry of Economy of the Slovak Republic encompassing the creation of a stable environment conducive to innovation for all relevant entities, and support for an increase in the efficiency and performance of the research, development and innovation system, as a key pillar for increasing competitiveness, sustainable economic growth and employment. Eligible activities: (a) Support for innovation and technology transfer (b) Support for technological and applied research outside the Bratislava Region (c) Support for technological and applied research in the Bratislava Region				
Evaluation of the measure	Bottom-up, via individual projects				
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[21] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after implementation of the measure); (c) relative savings drawing on technical estimates of savings. (d)				
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another.				
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of current and projected developments in science and technology.				
Monitoring, control and verification of the energy savings made	Monitoring is arranged in accordance with rules on the use of financial resources from the ESIF for the 2014-2020 programming period. This entails the provision of data on the fulfilment of the indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS 2014+ monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Ministry of Economy and the Slovak Innovation and Energy Agency) monitors the fulfilment of the indicator (energy savings) and, if it is not being met, applies the sanction mechanisms specified in the grant agreement.				
Overall evaluation and way forward	On 2 August 2016, the Ministry of Economy, as the intermediate body for the Operational Programme Research and Innovation, announced a call for grant applications (call code				

[21] EED – Directive 2012/27/EU on energy efficiency

	OPVaI-MH/DP/2016/1.2.2-02). The total indicative allocation for the grant call is EUR 175 million. Grant applications are accepted until the allocation is exhausted.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Education, Science, Research and Sport, is the managing authority of the Operational Program Research and Innovation. The Ministry of Economy, as the intermediary body, announces calls for grant applications. Project administration is carried out by the Slovak Innovation and Energy Agency. The activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity is not applicable: The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural and Investment Funds in the 2014-2020 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods and by means of relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a), (b) and (c) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS 2014+ level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.1.3**	**Title of measure:**	**Innovation and technology transfers at industrial enterprises**
MSEE ID:			
Sector:	**Industry**	Financial mechanism:	Operational Programme Research and Innovation 2014-2020

$$\acute{U}S_i = \left(S_{pred} - S_{po}\right)$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**5.2.1**		**Title of measure:**		**Increased energy efficiency in industrial production**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		Operational Programme Competitiveness and Economic Growth 2007-2013, Measure 2.1
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014
Characteristics of the measure (including eligible activities)	An increase in energy efficiency in both production and consumption and the deployment of progressive technologies in the energy sector Nature of measure: (a) funding schemes – a grant from the 2007-2013 Structural Funds via the Operational Programme Competitiveness and Economic Growth for the implementation of projects outside the Bratislava Self-governing Region; the maximum aid intensity for undertakings is 40 % (West Slovakia) or 50 % (Central and Eastern Slovakia) of eligible expenditure; Supported/eligible activities are mainly focused on: (a) the reconstruction and modernisation of structures in industry and related services in order to reduce the energy intensity thereof; (b) the reconstruction and modernisation of existing energy facilities to increase energy efficiency; (c) the reconstruction and modernisation of compressed air production and distribution systems; (d) the introduction of measurement and management systems for energy production and consumption to reduce energy consumption (not including the purchase of more energy-efficient production technologies); (e) the construction, modernisation and reconstruction of energy distribution systems or utility distribution systems, including systems for the external lighting of industrial complexes.				
Evaluation of the measure	Bottom-up, via individual projects				
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[22] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after implementation of the measure); (c) relative savings drawing on technical estimates of savings.				
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. In projects focusing exclusively on energy savings, the total energy savings referred to in point 1 and the total cost of project implementation are counted. 3. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 4. With combined projects focusing on the use of renewable sources of energy (RES) and on energy savings (EE), the total energy savings according to point 1, declared in the form of a measurable impact indicator, are counted. Of the investment costs, the part for RES is removed. This is calculated as the installed capacity of an installation for RES use multiplied by the average investment costs (Ni) per unit of installed capacity, determined according to previous projects, especially those under the Operational Programme Competitiveness and Economic Growth and SlovSEFF I and II, depending on the type of RES. 5. The accuracy of the data is then verified by comparing the investment intensity of each project with the average investment intensity of projects with a similar focus. If the difference is significant, the Slovak Innovation and Energy Agency contacts the beneficiaries, unless the credibility of the data is proven, the project is excluded, and the savings generated by it are not counted.				

[22] EED – Directive 2012/27/EU on energy efficiency

Use of expert estimates and assumptions in the calculation of energy savings	Yes 1. In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology. 2. In combined RES/EE projects, the average investment costs per unit of installed capacity are used to divide financial resources between RES and energy savings, for example as follows: a. photovoltaic generation at EUR 1 110 per kW (figure based on an analysis of SlovSEFF I and II projects) b. utilisation of RES for heat generation at EUR 735 per kW (figure based on an analysis of Operational Programme Competitiveness and Economic Growth projects for biomass and heat pumps) c. reconstruction of a heat source at EUR 300 per kW (figure based on an analysis of Operational Programme Competitiveness and Economic Growth projects focusing on the reconstruction of biomass combustion sources). The average investment cost per unit of installed capacity may be changed and supplemented further to analyses of other implemented projects.
Monitoring, control and verification of the energy savings made	1. Monitoring is arranged in accordance with rules on the use of financial resources from Structural Funds for the 2007-2013 programming period. This entails the provision of data on the fulfilment of the impact indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Slovak Innovation and Energy Agency) monitors the fulfilment of the indicator (energy savings) and, if it is not being met, applies the sanction mechanisms specified in the grant agreement. 2. Checks are also conducted as part of the preparation of action plans and the annual report, based on the investment intensity of the individual projects.
Overall evaluation and way forward	The final deadline for the receipt of grant applications was 13 January 2015. Project implementation may last up to 31 December 2015.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Economy, is the managing authority of the Operational Programme Competitiveness and Economic Growth, which announces calls for grant applications. Project administration is carried out by the intermediate body, i.e. the Slovak Innovation and Energy Agency. The activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity is not applicable: The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods and by means of relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a), (b) and (c) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no

	statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure MSEE ID:	**5.2.1**	**Title of measure:**	**Increased energy efficiency in industrial production**
Sector:	**Industry**	Financial mechanism:	Operational Programme Competitiveness and Economic Growth 2007-2013, Measure 2.1

$$ÚS_i = (S_{pred} - S_{po})$$

where:

$ÚS_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the grant application in [GJ/year] converted to [MWh/year].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**5.2.2**		**Title of measure:**		**Increased energy efficiency in industrial production**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		SlovSEFF II – industry
Measure lasting from: (year)	2013		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014
Characteristics of the measure (including eligible activities)	Energy efficiency in industry. (a) funding scheme – SlovSEFF II, SlovSEFF, a means for financing sustainable energy projects, has been developed by the European Bank for Reconstruction and Development (EBRD). SlovSEFF was launched with a value of EUR 60 million and was extended in 2010 with additional financing sources of EUR 90 million from the EBRD, intended for local banks. The funding source for grants and technical assistance was the Bohunice International Decommissioning Support Fund (BIDSF). The contribution takes the form of a loan ranging from EUR 20 000 to EUR 2.5 million via contracted commercial banks. If an internal rate of return (IRR) of more than 10 % is achieved, a grant of 7.5 % of the credit line is provided. Eligible activities are, in particular: — cogeneration facilities; — improvements in the thermal performance of industrial structures; — reconstruction of heat production and distribution facilities; — reconstruction of cold production and distribution facilities; — measurement and management;				
Evaluation of the measure	Bottom-up, via individual projects				
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement of energy consumption before and after implementation of the measure); (c) relative savings based on the planned energy requirement (further to similar measures implemented at other facilities with different capacity);				
Detailed description of the method to calculate energy savings	Energy savings in individual projects are calculated as the difference between the average energy consumption before the energy efficiency measure and the planned energy requirement after the implementation of the project referred to in the energy audit/design documentation.				
Use of expert estimates and assumptions in the calculation of energy savings	Expert estimates have been used to determine the total cost of implementing energy efficiency measures because data on total investment costs (including ineligible costs) is not available and therefore it was assumed that ineligible own-funded costs account for 20 % of the total investment costs. According to data from the programme consultant (ESG), eligible costs amount to EUR 110 577 000, for which loan coverage of EUR 89 810 000 was provided (approximately 81.22 %).				
Monitoring, control and verification of the energy savings made	Energy savings monitoring – data on energy consumption and savings was provided by the consultancy firm responsible for project implementation coordination and programme monitoring (ESG). In all industrial projects, an energy audit (EA) and/or a Rational Energy Utilisation Plan (REUP) was drawn up. All projects were verified after the implementation of the measures. Verification was carried out to check the physical implementation of the energy efficiency measures taken, and to check the functionality and operability, and where appropriate the use, of the subject of the project.				
Overall evaluation and way forward	An additional benefit for applicants is **free technical assistance,** including the production of an energy audit by the design consultant. The monitoring and verification of energy savings is hampered by the limited amount of information (in industry, for example, the enterprise size indicator, the total energy consumption, the number of employees, the total floor area of the modernised industrial building, a detailed list of implemented measures, etc.). SlovSEFF II will be followed by SlovSEFF III, part of the Green Investment Scheme.				
Projected overlapping with another measure – duplication	None foreseen.				
Method to avoid duplication	Not applicable.				
Information for the purposes of Article 7 of Directive 2012/27/EU					
Materiality of the measure (Annex V, point 2(c))	Project implementation contributes to savings for the final customer.				

	Activity carried out by the Ministry of Economy, as the BIDSF administrator, is demonstrably material, particularly the provision of financial resources and the control of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable: The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Projects are implemented in accordance with SlovSEFF II conditions. Eligibility for a grant is confirmed by the design consultant.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods and by means of relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a), (b) and (c) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at programme level (design and verification consultant) and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.2.2, further to RS2015**	**Title of measure:**	**Increased energy efficiency in industrial production**
MSEE ID:			
Sector:	**Industry**	Financial mechanism:	SlovSEFF II – industry

$$\acute{U}S_i = \left(S_{pred} - S_{po}\right)$$

where

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the loan application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the loan application in [GJ/year] converted to [MWh/year].

Note: The energy saving is provided by the programme consultant as a resultant value in GJ. After conversion to a unified physical unit, that value is used in the pursuit of the target under Article 7 of the Directive

Measure	**5.2.3, further to RS2015**		**Title of measure:**		**Increased energy efficiency in industrial production**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		SlovSEFF III – industry
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Energy efficiency in industry.
	Nature of measure: — funding schemes – SlovSEFF III is a loan-based instrument for the financing of sustainable energy projects developed by the European Bank for Reconstruction and Development (EBRD) in cooperation with the Ministry of the Environment of the Slovak Republic and the Ministry of Agriculture, Food and the Environment of Spain, which finance programme grants and technical assistance. The EBRD provided EUR 40 million for loan financing. The Spanish government provided EUR 5 693 800 for grants and another EUR 2 million for technical assistance (consulting, energy auditing arrangements, etc.). Financial resources for energy efficiency measures in industry account for approximately 35 % of the total resources allocated to the programme. The loan is granted by contracted commercial banks and the applicant is entitled to a grant upon reaching the required level of energy savings. Grants are funded from the profits of innovative emission credit transactions between the Slovak and Spanish governments. Under the terms of the contract, Slovakia allocated profits from the sale of permits to projects aimed at reducing additional greenhouse gas emissions in Slovakia. The maximum loan amount is EUR 5 million. The minimum internal rate of return (IRR) required is 8 %, excluding the grant awarded.
	Eligible activities are, in particular: — cogeneration facilities; — improvements in the thermal performance of industrial structures; — reconstruction of heat production and distribution facilities; — reconstruction of cold production and distribution facilities; — measurement and management;
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement of energy consumption before and after implementation of the measure); (c) relative savings based on the planned energy requirement (further to similar measures implemented at other facilities with different capacity);
Detailed description of the method to calculate energy savings	Energy savings achieved in individual projects are calculated as the difference between the average energy consumption before the energy efficiency measure and the planned energy requirement after the implementation of the project referred to in the energy audit/design documentation.
Use of expert estimates and assumptions in the calculation of energy savings	Projected savings for the entire funding scheme are calculated on the basis of the allocation planned for energy efficiency measures in industry and the average investment intensity in industry on the basis of previous programmes (e.g. SlovSEFF II – EUR 418 per MWh).
Monitoring, control and verification of the energy savings made	Energy savings monitoring – data on energy consumption and savings is provided by the consultancy firm responsible for project implementation coordination and programme monitoring (ESG). In all industrial projects, an energy audit (EA) and/or a Rational Energy Utilisation Plan (REUP) will be drawn up. All projects will be verified after the implementation of the measures. Verification will be carried out to check the physical implementation of the energy efficiency measures taken, and to check the functionality and operability, and where appropriate the use, of the subject of the project.
Overall evaluation and way forward	

Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	Project implementation contributes to savings for the final customer. The activity of the Ministry of the Environment, as the ministry responsible for the sale of emission permits, from the proceeds of which grants are financed under the funding scheme in question, is demonstrably material, in particular by securing financial resources and controlling the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable: The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Projects are implemented in accordance with SlovSEFF III conditions. The minimum internal rate of return (IRR) required is 8 %, excluding the grant awarded. Eligibility for a grant is confirmed by the verification consultant (ALLPLAN).
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of the Environment. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods and by means of relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a), (b) and (c) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at programme level (design and verification consultant) and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.2.3, further to RS2015**	**Title of measure:**	**Increased energy efficiency in industrial production**
MSEE ID:			
Sector:	**Industry**	Financial mechanism:	SlovSEFF III – industry

$$\acute{U}S_i = \left(S_{pred} - S_{po}\right)$$

where

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the loan application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the loan application in [GJ/year] converted to [MWh/year].

Note: The energy saving is provided by the programme consultant as a resultant value in GJ. After conversion to a unified physical unit, that value is used in the pursuit of the target under Article 7 of the Directive

Measure	**5.2.4**		**Title of measure:**		**Increased energy efficiency in industrial production**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		Operational Programme Environment 2007-2013, Axis 4
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of the Environment		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Minimisation of the adverse impacts of climate change, including the promotion of renewable energy sources. Priority Axis 4 – Specific objective: Completion of waste management infrastructure in Slovakia in accordance with EU and national legislation, the reduction and elimination of the negative impacts of environmental loads and landfills on human health and ecosystems.
	Nature of measure: (a) funding schemes – a grant from the 2007-2013 Structural Funds via the Operational Programme Environment, Priority Axis 4, for the implementation of projects outside the Bratislava Self-governing Region; approximately EUR 570 million was earmarked.
	Supported/eligible activities are mainly focused on: - construction of a biopellet production plant - separation of municipal waste collection in a central collection yard with energy recovery - utilisation of the possibility of the anaerobic fermentation of biodegradable waste, which generates biogas - biogas plants most commonly built at wastewater treatment plants (in connection with sludge stabilization). - Biogas plants, as part of the waste management infrastructure, could further improve the treatment of sludge, which is a waste generated in large quantities (WWTP waste) - waste incineration with energy recovery
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[23] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after); (c) relative savings drawing on technical estimates of savings.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of current and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	1. Monitoring is arranged in accordance with rules on the use of financial resources from Structural Funds for the 2007-2013 programming period. This entails the provision of data on the fulfilment of the impact indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Slovak Environmental Agency) monitors the fulfilment of the indicator (energy savings) and, if it is not being met, applies the sanction mechanisms specified in the grant agreement. 2. Checks are also conducted as part of the preparation of action plans and the annual report, based on the investment intensity of the individual projects.
Overall evaluation and way	The final deadline for the receipt of grant applications was in September 2015. Project

[23] EED – Directive 2012/27/EU on energy efficiency

forward	implementation could last up to 31 December 2015.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of the Environment, is the managing authority of the Operational Programme Environment, which announces calls for grant applications. Project administration is carried out by the intermediate body, i.e. the Slovak Environmental Agency. The activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity is not applicable. The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of the Environment. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods and by means of relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a), (b) and (c) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.2.4**	**Title of measure:**	**Increased energy efficiency in industrial production**
MSEE ID:			
Sector:	**Industry**	Financial mechanism:	Operational Programme Environment, Axis 4

$$\acute{U}S_i = \left(S_{pred} - S_{po}\right)$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the grant application in [GJ/year] converted to [MWh/year].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**5.3.1**		**Title of measure:**		**Implementation of energy efficiency measures derived from energy audits**
MSEE ID:					
Sector:	**Industry**		Financial mechanism:		Operational Programme Environmental Quality 2014-2020, Priority Axis 4
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment, Slovak Innovation and Energy Agency		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Reductions in the energy intensity of undertakings Nature of measure: (a) funding scheme – a grant from the 2014-220 ESIF via the Operational Programme Environmental Quality for the implementation of projects outside the Bratislava Self-governing Region; the aid intensity for undertakings is 30 %, and the bonuses for medium-sized enterprises and small enterprises are 10 % and 15 % of eligible expenditure, respectively Eligible activities: (a) production of energy audits for SMEs; (b) implementation of measures from energy audits for undertakings (including large ones) in industry and related services, focusing on: - the reconstruction and modernisation of structures in industry and related services in order to reduce the energy intensity thereof; - the reconstruction and modernisation of existing energy facilities to increase energy efficiency or to reduce greenhouse gas emissions; - the reconstruction and modernisation of compressed air production and distribution systems; - the introduction of measurement and management systems, including energy and environmental management systems, especially EMAS, in the field of energy production and consumption in order to reduce energy consumption and greenhouse gas emissions; - the construction, modernisation and reconstruction of energy distribution systems or energy-medium distribution systems, including systems for the external lighting of industrial complexes; - other measures helping to reduce the consumption of primary energy sources.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after implementation of the measure); (c) relative savings drawing on technical estimates of savings.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another.
Assumptions and estimates used in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of current and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	Monitoring is arranged in accordance with rules on the use of financial resources from the ESIF for the 2014-2020 programming period. This entails the provision of data on the fulfilment of the indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS 2014+ monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Ministry of Economy and the Slovak Innovation and Energy Agency) monitors the fulfilment of the indicator (energy savings)

	and, if it is not being met, applies the sanction mechanisms specified in the grant agreement.
Overall evaluation and way forward	The implementation of specific projects is expected in 2017.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	The responsible entity, the Ministry of the Environment, is the managing authority of the Operational Programme Environmental Quality. Calls for grant applications are announced by the intermediate body, i.e. the Slovak Innovation and Energy Agency. The Slovak Innovation and Energy Agency is responsible for the entire process of project administration and evaluation. The activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity is not applicable: The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only take the measures necessary to run their businesses.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural and Investment Funds in the 2014-2020 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of the Environment. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods and by means of relative savings; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a), (b) and (c) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS 2014+ level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.3.1**	**Title of measure:**	**Implementation of energy efficiency measures derived from energy audits**
MSEE ID:			
Sector:	**Industry**	Financial mechanism:	Operational Programme Environmental Quality 2014-2020, Priority Axis 4

$$\acute{U}S_i = \left(S_{pred} - S_{po}\right)$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

S_{po} – energy consumption after project implementation – value from the grant application in [GJ/year] converted to [MWh/year];

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**5.4**		**Title of measure:**		**Promotion of energy audits for SMEs in the Bratislava Region**
MSEE ID:					
Sector:	**Industry**		Source of financing:		Subsidy schemes within the purview of the Ministry of Economy
Measure lasting from: (year)	2016		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(b) and (f)
Lifetime of measure (years):			Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Implementation of energy efficiency measures further to recommendations from the energy audits supported. Nature of measure: (b) funding scheme – subsidy from the budget heading of the Ministry of Economy to **support the implementation of energy audits of micro, small and medium-sized enterprises (SMEs) based in the Bratislava Region.** The maximum aid intensity is 85 % of the total eligible expenditure; the maximum grant is EUR 10 000. Financial resources of EUR 300 000 from the central government budget are earmarked for support purposes. (f) training, education – the Slovak Innovation and Energy Agency (SIEA), as an organisation partly funded from the public purse under the Ministry of Economy, organises free tests and periodic training of professionally competent persons (energy auditors). Eligible activities: - implementation of measures derived from energy audits
Evaluation of the measure	Bottom-up, further to project packages.
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[24] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure);
Detailed description of the method to calculate energy savings	When quantifying the energy savings achieved further to energy audits, it is assumed that each undertaking will at least implement low-cost measures stemming from the auditing. Savings are calculated from the datasets delivered by the energy auditor to the energy efficiency monitoring system (MSEE) operator for all energy audits performed by the auditor during the previous calendar year. Further to an analysis of the data submitted, in particular the payback period of the proposed measures, the MSEE operator calculates the percentage of low-cost measures that energy customers carry out in the following year.
Application of expert estimates and assumptions in the calculation of energy savings	Yes The MSEE operator, further to an analysis of the datasets delivered by energy auditors for mandatory energy audits under Act No 476/2008 and Act No 321 on energy efficiency, determined that the share of low-cost measures implemented by an undertaking in the year following an energy audit is 10 % of energy savings under the measures proposed by the energy auditor. Information on the measures actually implemented will be provided by the SME receiving a subsidy for an energy audit to the MSEE operator on request.
Monitoring, control and verification of the energy savings made	The potential for energy savings under measures derived from energy audits, which are supported from public sources, is monitored in MSEE. Energy savings are verified by means of SIEA checks on energy audit reports. The SIEA checks at least 5 % of energy audit reports.
Overall evaluation and way forward	Actual support for energy auditing for SMEs registered in the Bratislava Region will not be up-to-date until 2017. The implementation of measures further to recommendations from these audits will be up-to-date in the second half of 2017 or in 2018.
Projected overlapping with another measure – duplication	Not applicable. Low-cost measures are not taken when implementing measures with the support of financial schemes.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	

[24] EED – Directive 2012/27/EU on energy efficiency

Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Economy, grants energy auditing subsidies for SMEs registered in the Bratislava Region. As a result of the introduction of a funding scheme and the training of energy auditors by the SIEA, the activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Not applicable. The measure would not be implemented to the scope indicated without a funding scheme. Undertakings would only deal with the implementation of energy efficiency measures sporadically, to the extent necessary for their operation.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with Act No 71/2013 on subsidisation in the competence of the Ministry of Economy of the Slovak Republic and Act No 321/2014 on energy efficiency.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* method. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE level and as part of the preparation of action plans and annual reports. As measures are checked as project packages, a 5 % share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.4**	**Title of measure:**	**Promotion of energy audits for SMEs in the Bratislava Region**
MSEE ID:			
Sector:	**Industry**	Source of financing:	Subsidy schemes within the purview of the Ministry of Economy

$$\acute{U}S_i = 0{,}1 \text{ x } (S_{pred} - S_{po})$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the set of data provided by the energy auditor [MWh/year];

S_{po} – energy consumption after project implementation – value from the set of data provided by the energy auditor [MWh/year].

Measure	**5.5**		**Title of measure:**		**Application of legislative measures**
MSEE ID:					
Sector:	**Industry**		Source of financing:		Energy audits at industrial enterprises pursuant to the Energy Efficiency Act
Measure lasting from: (year)	2009		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(c) and (f)
Lifetime of measure (years):	>15		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Implementation of energy efficiency measures further to recommendations from mandatory energy audits. Nature of measure: (b) legislative regulations – with Act No 476/2008 on energy efficiency, Slovakia introduced the obligation of energy auditing for energy consumers in industry and agriculture, drawing on the average annual final energy consumption in the period up to 31 December 2011 (final energy consumption from 2 500/5 000 to 10 000/20 000 MWh) and up to 31 December 2013 (final energy consumption of more than 10 000/20 000 MWh). Undertakings thus obtained an instrument to propose energy saving measures, including the energy, economic and environmental evaluation of the measures proposed. Under this instrument, they can prepare and implement energy efficiency measures. (f) training, education – the Slovak Innovation and Energy Agency (SIEA), as an organisation partly funded from the public purse under the Ministry of Economy, organises free tests and periodic training of professionally competent persons (energy auditors). Eligible activities: - implementation of measures derived from energy audits
Evaluation of the measure	Bottom-up, further to project packages.
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[25] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure);
Detailed description of the method to calculate energy savings	When quantifying the energy savings achieved further to energy audits, it is assumed that each undertaking will at least implement low-cost measures stemming from the auditing. Savings are calculated from the datasets delivered by the energy auditor to the energy efficiency monitoring system (MSEE) operator for all energy audits performed by the auditor during the previous calendar year. Further to an analysis of the data submitted, in particular the payback period of the proposed measures, the MSEE operator calculates the percentage of low-cost measures that energy customers carry out in the following year.
Application of expert estimates and assumptions in the calculation of energy savings	Yes The MSEE operator, further to an analysis of the datasets delivered by the energy auditor, determined that the share of low-cost measures implemented by an undertaking in the year following an energy audit is 10 % of energy savings under the measures proposed by the energy auditor. Actual energy efficiency actions at individual undertakings can be identified only further to repeated energy audits at four-year intervals.
Monitoring, control and verification of the energy savings made	The potential for energy savings under measures derived from energy audits is monitored in MSEE. Energy savings are verified by means of SIEA checks on energy audit reports. The SIEA checks at least 5 % of energy audit reports.
Overall evaluation and way forward	Drawing on statistics, much higher energy savings can be identified in industry than the saving reported as a 10 % share of low-cost measures. Further to the dataset from the repeated energy audits (after four years), the calculated energy savings will have to be corrected.
Projected overlapping with another measure – duplication	Not applicable. Low-cost measures are not taken when implementing measures with the support of financial schemes.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	

[25] EED – Directive 2012/27/EU on energy efficiency

Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Economy, proposes relevant legislative regulations or amendments thereto. As a result of the introduction of mandatory energy auditing and the training of energy auditors by the SIEA, the activities of these entities are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Not applicable. The measure would not be implemented to the scope indicated without legislation of general application. Undertakings would only deal with the implementation of energy efficiency measures sporadically, to the extent necessary for their operation.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with Act No 476/2008 on energy efficiency, which was superseded by Act No 321/2014 on energy efficiency on 1 December 2014.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* method. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE level and as part of the preparation of action plans and annual reports. As measures are checked as project packages, a 5 % share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.5**	**Title of measure:**	**Application of legislative measures**
MSEE ID:			
Sector:	**Industry**	Source of financing:	Energy audits at industrial enterprises pursuant to the Energy Efficiency Act

$$\acute{U}S_i = 0{,}1 \times \left(S_{pred} - S_{po}\right)$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value from the set of data provided by the energy auditor [MWh/year];

S_{po} – energy consumption after project implementation – value from the set of data provided by the energy auditor [MWh/year].

Measure	**5.6**		**Title of measure:**		**Voluntary energy savings agreement**
MSEE ID:					
Sector:	**Industry**		Source of financing:		Own funds
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(c)
Lifetime of measure (years):	case-by-case basis, depending on the type of measure		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Implementation of energy efficiency measures under voluntary agreements.
	Nature of measure: (b) legislative regulations and voluntary agreements – pursuant to Section 8 of Act No 321/2014, the Ministry of Economy may entered into a voluntary energy saving agreement with a natural person engaging in business or with a legal person, whereby the stakeholder makes the commitment to achieve an agreed energy saving or to provide information on its measures for improvements in energy efficiency
	Eligible activities: — Energy efficiency measures at final customers
Evaluation of the measure	Stakeholders evaluate energy savings according to the nature of the measure, from the bottom up for each project, or from the bottom up for each project package. The stakeholder is responsible for evaluating energy savings.
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[26] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex ante* – projected savings, by reference to the results of previous independently monitored energy improvements in similar facilities; (b) *ex post* – measured savings (measurement before and after implementation of the measure); (c) relative savings – technical estimates of savings by reference to similar facilities (d) further to a survey.
Detailed description of the method to calculate energy savings	Depending on the type of measure, the stakeholder applies one of the methods for calculating energy savings.
Application of expert estimates and assumptions in the calculation of energy savings	Yes. The stakeholder specifies the application of expert estimates and assumptions along with data on the energy savings achieved by the measure.
Monitoring, control and verification of the energy savings made	Under the energy savings agreement and Section 24 of Act No 321/2014 on energy efficiency, the energy efficiency monitoring system (MSEE) operator monitors energy savings. As part of monitoring, it arranges checks and verification for 5 % of the energy savings reported.
Overall evaluation and way forward	The Ministry of Economy entered into the first voluntary agreements in 2016. Further to experience with stakeholders, the measure will be adjusted if necessary.
Projected overlapping with another measure – duplication	Without information on the specific measures implemented, it is impossible to determine this.
Method to avoid duplication	This will be addressed on a case-by-case basis further to an analysis of the data provided by stakeholders.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Economy, enters into energy saving agreements with stakeholders. The voluntary agreement also includes the obligation of the Ministry of Economy and the Slovak Innovation and Energy Agency to regularly provide the stakeholder with energy efficiency information and to provide cooperation in the calculation of energy savings from measures implemented by the stakeholder. The activities of the Ministry and the Agency are demonstrably material to the achievement of the energy savings reported.

[26] EED – Directive 2012/27/EU on energy efficiency

Complementarity of the measure	Not applicable. The measure would not be implemented to the scope indicated without legislation of general application. Stakeholders would only engage in the implementation of energy efficiency measures sporadically, mainly for positive marketing in order to attract new energy customers.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is carried out in accordance with Act No 321/2014 on energy efficiency and in line with individual voluntary energy savings agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the type of energy efficiency measure; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) to (d) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Where possible, stakeholders will draw up and publish an annual report on the energy savings achieved; (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE level and as part of the preparation of action plans and annual reports. As measures are also checked as project packages, a 5 % share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.6**	**Title of measure:**	**Voluntary energy savings agreement**
MSEE ID:			
Sector:	**Industry**	Source of financing:	Own funds

$$\acute{U}S_i = \left(S_{pred} - S_{po}\right)$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value provided by the stakeholder [MWh/year];

S_{po} – energy consumption after project implementation – value provided by the stakeholder [MWh/year].

Measure	**5.9**		**Title of measure:**		**Investment incentives for industrial enterprises**
MSEE ID:					
Sector:	**Industry**		Source of financing:		
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(b)
Lifetime of measure (years):	Indicate in accordance with Implementing Decree No 327/2015.		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	37.63 %	3.80 %	32.67 %	25.90 %	Statistical Office – Energy Sector 2014

Characteristics of the measure (including eligible activities)	Reductions in the energy intensity of industrial production. Nature of measure: (b) fiscal incentives – the Ministry of Economy provides individual investment incentives to develop business and increase competitiveness. These contribute to the use of energy efficient technologies or techniques and result in a reduction in final energy consumption. Investment incentives are provided in accordance with State aid rules. Eligible activities: Measures to develop business and increase competitiveness, including the use of energy efficient technologies or techniques.
Evaluation of the measure	Bottom-up, on a project-by-project basis.
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[27] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex post* – savings measured (the measurement before and after the implementation of the measure takes into account factors that may affect consumption (e.g. the utilisation rate, the production level, the weather)
Detailed description of the method to calculate energy savings	The beneficiary of an investment incentive determines energy savings by measuring energy consumption before and after the implementation of the measure for which the incentive was granted. Where it is impossible to quantify energy savings by measuring a particular facility, the saving will be determined by reference to the added value and final energy consumption before and after the implementation of the measure.
Application of expert estimates and assumptions in the calculation of energy savings	Yes. Expert estimates are used on a case-by-case basis. The incentive beneficiary, together with information on the energy savings achieved, also notifies the energy efficiency monitoring system (MSEE) operator of any use of expert estimates and assumptions.
Monitoring, control and verification of the energy savings made	Energy savings are monitored by the MSEE operator. As part of monitoring, it arranges checks and verification for 5 % of the energy savings reported.
Overall evaluation and way forward	Further to experience gained from the measures implemented, the measure will be adjusted if necessary.
Projected overlapping with another measure – duplication	Without information on the specific measures implemented, it is impossible to determine this.
Method to avoid duplication	This will be addressed on a case-by-case basis further to an analysis of the data provided by investment incentive beneficiaries.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The activities of the responsible entity, the Ministry of Economy, which provides financial incentives, are demonstrably material to the achievement of the energy savings reported.

[27] EED – Directive 2012/27/EU on energy efficiency

Complementarity of the measure	Not applicable. The measure would not be implemented to the scope indicated without the provision of a financial incentive. Undertakings would only deal sporadically with reductions in energy intensity.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The measure is implemented in accordance with State aid rules.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex post* method. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(b) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE level and as part of the preparation of action plans and annual reports. As measures are checked as project packages, a 5 % share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**5.9**	**Title of measure:**	**Investment incentives for industrial enterprises**
MSEE ID:			
Sector:	**Industry**	Source of financing:	

$$\acute{U}S_i = \left(S_{pred} - S_{po}\right)$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [MWh/year];

S_{pred} – energy consumption before project implementation – value provided by the incentive beneficiary [MWh/year];

S_{po} – energy consumption after project implementation – value provided by the incentive beneficiary [MWh/year].

Public sector

Measure	**3.1.1**		**Title of measure:**		**Improvements in the thermal performance of public buildings**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		Operational Programme Health 2007-2013
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Health		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	66.92 %	0.55 %	32.55 %	0.00 %	MSEE – RS 2015

Characteristics of the measure (including eligible activities)	Modernisation and reconstruction of the capacities of hospitals and outpatient healthcare facilities with a view to introducing the low-energy intensity of the buildings.
	Nature of measure: (b) support schemes – a grant from the 2007-2013 Structural Funds via the Operational Programme Health to improve the thermal performance of buildings as part of Measures 1.1 'Construction, reconstruction and modernisation of specialised hospitals', 1.2 'Construction, reconstruction and modernisation of general hospitals' and 2.1 'Reconstruction and modernisation of outpatient healthcare facilities'. Eligible applicants are healthcare providers and/or founders of hospitals and healthcare facilities at central and local government level. Activities are supported by a 100 % grant for bodies of State administration and a 95 % grant for other eligible entities. Projects may be implemented up to the end of 2015 and energy savings data will be submitted to the managing authority, the Ministry of Health, up to 2020 (i.e. five years after the end of the last projects). Overall, Measures 1.1 and 1.2 were allocated approximately EUR 230.3 million. Measure 2.1 was allocated approximately EUR 57.6 million, part of which was used to improve the thermal performance of buildings and modernise building technical systems.
	Supported/eligible activities are mainly focused on: (a) the construction, modernisation and reconstruction of capacities with a view to introducing low-energy intensity via — structural alterations that improve the energy performance of buildings; — reconstruction work on central heating and steam distribution systems, water and electricity distribution systems, and the sewage system, reconstruction of metering and control.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[28] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; (b) *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the managing authority for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS system is taken as the decisive factor.

[28] EED – Directive 2012/27/EU on energy efficiency

Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring is carried out by the managing authority (the Ministry of Health) via the ITMS, where a measurable indicator is presented. As the 'Energy savings' indicator is an impact indicator, information is monitored by way of *ex post* monitoring reports, which beneficiaries are required to submit once a year for the five years following the end of the project. The beneficiary is responsible for the data provided. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	1. The final deadline for the receipt of grant applications was 15 October 2014. 2. The overall evaluation of the effectiveness of the measure also includes the financial resources used to achieve energy savings. In this measure, it is impossible to separate financial resources directly linked to a reduction in the energy intensity of hospitals and outpatient healthcare facilities from the total resources used. The investment intensity per unit of energy savings may therefore report a significant deviation from other similar energy efficiency measures in the buildings sector. 3. For future similar funding schemes, it is necessary to separate funds to improve the thermal performance of buildings from other eligible costs when a grant application is submitted.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Activity carried out by the managing authority is demonstrably material, particularly the provision of financial resources and the management of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Health. (c) Savings are determined transparently according to method (a) *ex ante*, by reference to a calculation of the energy required, and method (b) *ex post*, by measuring energy consumption after project implementation; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.1.1**	**Title of measure:**	**Improvements in the thermal performance of public buildings**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	Operational Programme Health 2007-2013

$$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$$

where:

ÚSi_plán – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

Ppred – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

Ppo – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.1.2**		**Title of measure:**		**Improvements in the thermal performance of public buildings – Healthcare facilities**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		Public resources
Measure lasting from: (year)	2007		to: (year)		2020
Responsible:	Ministry of Health		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	66.92 %	0.55 %	32.55 %	0.00 %	MSEE – RS 2015

Characteristics of the measure (including eligible activities)	Renovation of hospitals, buildings and facilities in the health sector to save energy, in particular the heat required for space heating, or other energy efficiency measures. Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are established on a par with minimum requirements for new buildings); (f) training, education – consulting, seminars, conferences and information campaigns. The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[29] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building.
Detailed description of the method to calculate energy savings	The energy saving for improvements in the thermal performance of buildings is determined as the difference in the heat required for space heating in the building's original condition and after renovation, according to the energy performance certificate. The INFOREG IS operated by the Ministry of Transport, Construction and Regional Development is used as a data source.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings, the average heat requirements for space heating applicable to the building in its original condition (based on the year of construction and the technical standards applicable to the given building category at the time) will be used. The average figure for the original condition of the office building is a value corresponding to the upper limit of energy class D (Implementing Decree of the Ministry of Transport and Construction No 364/2012). Estimates need to be used as no data on the original condition of renovated office buildings is available and additional surveying of energy consumption data is demanding and unreasonably costly. In the calculation of heat required for space heating, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the INFOREG and MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is entered in the INFOREG system by professionally competent persons responsible for energy performance certificates. INFOREG automatically (systemically) checks the data entered. Data on energy requirements (energy performance certificates) is exported, data formatted, from INFOREG to MSEE. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure – duplication	There is a potential overlap with measures funded from the 2007-2013 Structural Funds, the 2014-2020 ESIF and EPC for public sector buildings housing healthcare facilities.

[29] EED – Directive 2012/27/EU on energy efficiency

Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for identifiable financial mechanisms (public sector measures) and related to healthcare facilities (e.g. 3.1.1, 3.14) are deducted in full from the savings determined for this measure (3.1.2).
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that owners are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in buildings, publications have been issued and disseminated, such as Insulation and Window Replacement in Office Buildings. It is only through these State-initiated synergic support measures that investment activities in the renovation and construction of office buildings and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is applicable in the public sector. The savings made by improvements in the thermal performance of buildings are only included if a major renovation is performed under an issued energy performance certificate that the owners would not have carried out to the required extent had the State not intervened, i.e. they would only have dealt with energy-saving measures with a short payback period (e.g. window replacement). The measure takes into account energy savings, representing the difference in the heat required for space heating between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Health. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS and INFOREG IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.1.2**	**Title of measure:**	**Improvements in the thermal performance of public buildings – Healthcare facilities**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	Public resources

$$ÚS_{i\_plán} = (P_{pred} - P_{po}) \bullet CPP$$

where:
$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];
P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];
P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(m^2.a)];
CPP – total floor area of the building [m^2].

Measure	**3.2.1**		**Title of measure:**		**Improvements in the thermal performance of public buildings – Schools and school facilities**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		Operational Programme Research and Development 2007-2013
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Education, Science, Research and Sport		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	57.37 %	7.28 %	35.05 %	0.31 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Building of the infrastructure of higher-education institutions and modernisation of their interior fittings in order to improve the conditions of the educational process
	Nature of measure: (b) funding schemes – a grant from the 2007-2013 Structural Funds via the Operational Programme Research and Development to improve the thermal performance of buildings as part of Measure 5.1 Building of the infrastructure of higher-education institutions and modernisation of their interior fittings in order to improve the conditions of the educational process. Eligible applicants are public and State higher-education institutions and the Slovak Academy of Sciences. Activities are supported by a 95 % grant for public higher-education institutions and 100 % for other eligible beneficiaries. Projects may be implemented up to the end of 2015, and energy savings data will be submitted to the intermediate body, i.e. the Agency of the Ministry of Education, Science, Research and Sport (ASFEU), up to 2020 (i.e. five years after the end of the last projects). Overall, EUR 285.3 million was allocated to Measure 5.1. Part of this was used to improve the thermal performance of buildings.
	Supported/eligible activities are mainly focused on: (a) reconstruction of higher-education institutions (e.g. building insulation, window replacement, roof replacement or repair, central heating replacement, the repair of building walls, building stabilisation, the repair of the building exterior, reconstruction of hot water, water supply, sewage and electrical networks); (b) construction of the new buildings of existing higher-education institutions; (c) expansion of the structures of higher-education institutions (e.g. horizontal and vertical building extensions, academic libraries) (d) modernisation and reconstruction of accommodation capacities, gymnasiums, canteens, and sports facilities of higher-education institutions.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[30] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; (b) *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts.
Detailed description of the method to calculate energy savings	1. The energy saving is the difference between the energy required in the original condition of the building and the energy required after its renovation, as set out in the renovation project (improvement in the building's thermal performance). Data on energy required annually prior to the implementation of the renovation project and the planned energy required after renovation is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual

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	savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS system is taken as the decisive factor.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring is arranged by the managing authority (the Ministry of Education, Science, Research and Sport) and the intermediate body (the Agency for the Structural Funds of the EU – ASFEU) via ITMS, where a measurable indicator is provided. As the 'Energy savings' indicator is an impact indicator, information is monitored by way of *ex post* monitoring reports, which beneficiaries are required to submit once a year for the five years following the end of the project. The beneficiary is responsible for the data provided. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	1. The overall evaluation of the effectiveness of the measure also includes the financial resources used to achieve energy savings. In this measure, it is impossible to separate financial resources directly linked to a reduction in the energy intensity of schools and school facilities from the total financial resources used to improve the conditions of the education process. The investment intensity per unit of energy savings may therefore report a significant deviation from other similar energy efficiency measures in the buildings sector. 2. For future similar funding schemes, it is necessary to separate funds to improve the thermal performance of buildings from other eligible costs when a grant application is submitted.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Activity carried out by the managing authority and the intermediate body is demonstrably material, particularly the provision of financial resources and the management of the process for the use of those funds.
Complementarity of the measure	Not applicable. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Education, Science, Research and Sport. (c) Savings are determined transparently according to method (a) *ex ante*, by reference to a calculation of the energy required, and method (b) *ex post*, by measuring energy consumption after project implementation; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of

	action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formulas for calculating savings for individual energy efficiency measures

Formula to calculate energy savings			
Measure	**3.2.1**	**Title of measure:**	**Improvements in the thermal performance of public buildings – Schools and school facilities**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	2007-2013 Structural Funds, Operational Programme Research and Development

$$ÚS_{i\_plán} = (P_{pred} - P_{po}) \bullet CPP$$

where:

ÚSi_plán – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

Ppred – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

Ppo – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Note: If the energy saving is provided by the managing authority/the intermediate body as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.2.2**		**Title of measure:**		**Improvements in the thermal performance of public buildings – Schools and school facilities**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		2007-2013 ROP, Measure 1.1 Education infrastructure
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	57.37 %	7.28 %	35.05 %	0.31 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The implementation of Measure 1.1 Education infrastructure contributes to the objective of Priority Axis 1 of the ROP 'Increase in the standard of education services provided'. Nature of measure: (b) support schemes – a grant under the ROP; Measure 1.1 was intended to increase the quality of education services provided through the reconstruction, extension and modernisation of preschool facilities, primary schools and secondary schools, including the procurement of their equipment. (f) training, education – consulting, seminars, conferences and information campaigns – the opportunity to benefit from free advice via Living with Energy and similar SIEA activities aimed at achieving energy savings Supported/eligible activities are mainly focused on: - the reconstruction, extension and modernisation of selected nursery, primary and secondary schools and the related procurement of equipment More detailed description of eligible activities: (a) horizontal extension, vertical extension, structural alterations, building, reconstruction of structures and completion of buildings under construction, the connection of structures to utility networks (in accordance with the Building Act); (b) improvements in the energy performance of buildings – implementation of measures to improve the thermal insulation properties of structures, in particular the restoration of the external skin, the repair and replacement of the roof cladding, including roofing and flat roof surfaces, the repair and replacement of exterior windows and doors, the repair of a building's technical, energy or technological equipment and facilities, and the replacement of components thereof (in particular the replacement of boilers and radiators, interior plumbing systems, air-conditioning equipment, the installation of solar panels where appropriate, etc.); (c) the procurement of a building's internal and external equipment necessarily related to the building's purpose of use (d) design and engineering work for a project
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[31] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;
Detailed description of the method to calculate energy savings	- Energy savings are calculated on the basis of data under energy performance certificates for the schools and school facilities category (total floor area of renovated buildings in the given year, the resultant space heating energy requirement) and the number of buildings renovated under ROP 1.1 in the given year. - Finances are calculated on the basis of the investment intensity of similar projects for the renovation of schools and school facilities under the MunSEFF programme, where funds are spent only on the financing of energy efficiency measures (i.e. excluding the cost of the completion of works, extensions, technical equipment, etc.).
Use of expert estimates and assumptions in the	Yes

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calculation of energy savings	- Energy savings: assumptions: - initial condition: upper limit of F (168 kWh/(m2.a)); - post-renovation: upper limit of C (84 kWh/(m2.a)) (based on the energy performance certificate in 2011) - i.e. the average saving is approximately 84.00 kWh/(m2.a). That equates to approximately 208 MWh per building. - Finances are quantified on the basis of investment intensity assumed to be EUR 1 450 per MWh (source: average investment intensity, schools, MunSEFF). These are the total investment costs, which are split at a ratio of 85 %, 10 % and 5 % into the ERDF, the central government budget, and the budgets of municipalities and higher territorial units. - The savings are indicated in the year following the year of renovation. Finances are indicated in the year of project completion.
Monitoring, control and verification of the energy savings made	Monitoring is carried out by the managing authority (the Ministry of Agriculture and Rural Development) and the intermediate body via the ITMS, where a measurable indicator is provided. Verification procedure by the Ministry of Economy/the Slovak Innovation and Energy Agency, however, found that this indicator is not always correctly presented (errors in units, cumulative savings for five years presented instead of annual savings, etc.). Therefore, savings were determined on the basis of energy performance certificates. In the future, with similar projects it will be necessary to place a greater emphasis on measurable indicators and to check them periodically against the actually measured energy consumption before and after renovation.
Overall evaluation and way forward	The measure was successful; it delivered the required savings. The IROP 2014-2020, which will be used to finance the renovation of public buildings, is the follow-up programme to the ROP 2007-2013.
Projected overlapping with another measure – duplication	Potential overlap with other measures for school buildings.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that the energy savings reported are monitored on a project-by-project basis and the savings are counted in only one of the relevant measures, depending on the financing method.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activity of the designated bodies (central bodies of State administration) is demonstrably material, in particular in the exercise of Task B of Government Resolution No 350/2014. Resources from the central government budget are provided to implement the measure in full. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that central bodies of State administration are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in buildings, publications have been issued and disseminated, such as Insulation and Window Replacement in Office Buildings. It is only through these State-initiated synergic support measures that investment activities in the renovation of the office buildings of central bodies of State administration and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. Savings from this measure are counted only if renovation is based on the acceptance of a grant. The measure takes into account total energy savings representing the difference between the original and the new condition of the building.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second

	subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS IS and MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.2.2**	**Title of measure:**	**Improvements in the thermal performance of public buildings – Schools and school facilities**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	2007-2013 ROP, Measure 1.1 Education infrastructure

$$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$$

where:

ÚSi_plán – planned energy saving (final energy consumption) in the year of building renovation [kWh];

Ppred – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

Ppo – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.3**		**Title of measure:**		**Improvements in the thermal performance of public buildings – Social services**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		2007-2013 ROP, Measure 2.1 Infrastructure of social services, social protection and social guardianship
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	41 %	12 %	47 %	0 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The implementation of Measure 2.1 contributes to the fulfilment of the objective of Priority Axis 2 of the ROP, 'Increase in the scope and standard of education services provided'. Measure 2.1 aims to enhance the quality of social services provided through the reconstruction, extension, modernisation and building of social service facilities and child protection and social guardianship facilities, including the procurement of their equipment. Nature of measure: (b) funding schemes – a grant from the 2007-2013 Structural Funds via the ROP for the implementation of projects outside the Bratislava Self-governing Region; the maximum aid intensity for undertakings was 85 %, 10 % and 5 % of eligible expenditure for the ERDF, the central government budget, and the budgets of municipalities and higher territorial units; (f) training, education – consulting, seminars, conferences and information campaigns – the opportunity to benefit from free advice via Living with Energy and similar SIEA activities aimed at achieving energy savings Supported/eligible ROP 2.1 activities mainly focused on: (a) support for a pilot approach to the deinstitutionalisation of existing social service facilities and support for the deinstitutionalisation of existing child protection and social guardianship facilities through the construction, reconstruction, extension and modernisation of structures used by the facilities, and the related procurement of equipment, including ICT equipment – area of support 2.1a, improvements in the energy performance of buildings; – implementation of measures to improve the thermal insulation properties of structures, in particular the restoration of the external skin, the repair and replacement of the roof cladding, including roofing and flat roof surfaces, and the repair and replacement of exterior windows and doors; – the repair of a building's technical, energy or technological equipment and facilities, and the replacement of components thereof (in particular the replacement of boilers and radiators, interior plumbing systems, and air-conditioning equipment); – the installation of solar panels where appropriate, etc. (b) the building, reconstruction, modernisation and equipping of the community centres as civil infrastructure facilities aimed at strengthening social inclusion (especially marginalised Roma communities) – area of support 2.1b
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[32] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a) ex ante* – projected savings – to determine the original condition of the building according to the year of construction and the technical standards applicable at the time, and the new condition of the building, using a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing thermal performance of the building
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the managing authority for five years after the completion of project implementation.

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	2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS system is taken as the decisive factor.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring is carried out by the managing authority (the Ministry of Construction and Regional Development) via the ITMS, where a measurable indicator is presented. As the 'Energy savings' indicator is an impact indicator, information is monitored by way of *ex post* monitoring reports, which beneficiaries are required to submit once a year for the five years following the end of the project. The beneficiary is responsible for the data provided. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	1. The final deadline for the receipt of grant applications was 10 March 2014. 2. The overall evaluation of the effectiveness of the measure also includes the financial resources used to achieve energy savings. In this measure, it is impossible to separate financial resources directly linked to a reduction in the energy intensity of hospitals and outpatient healthcare facilities from the total resources used. The investment intensity per unit of energy savings may therefore report a significant deviation from other similar energy efficiency measures in the buildings sector. 3. For future similar funding schemes, it is necessary to separate funds to improve the thermal performance of buildings from other eligible costs when a grant application is submitted. 4. The IROP 2014-2020, which will be used to finance the renovation of public buildings, is the follow-up programme to the ROP 2007-2013.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Activity carried out by the managing authority is demonstrably material, particularly the provision of financial resources and the management of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement). .
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) *ex ante*, by reference to a calculation of the energy required, and method (b) *ex post*, by measuring energy consumption after project implementation; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation

	of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.3**	**Title of measure:**	**Improvements in the thermal performance of public buildings – Social services**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	2007-2013 ROP, Measure 2.1 Infrastructure of social services, social protection and social guardianship

$$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right)$$

where:

$\acute{U}S_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(a)].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.4**		**Title of measure:**		**Improvements in the thermal performance of public buildings – Cultural facilities**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		ROP 2007-2013, Measure 3.1 Strengthening the cultural potential of the regions
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	41 %	12 %	47 %	0 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The implementation of Measure 3.1 contributes to the objective of Priority Axis 3 of the ROP 'Strengthening the cultural potential of the regions and the development of tourism'. Measure 3.1 aims to increase the quality of services provided by heritage and repository institutions locally and regionally through their reconstruction, extension and modernisation, including the procurement of their equipment, and the revitalisation of important landmarks in connection with the preservation of cultural heritage and its use in cultural and sightseeing tourism.
	Nature of measure: (b) funding schemes – a grant from the 2007-2013 Structural Funds via the ROP for the implementation of projects outside the Bratislava Self-governing Region; the maximum aid intensity for undertakings was 85 %, 10 % and 5 % of eligible expenditure for the ERDF, the central government budget, and the budgets of municipalities and higher territorial units; (f) training, education – consulting, seminars, conferences and information campaigns. The opportunity to benefit from free advice via Living with Energy and similar SIEA activities aimed at achieving energy savings
	Supported/eligible ROP 3.1 activities mainly focused on: (a) the reconstruction, extension and modernisation of heritage and repository institutions locally and regionally (libraries, museums, galleries) and the associated procurement of equipment, including ICT, improvement in the energy performance of buildings – implementation of measures to improve the thermal insulation properties of structures, in particular the restoration of the external skin, the repair and replacement of the roof cladding, including roofing and flat roof surfaces, and the repair and replacement of exterior windows and doors; – the repair of a building's technical, energy or technological equipment and facilities, and the replacement of components thereof (in particular the replacement of boilers and radiators, interior plumbing systems, and air-conditioning equipment); – the installation of solar panels where appropriate, etc. (b) the revitalisation of significant unused or inappropriately used immovable cultural monuments in an area owned by the public sector, used to expand the activities of heritage and repository institutions and their use in cultural and sightseeing tourism, in justified and exceptional cases for cultural, social and educational purposes, and the associated procurement of equipment, including ICT equipment
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[33] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(c) ex ante* – projected savings – to determine the original condition of the building according to the year of construction and the technical standards applicable at the time, and the new condition of the building, using a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing thermal performance of the building
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the managing authority for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no

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	reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS system is taken as the decisive factor.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring is carried out by the managing authority (the Ministry of Construction and Regional Development) via the ITMS, where a measurable indicator is presented. As the 'Energy savings' indicator is an impact indicator, information is monitored by way of *ex post* monitoring reports, which beneficiaries are required to submit once a year for the five years following the end of the project. The beneficiary is responsible for the data provided. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	1. The final deadline for the receipt of grant applications was 18 February 2015. 2. The overall evaluation of the effectiveness of the measure also includes the financial resources used to achieve energy savings. In this measure, it is impossible to separate financial resources directly linked to a reduction in the energy intensity of hospitals and outpatient healthcare facilities from the total resources used. The investment intensity per unit of energy savings may therefore report a significant deviation from other similar energy efficiency measures in the buildings sector. 3. For future similar funding schemes, it is necessary to separate funds to improve the thermal performance of buildings from other eligible costs when a grant application is submitted. 4. The IROP 2014-2020, which will be used to finance the renovation of public buildings, is the follow-up programme to the ROP 2007-2013.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Activity carried out by the managing authority is demonstrably material, particularly the provision of financial resources and the management of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement). .
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) *ex ante*, by reference to a calculation of the energy required, and method (b) *ex post*, by measuring energy consumption after project implementation; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established.

	(j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.4**	**Title of measure:**	**Improvements in the thermal performance of public buildings – Cultural facilities**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	ROP 2007-2013, Measure 3.1 Strengthening the cultural potential of the regions

$$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right)$$

where:

$\acute{U}S_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(a)].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.5**		**Title of measure:**		**Improvements in the thermal performance of public buildings – emergency services**
MSEE ID:	**ROP**				
Sector:	**Public sector**		Financial mechanism:		ROP 2007-2013, Measure 4.2 Infrastructure of non-commercial emergency services
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	41 %	12 %	47 %	0 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The implementation of Measure 4.2 contributes to the objective of Priority Axis 4 of the ROP 'Increasing the competitiveness of settlements and increasing the quality and safety of public spaces'. Measure 4.2 aims to increase the quality and safety of public spaces through the reconstruction, extension and modernisation of non-commercial emergency service facilities, including the procurement of their equipment.
	Nature of measure: (b) funding schemes – a grant from the 2007-2013 Structural Funds via the ROP for the implementation of projects outside the Bratislava Self-governing Region; the maximum aid intensity for undertakings was 85 %, 10 % and 5 % of eligible expenditure for the ERDF, the central government budget, and the budgets of municipalities and higher territorial units; (f) training, education – consulting, seminars, conferences and information campaigns – the opportunity to benefit from free advice via Living with Energy and similar SIEA activities aimed at achieving energy savings
	Supported/eligible ROP 4.2 activities mainly focused on: (a) the reconstruction, extension and modernisation of existing facilities and the associated procurement of non-commercial emergency service equipment, including ICT, improvements in the energy performance of buildings, improvements in the energy performance of buildings: – implementation of measures to improve the thermal insulation properties of structures, in particular the restoration of the external skin, the repair and replacement of the roof cladding, including roofing and flat roof surfaces, and the repair and replacement of exterior windows and doors; – the repair of a building's technical, energy or technological equipment and facilities, and the replacement of components thereof (in particular the replacement of boilers and radiators, interior plumbing systems, and air-conditioning equipment); – the installation of solar panels where appropriate, etc. (b) the building of new Fire and Rescue Service facilities – rapid response stations exclusively in two cases (in Trnava and Košice) in line with needs identified in the 'Concept for the blanket deployment of the forces and resources of the Fire and Rescue Service and municipal fire brigades in the Slovak Republic – the sites of fire stations and fire houses', and the associated procurement of equipment, including ICT equipment, other than vehicles and the associated procurement of equipment for the flood rescue service established by the Fire and Rescue Service
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[34] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: *(a) ex ante* – projected savings – to determine the original condition of the building according to the year of construction and the technical standards applicable at the time, and the new condition of the building, using a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing thermal performance of the building
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the

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	evaluation of the application. The actual savings achieved are monitored by the managing authority for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS system is taken as the decisive factor.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring is carried out by the managing authority (the Ministry of Agriculture and Rural Development) via the ITMS, where a measurable indicator is presented. As the 'Energy savings' indicator is an impact indicator, information is monitored by way of *ex post* monitoring reports, which beneficiaries are required to submit once a year for the five years following the end of the project. The beneficiary is responsible for the data provided. Under Section 11(2) of Act No 321/2014 on energy efficiency, the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide energy consumption data for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	1. The final deadline for the receipt of grant applications was 17 May 2013. 2. The overall evaluation of the effectiveness of the measure also includes the financial resources used to achieve energy savings. In this measure, it is impossible to separate financial resources directly linked to a reduction in the energy intensity of hospitals and outpatient healthcare facilities from the total resources used. The investment intensity per unit of energy savings may therefore report a significant deviation from other similar energy efficiency measures in the buildings sector. 3. For future similar funding schemes, it is necessary to separate funds to improve the thermal performance of buildings from other eligible costs when a grant application is submitted. 4. The IROP 2014-2020, which will be used to finance the renovation of public buildings, is the follow-up programme to the ROP 2007-2013.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. Activity carried out by the managing authority is demonstrably material, particularly the provision of financial resources and the management of the process for the use of those funds.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The measure would not be implemented without a funding scheme. Were it not for State intervention, projects would not be implemented to the existing extent. They would only deal with any serious disrepair and energy-saving measures with a reasonable payback period (e.g. window replacement). .
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) *ex ante*, by reference to a calculation of the energy required, and method (b) *ex post*, by measuring energy consumption after project implementation; (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken.

	(i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formulas for calculating savings for individual energy efficiency measures

Formula to calculate energy savings			
Measure	**3.5**	**Title of measure:**	**Improvements in the thermal performance of public buildings – emergency services**
MSEE ID:	**ROP**		
Sector:	**Public sector**	Financial mechanism:	2007-2013 Structural Funds, ROP, Measure 4.2 Infrastructure of non-commercial rescue services

$$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right)$$

where:

$\acute{U}S_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(a)].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.6**		**Title of measure:**		**Reduction in the energy intensity of public buildings – office buildings, buildings of schools and school facilities, healthcare facilities**
MSEE ID:	**KZP**				
Sector:	**Public sector**		Financial mechanism:		Operational Programme Environmental Quality 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential (AB) in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Under Specific Objective 4.3 'Support of energy efficiency and the use of energy from renewable sources in public infrastructure, including public buildings' of the Operational Programme Environmental Quality, particular support will focus on comprehensive projects, i.e. projects combining several measures to reduce energy requirement to the level of low-energy buildings, ultra-low-energy buildings and nearly zero-energy buildings.
	Nature of measure: (b) support schemes – Structural Funds, grant from the Operational Programme Environmental Quality. Energy-saving activities are financed up to a maximum of 85 % of eligible expenditure (excluding the Bratislava Region) in the form of a grant in accordance with the rules set out in the System for the Financial Management of the European Structural Funds for the 2014-2020 Programming Period.
	Supported/eligible activities are mainly focused on: (a) improvements in the thermal performance of buildings (b) the modernisation of space heating/air-conditioning systems (c) the modernisation of hot water production systems (d) the modernisation of lighting and wiring with other energy-saving measures (e) the installation of RES facilities in buildings will only be supported as part of a comprehensive project to improve the energy performance of public buildings
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[35] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; (b) *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS 2014+ system is taken as the decisive factor.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring will be arranged in accordance with rules on the use of financial resources from the ESIF for the 2014-2020 programming period. This entails the provision of data on the fulfilment of the indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS 2014+ and MSEE (energy efficiency monitoring system). The beneficiary is responsible for the data provided. The intermediate body (the Slovak Innovation and Energy Agency) monitors the fulfilment of the indicator (energy savings)

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	and, if it is not being met, applies the sanction mechanisms specified in the grant agreement.
Overall evaluation and way forward	By the end of 2016, no call for projects had been announced. It is envisaged that projects will be included in the detailed monitoring of energy consumption for operational purposes by the energy efficiency monitoring system (MSEE)
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. Savings from this measure are counted only if renovation is based on the acceptance of a grant. The measure takes into account total energy savings representing the difference between the original and the new condition of the building.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2014-2020 programming period and in State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will assess the contribution of policy measures in the 2017-2020 period. (b) Ministry responsible for the measure: Ministry of the Environment. (c) Savings are determined transparently according to method (a) – *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS 2014+ IS and MSEE level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.6**	**Title of measure:**	**Reduction in the energy intensity of public buildings – office buildings, buildings of schools and school facilities, healthcare facilities**
MSEE ID:	**KZP**		
Sector:	**Public sector**	Financial mechanism:	Operational Programme Environmental Quality 2014-2020

$$ÚS_{i\_plán} = \left(P_{pred} - P_{po}\right)$$

where:

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(a)].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.7.1**		**Title of measure:**		**Improvements in the thermal performance of public buildings – office buildings ('relevant')**
MSEE ID:	**REL**				
Sector:	**Public sector**		Financial mechanism:		Budget headings of central bodies of State administration
Measure lasting from: (year)	2007		to: (year)		2020
Responsible:	Central bodies of State administration		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Renovation of the buildings and building technical systems of central bodies of State administration (relevant buildings included in the list maintained by the Ministry of Transport and Construction).
	Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are set at the level of minimum requirements for new buildings, the building renovation plan pursuant to Section 10 of Act No 321/2014 on energy efficiency, the hydronic balancing of heat and hot water distribution, the insulation of hot water distribution systems); (f) training, education – consulting, seminars, conferences and information campaigns.
	The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings; (b) hydronic balancing of space heating, including thermostatic valves; (c) hydronic balancing and insulation of hot water distribution systems.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[36] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;
Detailed description of the method to calculate energy savings	The energy saving is determined as the difference between the energy required for space heating and hot water production in the original condition of the building and the energy required for space heating and hot water production after the renovation of the building according to the building renovation project. The data necessary for the energy saving calculation is transmitted electronically to the energy efficiency monitoring system (MSEE) by central bodies of State administration further to Task B of Government Resolution No 350/2014 and pursuant to Section 24 of Act No 321/2014 on energy efficiency.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is transmitted to the system electronically by building managers. Under Section 24 of Act No 321/2014 on energy efficiency, central bodies of State administration are required to provide the MSEE operator annually with energy consumption data for the previous calendar year and, under Section 11(2), the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide data on the energy efficiency measures implemented for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with another measure –	There is a potential overlap with measures funded from the 2007-2013 Structural Funds, the 2014-2020 ESIF and via guaranteed energy services for public- and private-sector office

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duplication	buildings.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings are monitored on a project-by-project basis and the savings are counted in only one of the relevant measures. Priority is given to energy savings counted towards measures funded from the 2007-2013 Structural Funds, the 2014-2020 ESIF and via guaranteed energy services, if such funding sources have been identified. In this case, the savings for the building in question are not included in the savings under Measure 3.7.1.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activity of the designated bodies (central bodies of State administration) is demonstrably material, in particular in the exercise of Task B of Government Resolution No 350/2014. Resources from the central government budget are provided to implement the measure in full. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that central bodies of State administration are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in buildings, publications have been issued and disseminated, such as Insulation and Window Replacement in Office Buildings. It is only through these State-initiated synergic support measures that investment activities in the renovation of the office buildings of central bodies of State administration and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The measure takes into account energy savings, representing the difference in the heat required for space heating and hot water production between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued. The performance of the tasks under Government Resolution No 350/2014 is checked annually by the Government Office.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.7.1**	**Title of measure:**	**Improvements in the thermal**

MSEE ID:			**performance of public buildings – office buildings ('relevant')**
Sector:	**Public sector**	Financial mechanism:	Budget headings of central bodies of State administration

$$ÚS_{i\_plán} = (P_{pred} - P_{po})$$

where:

ÚSi_plán – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

Ppred – energy required for space heating and hot water production prior to renovation of the building – standardised energy requirement for space heating and hot water production in the original condition of the building [kWh/a];

Ppo – energy required for space heating and hot water production after renovation of the building – standardised energy requirement for space heating and hot water production in the post-renovation condition of the building [kWh/a];

Measure	**3.7.2a**		**Title of measure:**		**Improvements in the thermal performance of public buildings – office buildings (of central bodies of State administration directly)**
MSEE ID:	**UOSS**				
Sector:	**Public sector**		Financial mechanism:		Budget headings of central bodies of State administration
Measure lasting from: (year)	2007		to: (year)		2020
Responsible:	Central bodies of State administration		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Renovation of the buildings and building technical systems of central bodies of State administration (buildings owned/managed by central bodies of State administration, excluding relevant buildings included in the list maintained by the Ministry of Transport and Construction). Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are set at the level of minimum requirements for new buildings, the building renovation plan pursuant to Section 10 of Act No 321/2014 on energy efficiency, the hydronic balancing of heat and hot water distribution, the insulation of hot water distribution systems); (f) training, education – consulting, seminars, conferences and information campaigns. The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings; (b) hydronic balancing of space heating, including thermostatic valves; (c) hydronic balancing and insulation of hot water distribution systems.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[37] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;
Detailed description of the method to calculate energy savings	The energy saving is determined as the difference between the energy required for space heating and hot water production in the original condition of the building and the energy required for space heating and hot water production after the renovation of the building according to the building renovation project. The data necessary for the energy saving calculation is transmitted electronically to the energy efficiency monitoring system (MSEE) by central bodies of State administration further to Task B of Government Resolution No 350/2014 and pursuant to Section 24 of Act No 321/2014 on energy efficiency.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is transmitted to the system electronically by building managers. Under Section 24 of Act No 321/2014 on energy efficiency, central bodies of State administration are required to provide the MSEE operator annually with energy consumption data for the previous calendar year and, under Section 11(2), the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide data on the energy efficiency measures implemented for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.

[37] EED – Directive 2012/27/EU on energy efficiency

Projected overlapping with another measure – duplication	There is a potential overlap with measures funded from the 2007-2013 Structural Funds, the 2014-2020 ESIF and via guaranteed energy services for public- and private-sector office buildings.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings are monitored on a project-by-project basis and the savings are counted in only one of the relevant measures. Priority is given to energy savings counted towards measures funded from the 2007-2013 Structural Funds, the 2014-2020 ESIF and via guaranteed energy services, if such funding sources have been identified. In this case, the savings for the building in question are not included in the savings under Measure 3.7.2a.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activity of the designated bodies (central bodies of State administration) is demonstrably material, in particular in the exercise of Task B of Government Resolution No 350/2014. Resources from the central government budget are provided to implement the measure in full. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that central bodies of State administration are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in buildings, publications have been issued and disseminated, such as Insulation and Window Replacement in Office Buildings. It is only through these State-initiated synergic support measures that investment activities in the renovation of the office buildings of central bodies of State administration and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The measure takes into account energy savings, representing the difference in the heat required for space heating and hot water production between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued. The performance of the tasks under Government Resolution No 350/2014 is checked annually by the Government Office.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.7.2a**	**Title of measure:**	**Improvements in the thermal performance of public buildings – office buildings (central bodies of State administration directly)**
MSEE ID:	**UOSS**		
Sector:	**Public sector**	Financial mechanism:	Budget headings of central bodies of State administration

$$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right)$$

where:

ÚSi_plán – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

Ppred – energy required for space heating and hot water production prior to renovation of the building – standardised energy requirement for space heating and hot water production in the original condition of the building [kWh/a];

Ppo – energy required for space heating and hot water production after renovation of the building – standardised energy requirement for space heating and hot water production in the post-renovation condition of the building [kWh/a];

Measure	**3.7.2a**		**Title of measure:**		**Improvements in the thermal performance of public buildings – office buildings (of central bodies of State administration indirectly)**
MSEE ID:	**UOSS**				
Sector:	**Public sector**		Financial mechanism:		Budget headings of central bodies of State administration
Measure lasting from: (year)	2007		to: (year)		2020
Responsible:	Central bodies of State administration		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Renovation of the buildings and building technical systems of organisations within the competence of central bodies of State administration (e.g. office buildings owned by towns and municipalities). Nature of measure: (c) legislative regulations – (energy performance of buildings – minimum requirements for buildings undergoing major renovation are set at the level of minimum requirements for new buildings, the building renovation plan pursuant to Section 10 of Act No 321/2014 on energy efficiency, the hydronic balancing of heat and hot water distribution, the insulation of hot water distribution systems); (f) training, education – consulting, seminars, conferences and information campaigns. The activities evaluated focused primarily on: (a) improvements in the thermal performance of buildings; (b) hydronic balancing of space heating, including thermostatic valves; (c) hydronic balancing and insulation of hot water distribution systems.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[38] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building;
Detailed description of the method to calculate energy savings	The energy saving is determined as the difference between the energy required for space heating and hot water production in the original condition of the building and the energy required for space heating and hot water production after the renovation of the building according to the building renovation project. The data necessary for the energy saving calculation is transmitted electronically to the energy efficiency monitoring system (MSEE) by central bodies of State administration further to Task B of Government Resolution No 350/2014 and pursuant to Section 24 of Act No 321/2014 on energy efficiency.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring – carried out via the MSEE IS (the energy efficiency monitoring system operated by the Slovak Innovation and Energy Agency). Data is transmitted to the system electronically by building managers. Under Section 24 of Act No 321/2014 on energy efficiency, central bodies of State administration are required to provide the MSEE operator annually with energy consumption data for the previous calendar year and, under Section 11(2), the MSEE operator may ask the owner/manager of a building with a total floor area of more than 1 000 m^2 to provide data on the energy efficiency measures implemented for the previous calendar year. Checks are then also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period. This change will tighten minimum requirements for buildings undergoing renovation further to Act No 555/2005 and Implementing Decree No 364/2012.
Projected overlapping with	There is a potential overlap with measures funded from the 2007-2013 Structural Funds, the

[38] EED – Directive 2012/27/EU on energy efficiency

another measure – duplication	2014-2020 ESIF and via guaranteed energy services for public- and private-sector office buildings.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings are monitored on a project-by-project basis and the savings are counted in only one of the relevant measures. Priority is given to energy savings counted towards measures funded from the 2007-2013 Structural Funds, the 2014-2020 ESIF and via guaranteed energy services, if such funding sources have been identified. In this case, the savings for the building in question are not included in the savings under Measure 3.7.2a.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer. The activity of the designated bodies (central bodies of State administration) is demonstrably material, in particular in the exercise of Task B of Government Resolution No 350/2014. Resources from the central government budget are provided to implement the measure in full. The introduction of the obligation to renovate buildings to the energy efficiency level of new buildings means that central bodies of State administration are forced to carry out renovation beyond the average measures they would take for a reasonable economic return. To implement measures of the Energy Efficiency Policy (adopted under Government Resolution No 576 of 4 July 2007), Slovakia introduced a coherent system to raise awareness of energy efficiency, which includes the provision of free consulting by the Slovak Innovation and Energy Agency financed annually by the budget heading of the Ministry of Economy and the EU Structural Funds (mainly via the national 'Living with Energy' project). In addition to individual and group consulting on how to reduce energy requirements in buildings, publications have been issued and disseminated, such as Insulation and Window Replacement in Office Buildings. It is only through these State-initiated synergic support measures that investment activities in the renovation of the office buildings of central bodies of State administration and in the modernisation and reconstruction of building technical systems have been significantly accelerated.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. The measure takes into account energy savings, representing the difference in the heat required for space heating and hot water production between the original and the new condition of the building, because the minimum requirements for buildings undergoing major renovation are set at the level of the minimum requirements for new buildings, which in the case of renovated buildings is not always technically, functionally and economically feasible. Potential savings that can be achieved by replacing an existing heat source with a more modern new one to which the Ecodesign Directive might apply, as well as potential savings from the modernisation and reconstruction of lighting, do not count towards energy savings.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	If a building undergoes major renovation, minimum energy performance requirements should be achieved if technically, functionally and economically feasible. This is checked in the final approval procedure. If the fulfilment of requirements is not technically, functionally and economically feasible, this is already evident when the project for the issuance of a building permit is submitted, and the competent building authority decides whether non-compliance with the minimum requirements is justified. If it is not justified, no building permit is issued. The performance of the tasks under Government Resolution No 350/2014 is checked annually by the Government Office.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) – *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.7.2b**	**Title of measure:**	**Improvements in the thermal performance of public buildings – office buildings (central bodies of State administration indirectly)**
MSEE ID:	**UOSS**		
Sector:	**Public sector**	Financial mechanism:	Budget headings of central bodies of State administration

$$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right)$$

where:

ÚSi_plán – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

Ppred – energy required for space heating and hot water production prior to renovation of the building – standardised energy requirement for space heating and hot water production in the original condition of the building [kWh/a];

Ppo – energy required for space heating and hot water production after renovation of the building – standardised energy requirement for space heating and hot water production in the post-renovation condition of the building [kWh/a].

Measure	**3.9**		**Title of measure:**		**Improvements in the thermal performance of public buildings**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		EkoFond
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	EkoFond non-investment fund		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The main form of support for non-business entities (schools, municipalities, higher territorial units and others) lies in the granting of financial contributions under programmes and grants to promote energy efficiency. EkoFond pools financial resources intended to meet a generally beneficial purpose, such as promoting the efficient use of energy and environmental protection. Nature of measure: (b) funding schemes – EkoFond provides support in the form of financial contributions, in accordance with the generally beneficial purpose and conditions specified in the declared programme, further to applications for these contributions from applicants. EkoFond is a non-investment fund, founded by Slovenský plynárenský priemysel, a.s., that has been operating in Slovakia since 2007. Since its establishment, it has financially supported – as a publicly beneficial and active society – projects for the efficient use of energy, environmental protection and educational activities in these areas. Supported/eligible activities are mainly focused on: (c) eligible projects under EkoFond: GP 01 Cogeneration and trigeneration based on natural gas – up to 1 MWe GP 02 Improvement in the energy performance of buildings (thermal insulation of the external skin of buildings and window replacement) GP 03 Support of gas heat pump installation GP 04 Research, development and introduction of new progressive technology based on natural gas GP 05 Support for the development of the use of alternative CNG motor fuel
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[39] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after).
Detailed description of the method to calculate energy savings	Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Under GP 01 Cogeneration and trigeneration based on natural gas – highly efficient combined production produces primary energy savings of at least 10 % compared to the separate production of heat and electricity; Under GP 02 Improvement in the energy performance of buildings – EkoFond provides a contribution of EUR 25 per m^2 of insulated surface for the thermal insulation of the external skin and roofs of buildings, and EUR 80 per m^2 of window surface for the replacement of windows; Under GP 03 Support of gas heat pump installation – gas heat pumps most commonly obtain heat from the ambient air, and, to produce heat, require approximately 55 % of primary energy compared to other space heating systems.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	The fund enters into an agreement on the granting of a financial contribution with beneficiaries. Financial resources will not be released to the beneficiary until the project has been completed. 70 % of the financial contribution will be credited to the beneficiary's bank account

[39] EED – Directive 2012/27/EU on energy efficiency

	after project implementation, and 30 % after 12 months of project operation, provided that the project parameters foreseen under the design documentation submitted by the applicant are met. The fund is entitled to carry out interim in-person checks on the use of the financial contribution
Overall evaluation and way forward	The fund keeps complete records of applications for financial contributions and decisions to grant/refuse financial contributions throughout the life of the fund.
Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that the energy savings presented are monitored on a project-by-project basis.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the EkoFond support programme.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	In keeping with an approved agreement on the granting of a financial contribution, the fulfilment of the conditions attached to the approved financial contribution are continuously monitored during the process of project implementation. The first instalment of the financial contribution will be disbursed after the project has been implemented in keeping with its expected parameters and intentions. This is followed by a final evaluation of the approved project and the financial contribution, with the Fund reserving the right to monitor and evaluate the preparation, progress and results of the projects supported. The final project and financial statement are also evaluated and checked. The second instalment of the financial contribution is then disbursed.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.9**	**Title of measure:**	**Improvements in the thermal performance of public buildings**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	EkoFond

$$\acute{U}S_i = S_{pred} - S_{po}$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [kWh/year];

S_{pred} – energy consumption before project implementation – value from the financial contribution application in [kWh/year];

S_{po} – energy consumption before project implementation – value from the financial contribution application in [kWh/year].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.10**		**Title of measure:**		**Improvements in the thermal performance of public buildings**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		MunSEFF
Measure lasting from: (year)	2011		to: (year)		2015
Responsible:	EBRD, Commission, ESG		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The main objective of the programme is to stimulate the energy-efficient renovation of municipal infrastructure, especially in cases where there is high potential to achieve savings in the sector of municipality-owned public buildings
	Nature of measure: (b) funding schemes – credit line to support the development of energy efficiency and renewable energy sources among towns and municipalities in Slovakia;
	Supported/eligible activities are mainly focused on: (c) eligible projects under MunSEFF: component 2 – projects for the energy efficiency of municipality-owned buildings – heat production for space heating and water heating, replacement of windows and transparent parts of the building envelope, thermal insulation of the external skin
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[40] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after)
Detailed description of the method to calculate energy savings	According to MunSEFF, component 2: Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is part of the grant application. Grant eligibility depends on minimum energy savings of 30 % compared to the original energy consumption.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	Monitoring – the design consultant (ESG/ENVIROS) conducts an energy audit for projects to improve the energy efficiency of municipality-owned public buildings. If the client already has a clearly defined project scope presented in the appropriate form, the design consultant proceeds directly to the production of a Rational Energy Utilisation Plan (REUP), which includes the results of the energy audit, and describes the financing plan and timetable for implementation. It also incorporates proposed measures related to the investor's plan, as well as compliance with environmental standards. If required, the design consultant assists the client when applying for a loan. Checks are also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period.
Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for projects intended to improve the energy efficiency of public buildings owned by municipalities with a MunSEFF contribution are not counted towards other measures as the processing is carried out on a project-by-project basis.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure	The MunSEFF-measure support providers are the European Bank for Reconstruction and

[40] EED – Directive 2012/27/EU on energy efficiency

(Annex V, point 2(c), to the EED)	Development and the European Commission. The programme implementers are Slovenská sporiteľňa a.s. and Všeobecná úverová banka a.s. The design consultant (ESG/ENVIROS) assists clients applying for loans and monitors the relevant projects for the energy efficiency of public buildings. The activities of these entities are demonstrably material to the achievement of claimable energy savings.
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the MunSEFF support programme.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Grant levels relative to the loan principal are set according to the components of each project: component 2 – the grant level ranges from 10 % to 15 % of the loan principal
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) *ex ante* and the *ex post* method. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.10**	**Title of measure:**	**Improvements in the thermal performance of public buildings**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	MunSEFF

$$ÚS_{i\_plán} = P_{pred} - P_{po}$$

where:

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year in which improvements are made to the energy efficiency of a public building owned by a municipality [GJ/a];

P_{pred} – energy requirement for the project prior to renovation – for the original condition [GJ/a];

P_{po} – energy requirement for the project after renovation – for the new condition [GJ/a];

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.11**		**Title of measure:**		**Improvements in the thermal performance of public buildings**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		Environmental Fund
Measure lasting from: (year)	2005		to: (year)		2017
Responsible:	Environmental Fund		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The Environmental Fund has been established primarily to provide State aid in environmental care and the cultivation of the environment on the principles of sustainable development. Nature of measure: (b) funding schemes – the Environmental Fund's main mission is to provide financial resources to applicants in the form of subsidies or loans to support projects where activities are aimed at fulfilling State environmental policy objectives nationally, regionally or locally. Supported/eligible activities are mainly focused on: (c) eligible projects under the Environmental Fund: • support of projects intended to make realistically achievable and measurable savings in greenhouse gas emissions; • the modernisation of facilities to make energy savings for the consumer; • the enhanced energy efficiency of existing buildings, including insulation; • support for a switch to low-emission forms of transport and from individual to public transport; • heat loss reduction during heat distribution in district heating; • the enhanced energy efficiency of technological units and individual facilities;
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[41] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after).
Detailed description of the method to calculate energy savings	Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	The Environmental Fund performs the following activities and processes related to the provision of support to applicants: • the acceptance, registration and administration of subsidy or loan applications until the subsidy/loan agreements with applicants are signed; • supervision of project implementation and the utilisation of financial resources by beneficiaries until the final evaluation of the fulfilment of terms under the subsidy/loan agreements • a check on the fulfilment of terms under subsidy/loan agreements and a financial control pursuant to Act No 502/2001 on financial control and internal auditing
Overall evaluation and way forward	Once the contractual terms have been met, the fund will release and transfer financial resources to the beneficiaries, supervising the implementation of the projects in question and compliance with the contractual terms and legislation of general application.
Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact

[41] EED – Directive 2012/27/EU on energy efficiency

	that the energy savings presented are monitored on a project-by-project basis.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the Environmental Fund support programme.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The provision of the fund's resources and the method for the use thereof are governed primarily by Sections 4, 6, 7, 8 and 9 of the Fund Act. The starting point for the support of applicants with subsidies or loans is the annual publication of specifications covering the support of activities in the form of a subsidy/loan for which applicants may apply. This specification of activities may be extended to include new activities (they must comply with the Fund Act) further to a proposal from the Environmental Fund Board.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.11**	**Title of measure:**	**Improvements in the thermal performance of public buildings**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	Environmental Fund

$$\acute{U}S_i = S_{pred} - S_{po}$$

where:

$\acute{U}S_i$ – energy saving (final energy consumption) in the year of project implementation [kWh/year];

S_{pred} – energy consumption before project implementation – value from the financial contribution application in [kWh/year];

S_{po} – energy consumption before project implementation – value from the financial contribution application in [kWh/year].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.12**		**Title of measure:**		**Application of the principle of energy efficiency in public procurement**
MSEE ID:					
Sector:	**Public sector**		Source of financing:		National budget
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(c)
Lifetime of measure (years):	Indicate in accordance with Implementing Decree No 327/2015.		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential (AB) in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Green Public Procurement (GPP) Act. - Green public procurement is a voluntary environmental policy instrument, i.e. it is not enforced by law or motivated by any form of stimulus, and its non-application is not punishable. It is a preventive strategy instrument that comprises measures to reduce environmental pollution.
	Nature of measure: (c) legislative regulations, Act No 25/2006 and Act No 343/2015 on public procurement and amending certain acts, as amended (the green public procurement framework), lay down obligations for above-the-limit-contracting: - for energy-related products, establish – in the description of the subject-matter of the contract – requirements for a product of the highest performance criteria and highest energy efficiency class pursuant to a special regulation; - for the supply of motor vehicles in categories M1, M2, M3, N1, N2 and N3, take into account – in the description of the subject-matter of the contract or in the award criteria – the energy and environmental impacts of the operation of these vehicles during their service life further to Act No 158/2011 on the promotion of energy-saving and environmentally-friendly motor vehicles and amending certain acts. Building on legislative and technological changes and developments in green public procurement in the EU and Slovakia, the National Action Plan for Green Public Procurement in the Slovak Republic for 2011-2015 (NAP GPP II) was drawn up. The Slovak Government approved it on 18 January 2012 under Resolution No 22. The strategic goal is to achieve up to 65 % green public procurement among central bodies of State administration and their subordinate organisations and 50 % green public procurement among self-governing regions and towns by 2015.
	Eligible activities are: - Take into account the final energy consumption of the procured equipment as a selection criterion, i.e. not just the minimum purchase price
Evaluation of the measure	- Bottom-up, via individual facilities procured
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[42] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – expected savings on the basis of previous independently monitored energy efficiency measures by an energy service provider or by the operator of the Energy Efficiency Monitoring System (MSEE), i.e. the Slovak Innovation and Energy Agency;
Detailed description of the method to calculate energy savings	1. Energy savings are determined individually depending on the type of facility procured; 2. The calculation of energy savings typically takes into account the average final energy consumption over the lifetime of the facility for the normal solution, and the average final energy consumption over the lifetime of the facility for the solution procured as part of green public procurement
Application of expert estimates and assumptions in the calculation of energy savings	Yes Expert estimates and assumptions in the calculation of energy savings are used on a case-by-case basis. For each type of facility procured, the savings must be determined.
Monitoring, control and verification of the energy savings made	The green public procurement dataset comprises the group of facilities procured by individual procuring entities in the previous calendar year, as provided by the Slovak Environmental Agency. Savings are evaluated for each facility separately.
Overall evaluation and way forward	The measure could not be evaluated as the green public procurement data provided for 2014, 2015 and 2016 was not enough to calculate the savings.
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.

[42] EED – Directive 2012/27/EU on energy efficiency

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the measure	Not applicable: a) the measure would not be implemented without a supportive legislative framework;
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The measure is in accordance with Act No 321/2014 on energy efficiency. Supervision of compliance with the provisions of the Act is carried out by the Slovak Trade Inspectorate.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* method. (d) Energy savings are shown in final energy consumption (if energy savings are only listed in primary energy consumption, they are not counted towards compliance with Article 7 of the Directive); (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control systems are run at the MSEE operator. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.12**	**Title of measure:**	**Application of the principle of energy efficiency in public procurement**
MSEE ID:			
Sector:	**Public sector**	Source of financing:	

$$\acute{U}S_{i_{GES}} = \left(P_{pred} - P_{po}\right)$$

where:

$\acute{U}S_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(a)].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.13.1**		**Title of measure:**		Modernisation of public lighting
MSEE ID:					
Sector:	**Public**		Source of financing:		2007-2013 Structural Funds, Operational Programme Competitiveness and Economic Growth, Measure 2.2
Measure lasting from: (year)	2007		to: (year)		2013
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(b)
Lifetime of measure (years):	15		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel		100			expert estimate

Characteristics of the measure (including eligible activities)	This measure is intended to make savings by reducing the cost of electricity and by scaling down the lighting system maintenance requirements. The reduced energy intensity of public lighting following the renovation, reconstruction and modernisation of the lighting system will alleviate the impact of lighting on the environment by cutting CO_2 emissions, contributing to the environmental component of sustainable development. The new lighting will reduce the lighting energy intensity dramatically.
	Nature of measure: : (b) funding scheme – energy-saving activities are financed by grants in accordance with the rules set out in the current System for the Financial Management of the Structural Funds and the Cohesion Fund for the 2007-2013 Programming Period.
	Eligible activities: 1. the replacement of original lights or light sources in the existing public lighting system with new, technically superior, less energy intensive lights or light sources; 2. the addition of new technically advanced, less energy intensive lights to already 3. constructed lighting points in the public lighting system, or already constructed load-bearing structures; 4. the technical renovation of original – or the installation of new – distribution boards for the system of public lighting in connection with Activity 1 and/or 2; 5. the modification or installation of the control or monitoring system for public lighting in connection with Activity 1 and/or 2; 6. the replacement and addition of cabling (not underground) in connection with Activity 1 and/or 2; 7. the production of design documentation to the following extent: a. a technical light study; b. the technical light measurement of the properties of the lighting system, to the extent of the project after reconstruction (final measurement).
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[43] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after).
Detailed description of the method to calculate energy savings	The energy saving calculation draws on the cover of the technical light study.
Application of expert estimates and assumptions in the calculation of energy savings	Yes The energy saving calculation draws on the cover of the technical light study drawn up by a professionally competent person providing services to a beneficiary of aid from the Structural Funds under individual projects.
Monitoring, control and verification of the energy savings made	The energy savings made are monitored and checked by means of a check on the data reported in the beneficiary's monitoring reports. The beneficiary's monitoring reports are checked by the project manager.
Overall evaluation and way forward	It is impossible to describe the success/failure of the overall evaluation as the measure is still under way and the actual evaluation of the achievement of the objectives will be monitored over the next five years of project sustainability. In this respect, it could be said that the measure remains ongoing. Bearing in mind the current stage of the measure's implementation, no change in new rules on the granting of aid under the implemented measure and no change in the reporting of the measurable indicators achieved is expected.
Projected overlapping with another measure – duplication	The measure does not overlap with other measures, as the collection of data and underlying documentation and subsequent evaluation are the responsibility of the Ministry of Economy.
Method to avoid duplication	The measure does not overlap with other measures, as the collection of data and underlying documentation and subsequent evaluation are the responsibility of the Ministry of Economy.

[43] EED – Directive 2012/27/EU on energy efficiency

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Materiality of the measure – according to the EED: 'the activities of the obligated, participating or entrusted party must be demonstrably material to the achievement of the claimed savings' (Annex V, point 2(c)) The materiality of the measure can be expressed as follows: (a) demonstration that the influence of the entity or the State is material to the final consumer's decision to implement an energy efficiency measure; (b) the State's influence can be demonstrated by the designated budget, the responsible entity/ministry, State-financed support measures (consulting, information campaigns), legislation, etc. (It is advisable to describe who is responsible for the individual supporting activities and how they are funded as accurately as possible.)
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the support programme.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.13.1**	**Title of measure:**	Modernisation of public lighting
MSEE ID:	**-**		
Sector:	**PUBLIC**	Source of financing:	2007-2013 Structural Funds, Operational Programme Competitiveness and Economic Growth, Measure 2.2

$$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right) \text{x } N_s \; x \; h$$

where:
$\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of public lighting modernisation [kWh/year];
P_{pred} – electricity required for public lighting before modernisation – average value modulated for the original condition = 0.291 [kW/(light)];
P_{po} – electricity required for public lighting after modernisation – average value for new condition = 0.100 [kW/(light)];
N_S – number of lights
h – hours of public lighting illumination per year (3 900 hours)

Measure	**3.13.2**		**Title of measure:**		Modernisation of public lighting
MSEE ID:					
Sector:	**Public sector**		Source of financing:		MunSEFF
Measure lasting from: (year)	2011		to: (year)		2015
Responsible:	xxx		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(b)
Lifetime of measure (years):	15		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel		100			expert estimate

Characteristics of the measure (including eligible activities)	The main objective of the programme is to stimulate the energy-efficient renovation of municipal infrastructure, especially in cases where there is high potential to achieve savings in the sector of municipality-owned public buildings
	Nature of measure: (b) funding schemes – credit line to support the development of energy efficiency and renewable energy sources among towns and municipalities in Slovakia
	Supported/eligible activities are mainly focused on: (c) eligible projects under MunSEFF: component 1 – projects for the energy efficiency of municipality-owned infrastructure (other than buildings) – arrangements for the renovation of public lighting within the municipality
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[44] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after).
Detailed description of the method to calculate energy savings	According to MunSEFF, component 1: Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is part of the grant application. Grant eligibility depends on minimum energy savings of 20 % compared to the original energy consumption.
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	Monitoring – the design consultant (ESG/ENVIROS) conducts an energy audit for projects to renovate public lighting within the municipality. If the client already has a clearly defined project scope presented in the appropriate form, the design consultant proceeds directly to the production of a Rational Energy Utilisation Plan (REUP), which includes the results of the energy audit, and describes the financing plan and timetable for implementation. It also incorporates proposed measures related to the investor's plan, as well as compliance with environmental standards. If required, the design consultant assists the client when applying for a loan. Checks are also conducted as part of the preparation of action plans and the annual report. As measures are checked on a project-by-project basis, there was no need to establish a statistically significant share of measures to be checked.
Overall evaluation and way forward	The measure will continue in the coming period.
Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for projects to renovate public lighting within the municipality with a MunSEFF contribution are not counted towards other measures as the processing is carried out on a project-by-project basis.
Information for the purposes of Article 7 of Directive 2012/27/EU	

[44] EED – Directive 2012/27/EU on energy efficiency

Materiality of the measure (Annex V, point 2(c), to the EED)	The MunSEFF-measure support providers are the European Bank for Reconstruction and Development and the European Commission. The programme implementers are Slovenská sporiteľňa a.s. and Všeobecná úverová banka a.s. The design consultant (ESG/ENVIROS) assists clients applying for loans and monitors the relevant projects for the energy efficiency of public buildings. The activities of these entities are demonstrably material to the achievement of claimable energy savings.
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the MunSEFF support programme.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Grant levels relative to the loan principal are set according to the components of each project: component 1 – the grant level ranges from 10 % to 20 % of the loan principal
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.13.2**	**Title of measure:**	Modernisation of public lighting
MSEE ID:	**-**		
Sector:	**Public sector**	Source of financing:	MunSEFF
$\acute{U}S_{i\_plán} = \left(P_{pred} - P_{po}\right) \text{x } N_s \; x \; h$			
where: $\acute{U}S_{i\_plán}$ – planned energy saving (final energy consumption) in the year of public lighting modernisation [kWh/year]; P_{pred} – electricity required for public lighting before modernisation – average value modulated for the original condition [kW/(light)]; P_{po} – electricity required for public lighting after modernisation – average value for new condition [kW/(light)]; N_S – number of lights h – hours of public lighting illumination per year (3 900 hours)			

Measure	**3.13.3**		**Title of measure:**		Modernisation of public lighting
MSEE ID:					
Sector:	**Public**		Source of financing:		Operational Programme Bratislava Region, Measure 2.2
Measure lasting from: (year)	2007		to: (year)		2013
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(b)
Lifetime of measure (years):	15		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel		100			expert estimate

Characteristics of the measure (including eligible activities)	This measure is intended to make savings by reducing the cost of electricity and by scaling down the lighting system maintenance requirements. The reduced energy intensity of public lighting following the renovation, reconstruction and modernisation of the lighting system will alleviate the impact of lighting on the environment by cutting CO_2 emissions, contributing to the environmental component of sustainable development. The new lighting will reduce the lighting energy intensity dramatically.
	Nature of measure: (b) funding schemes – energy-saving activities are financed by grants in accordance with the rules set out in the current System for the Financial Management of the Structural Funds and the Cohesion Fund for the 2007-2013 Programming Period.
	Eligible activities: 1. the replacement of original lights or light sources in the existing public lighting system with new, technically superior, less energy intensive lights or light sources; 2. the addition of new technically advanced, less energy intensive lights; 3. constructed lighting points in the public lighting system, or already constructed load-bearing structures; 4. the technical renovation of original – or the installation of new – distribution boards for the system of public lighting in connection with Activity 1 and/or 2; 5. the modification or installation of the control or monitoring system for public lighting in connection with Activity 1 and/or 2. 6. the replacement and addition of cabling (not underground) in connection with Activity 1 and/or 2; 7. the production of design documentation to the following extent: a. a technical light study; b. the technical light measurement of the properties of the lighting system, to the extent of the project after reconstruction (final measurement).
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[45] and Implementing Decree No 327/2015)	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure); (b) *ex post* – measured savings (measurement before and after).
Detailed description of the method to calculate energy savings	The energy saving calculation draws on the cover of the technical light study.
Application of expert estimates and assumptions in the calculation of energy savings	Yes The energy saving calculation draws on the cover of the technical light study drawn up by a professionally competent person providing services to a beneficiary of aid from the Structural Funds under individual projects.
Monitoring, control and verification of the energy savings made	The energy savings made are monitored and checked by means of a check on the data reported in the beneficiary's monitoring reports. The beneficiary's monitoring reports are checked by the project manager.
Overall evaluation and way forward	It is impossible to describe the success/failure of the overall evaluation as the measure is still under way and the actual evaluation of the achievement of the objectives will be monitored over the next five years of project sustainability. In this respect, it could be said that the measure remains ongoing. Bearing in mind the current stage of the measure's implementation, no change in new rules on the granting of aid under the implemented measure and no change in the reporting of the measurable indicators achieved is expected.
Projected overlapping with another measure – duplication	The measure does not overlap with other measures, as the collection of data and underlying documentation and subsequent evaluation are the responsibility of the Ministry of Economy.
Method to avoid duplication	The measure does not overlap with other measures, as the collection of data and underlying documentation and subsequent evaluation are the responsibility of the Ministry of Economy.

[45] EED – Directive 2012/27/EU on energy efficiency

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Materiality of the measure – according to the EED: 'the activities of the obligated, participating or entrusted party must be demonstrably material to the achievement of the claimed savings' (Annex V, point 2(c)) The materiality of the measure can be expressed as follows: (a) demonstration that the influence of the entity or the State is material to the final consumer's decision to implement an energy efficiency measure (b) the State's influence can be demonstrated by the designated budget, the responsible entity/ministry, State-financed support measures (consulting, information campaigns), legislation, etc. (It is advisable to describe who is responsible for the individual supporting activities and how they are funded as accurately as possible.)
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the support programme.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules (*de minimis* aid). Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.13.3**	**Title of measure:**	Modernisation of public lighting
MSEE ID:	**-**		
Sector:	**PUBLIC**	Source of financing:	Operational Programme Bratislava Region, Measure 2.2

$$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right) \text{x } N_s \; x \; h$$

where:
$\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of public lighting modernisation [kWh/year];
P_{pred} – electricity required for public lighting before modernisation – average modulated value for the original condition = 0.291 [kW/(light)];
P_{po} – electricity required for public lighting after modernisation – average value for new condition = 0100 [kW/(light)];
N_S – number of lights
h – hours of public lighting illumination per year (3 900 hours)

Measure	**3.14**		**Title of measure:**		**Provision of energy services for the public sector**
MSEE ID:	**GES**				
Sector:	**Public sector**		Source of financing:		Providers of guaranteed energy services (GES), recipients of GES
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(c) According to Article 7(9)(f)
Lifetime of measure (years):	Indicate in accordance with Implementing Decree No 327/2015.		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Reduction in energy consumption by engaging in EPC projects, implemented by an energy service provider (ESCO) under an energy efficiency contract with guaranteed energy saving. The investment is expected to be repaid from sources that the GES beneficiary would use to cover the cost of energy in the future. Nature of measure: (c) legislative regulations – Act No 321/2014 on energy efficiency (framework for the provision of guaranteed energy services); (f) training and education – professional competence required for providers of guaranteed energy services (test followed by mandatory participation in refresher training courses arranged by the Ministry of Economy via the Slovak Innovation and Energy Agency) Eligible activities are: - measures to reduce final energy consumption (e.g. in buildings for the provision of services), in particular: o reconstruction and modernisation of the space heating system, including boiler replacement or the installation of a compact heat transfer station; o the reconstruction and modernisation of lighting; o the hydronic balancing of hot water distribution systems, including the provision of suitable thermal insulation for hot water distribution systems; the installation of equipment for the monitoring and control of energy consumption
Evaluation of the measure	- Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[46] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: a) *ex ante* – expected savings on the basis of previous independently monitored energy efficiency measures by an energy service provider or by the operator of the Energy Efficiency Monitoring System (MSEE), i.e. the Slovak Innovation and Energy Agency; b) *ex post* – energy savings achieved annually are verified by the GES provider in the form of measurements
Detailed description of the method to calculate energy savings	1. The energy saving is determined individually depending on the proposed energy efficiency measures and comprises the difference between the measurement or calculation of the energy consumption determined before the implementation of energy efficiency measures and the energy consumption calculated after the introduction of energy efficiency measures. 2. In the calculation of energy savings, the average final energy consumption for a minimum of three years prior to the implementation of energy efficiency measures is typically taken into account. 3. A calculation of energy savings, including the specific calculation methodology, carried out by a professionally competent person (professional competence as set forth in Section 19 of Act No 321/2014), is part of each GES provision contract. 4. The actual energy savings achieved are evaluated annually according to the methodology set out in the GES provision contract.
Application of expert estimates and assumptions in the calculation of energy savings	Yes The use of expert estimates and assumptions for the energy saving calculation depends on each case and is stated in the GES provision contract as part of the methodology for the calculation of energy savings. -
Monitoring, control and verification of the energy savings made	Energy savings are monitored via the provision of data to the MSEE operator, which is mandatory under Sections 16 and 19 of Act No 321/20104 on energy efficiency. The dataset contains the sum of energy savings from each energy service provider for the previous calendar year, which evaluates the savings on a project-by-project basis and provides them as

[46] EED – Directive 2012/27/EU on energy efficiency

	a package of projects. The provision of data on a project-by-project basis is voluntary.
Overall evaluation and way forward	The provision of energy services is a mechanism that represents an effective way of designing, implementing and, in particular, evaluating energy efficiency measures. With significant support in raising the awareness of potential energy service recipients, it may be one of the most significant alternative measures to meet the target under Article 7 of the Energy Efficiency Directive.
Projected overlapping with another measure – duplication	Overlapping would be possible in the year following the implementation of energy efficiency measures if the building owner/manager provided information on energy consumption at the request of the MSEE operator and did not indicate that the measures were implemented via GES.
Method to avoid duplication	1. If, in MSEE, energy savings are identified further to a decrease in energy consumption in a building without reference to the measure implemented, the MSEE operator will email and, where appropriate, telephone the data provider to identify the specific instrument behind the energy savings ascertained. 2. If savings are identified as part of GES from a particular provider, building energy savings determined according to the data of the owner/manager of the building will not be counted.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The Ministry of Economy of the Slovak Republic, which maintains and updates the list of energy service providers (http://www.mhsr.sk/poskytovanie-energetickej-sluzby/145697s) is responsible for registering and issuing permits for energy service providers' activities. The Slovak Innovation and Energy Agency provides professional competence for providers of guaranteed energy services, as well as up-to-date training, from the resources of the central government budget. The Slovak Innovation and Energy Agency evaluates datasets from energy service providers.
Complementarity of the measure	Not applicable: (a) the measure would not be implemented without a supportive legislative framework;
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The measure is in accordance with Act No 321/2014 on energy efficiency. Supervision of compliance with the provisions of the Act is carried out by the Slovak Trade Inspectorate.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to the *ex ante* and *ex post* methods. (d) Energy savings are shown in final energy consumption (if energy savings are only listed in primary energy consumption, they are not counted towards compliance with Article 7 of the Directive); (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V to the EED; (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is run at the MSEE operator. All summary datasets from each GES provider are checked. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.14**	**Title of measure:**	**Provision of energy services for the public sector**
MSEE ID:	**GES**		
Sector:	**Public sector**	Source of financing:	Providers of guaranteed energy services (GES), recipients of GES
$$ÚS_{i_{GES}} = \left(P_{pred} - P_{po}\right)$$			
where: ÚSi $_{GES}$ – planned/guaranteed annual energy savings (final energy consumption) after a year of implementation of energy			

efficiency measures [kWh];

P_{pred} – energy consumption for the building prior to the implementation of energy efficiency measures (typically the average energy consumption for the original condition over the past 3 years) [kWh];

P_{po} – building energy consumption after the implementation of energy efficiency measures [kWh];

Note: The calculation of $ÚSi_{\_GES}$ is only indicative. Energy savings are announced to the GES operator by a GES operator for all projects in the previous calendar year.

Measure	**3.19**			**Title of measure:**	**Introduction of energy management systems, including energy audits and environmental management**
MSEE ID:	**KZP**				
Sector:	**Public sector**			Financial mechanism:	Operational Programme Environmental Quality 2014-2020
Measure lasting from: (year)	2014			to: (year)	2020
Responsible:	Ministry of the Environment			**Measure to comply with Article 7 of Directive 2012/27/EU:**	**Yes**
				Policy measure classification:	Article 7(9)(b) Article 7(9)(c) Article 7(9)(f)
Lifetime of measure (years):	>7			Compliance with Article 7(10)	Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential (AB) in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The Operational Programme Environmental Quality, as part of Specific Objective 4.4.1 'Increase in the number of local plans and measures associated with the low-carbon strategy for all types of territory' – Activity B, supports the implementation of energy and environmental management systems, including energy audits and the EU Environmental Management and Audit Scheme (EMAS).
	Nature of measure: (b) support schemes – Structural Funds, grant from the Operational Programme Environmental Quality. Energy-saving activities are financed up to a maximum of 85 % of eligible expenditure (excluding the Bratislava Region) in the form of a grant in accordance with the rules set out in the System for the Financial Management of the European Structural Funds for the 2014-2020 Programming Period. (c) legislative regulations – Act No 321/2014 on energy efficiency (framework for the provision of environmental management, including EMAS energy audits). (f) training and education – professional competence required for providers of guaranteed energy services (test followed by mandatory participation in refresher training courses arranged by the Ministry of Economy via the Slovak Innovation and Energy Agency)
	Supported/eligible activities are mainly focused on: (a) Implementation of environmental management (EMAS) (b) Energy auditing (EA)
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[47] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the energy required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building; (b) *ex post* – savings measured after project implementation, taking into account the extent to which the building is used, plus climate impacts.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. The actual savings achieved are monitored by the intermediate body for five years after the completion of project implementation. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS 2014+ system is taken as the decisive factor.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements, the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy	Monitoring will be arranged in accordance with rules on the use of financial resources from the ESIF for the 2014-2020 programming period. This entails the provision of data on the fulfilment

[47] EED – Directive 2012/27/EU on energy efficiency

savings made	of the indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS 2014+ monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Slovak Innovation and Energy Agency) monitors the fulfilment of the indicator (energy savings) and, if it is not being met, applies the sanction mechanisms specified in the grant agreement.
Overall evaluation and way forward	By the end of 2016, no call for projects had been announced. It is envisaged that projects will be included in the detailed monitoring of energy consumption for operational purposes by the energy efficiency monitoring system (MSEE)
Projected overlapping with another measure – duplication	None foreseen.
Method to avoid duplication	Not applicable.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. Savings from this measure are counted only if renovation is based on the acceptance of a grant. The measure takes into account total energy savings representing the difference between the original and the new condition of the building.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2014-2020 programming period and in State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will assess the contribution of policy measures in the 2017-2020 period; (b) Ministry responsible for the measure: Ministry of the Environment. (c) Savings are determined transparently according to method (a) *ex ante* and method (b) *ex post*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS 2014+ IS and MSEE level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.19**	**Title of measure:**	**Introduction of energy management systems, including energy audits and environmental management**
MSEE ID:	**KZP**		
Sector:	**Public sector**	Financial mechanism:	Operational Programme Environmental Quality 2014-2020

$$\text{ÚS}_{i\_plán} = \left(P_{pred} - P_{po}\right)$$

where:

$\text{ÚS}_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/a];

P_{po} – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(a)].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.21**		**Title of measure:**		**Implementation of measures derived from energy audits at public buildings**
MSEE ID:					
Sector:	**Public sector**		Source of financing:		Operational Programme Competitiveness and Economic Growth 2007-2013
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		According to Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The main objective is to reduce energy consumption in the operation of public buildings further to energy auditing
	Nature of measure: (b) funding schemes – energy-saving activities are financed by grants in accordance with the rules set out in the current System for the Financial Management of the Structural Funds and the Cohesion Fund for the 2007-2013 Programming Period.
	Supported/eligible activities are mainly focused on: (c) eligible projects in accordance with energy audits: • improvements in the thermal performance of structures; • the modernisation of space heating/air-conditioning systems, hot water production systems, lighting and lifts to reduce energy consumption; • installation of measurement and management systems; • change in the heat supply method to exploit efficient district heating systems; • installation of facilities for the use of renewable energy sources (RES) for energy consumption in a building.
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[48] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure).
Detailed description of the method to calculate energy savings	The energy saved in the operation of a public building is the difference between the energy required before and after the renovation of the public building. Priority will be given in particular to composite projects, i.e. projects combining improvements in the thermal performance of structures with the modernisation of space heating/air-conditioning systems, hot water production systems, lighting, wiring or other energy-saving measures in a building that are proposed to reduce energy requirements to the level of low-energy buildings, ultra-low-energy buildings and nearly zero-energy buildings. State administration buildings will be supported as a matter of priority.
Application of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology.

[48] EED – Directive 2012/27/EU on energy efficiency

Monitoring, control and verification of the energy savings made	Energy savings will be monitored by requiring support beneficiaries (engaging in projects to construct or make structural and technical alterations to buildings) to enter/transmit data to the energy efficiency monitoring system (in accordance with Act No 476/2008 on energy efficiency) operated by the Slovak Innovation and Energy Agency.
Overall evaluation and way forward	The measure will continue in the coming period.
Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for projects to reduce energy consumption in the operation of public buildings are not counted towards other measures as the processing is carried out on a project-by-project basis.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the Structural Funds' support programmes.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The proposed measures and their energy, environmental and economic evaluation will have to be substantiated by an energy audit conducted by a professionally competent person (energy auditor) at least to the extent specified in Annex VI to Directive 2012/27/EU. For this purpose, use will also be made of energy audits of public buildings conducted by the Slovak Innovation and Energy Agency as part of the pilot project 'Support of instruments for the deployment and optimisation of measures related to the energy efficiency of public buildings', financed under the Operational Programme Competitiveness and Economic Growth. Here, up to the end of 2015, 250 audits of public buildings operated by central bodies of State administration, municipalities and higher territorial units were continuously processed. Audits were conducted for office buildings, school buildings and buildings providing health or social care.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Economy. (c) Savings are determined transparently according to method (a) *ex ante*, further to the calculated energy requirement. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) and (b) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.21**	**Title of measure:**	**Implementation of measures derived from energy audits at public buildings**
MSEE ID:			
Sector:	**Public sector**	Source of financing:	Operational Programme Competitiveness and Economic Growth 2007-2013

$$ÚS_{i\_plán} = \left(P_{pred} - P_{po}\right) \bullet CPP$$

where:

$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

P_{pred} – energy requirement for the building prior to renovation – average energy requirement for the original condition of the building [kWh/(m^2.a)];

P_{po} – energy requirement for the building after renovation, by reference to energy performance certificate data [kWh/(m^2.a)];

CPP – total floor area of the building, as per the energy performance certificate [m^2].

Measure	**3.26.1**		**Title of measure:**		**Improvements in the thermal performance of public buildings**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		IROP 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by form of energy	54.35 %	17.50 %	27.46 %	0.69 %	Analysis of energy-saving potential (AB) in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The Integrated Regional Operational Programme (IROP) is a national programming document for the 2014-2020 programming period. The IROP's global objective is to contribute to improvements in the quality of life and to ensure the sustainable provision of public services with an impact on balanced and sustainable territorial development, and on the economic, territorial and social cohesion of regions, towns and municipalities.
	Nature of measure: (b) funding schemes – the co-financing of individual projects by the European Regional Development Fund (ERDF) and national co-financing relative to the regional category.
	Supported/eligible activities are mainly focused on: (c) eligible projects under the IROP: Priority axis 2: Easier access to efficient and better quality public services Investment priority 2.1: investing in health and social infrastructure which contributes to national, regional and local development, reducing inequalities in terms of health status, promoting social inclusion through improved access to social, cultural and recreational services and the transition from institutional to community-based services
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[49] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure).
Detailed description of the method to calculate energy savings	Under the IROP, investment priorities 2.1.1 and 2.1.2 – investments in health and social infrastructure, measures will be taken to increase the energy performance of buildings, and to modernise and reconstruct existing buildings. An indicator has been established – the reduction in annual primary energy consumption in public buildings, which is calculated as the difference between consumption before and after modernisation or reconstruction.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	Energy savings will be monitored by requiring support beneficiaries (engaging in projects to construct or make structural and technical alterations to buildings) to enter/transmit data to the energy efficiency monitoring system (in accordance with Act No 476/2008 on energy efficiency) operated by the Slovak Innovation and Energy Agency.
Overall evaluation and way forward	The measure will continue in the coming period.
Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that the energy savings presented are monitored on a project-by-project basis.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the	Complementarity is not applicable in the buildings sector.

[49] EED – Directive 2012/27/EU on energy efficiency

measure	Savings from this measure are counted only if building modernisation is based on the acceptance of a grant and support via financial instruments (loans). The measure takes into account total energy savings representing the difference between the original and the new condition of the building.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The IROP's financial plan, by source and regional category, has the following co-financing rate: - a less developed region has 85 % of financing from the European Regional Development Fund; - a more developed region has 50 % of financing from the European Regional Development Fund. National co-financing by regional category is 15 % or 50 % of total financing
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.26.1**	**Title of measure:**	**Improvements in the thermal performance of public buildings**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	IROP 2014-2020

$$\acute{U}S_{i\_plán} = \left(S_{pred} - S_{po}\right) \bullet CPP$$

where:

$\acute{U}S_{i\_plán}$ – planned energy saving (primary energy consumption) in the year of building modernisation [kWh/a];

S_{pred} – energy requirement for the building prior to modernisation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

S_{po} – energy required for a building after modernisation – standardised heat requirement for the post-renovation condition [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.26.2**		**Title of measure:**		**Improvements in the thermal performance of public buildings**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		IROP 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	57.37 %	7.28 %	35.05 %	0.31 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	The Integrated Regional Operational Programme (IROP) is the national programming document for the 2014-2020 programming period. The IROP's global objective is to contribute to improvements in the quality of life and to ensure the sustainable provision of public services with an impact on balanced and sustainable territorial development, and on the economic, territorial and social cohesion of regions, towns and municipalities.
	Nature of measure: (b) funding schemes – the co-financing of individual projects by the European Regional Development Fund (ERDF) and national co-financing relative to the regional category.
	Supported/eligible activities are mainly focused on: (c) eligible projects under the IROP: Priority axis 2: Easier access to efficient and better quality public services Investment priority 2.2: Investing in education and training, skills and lifelong learning through the development of educational and training infrastructure focusing on the energy efficiency of nursery schools and secondary vocational schools
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[50] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure);
Detailed description of the method to calculate energy savings	Under the IROP, investment priority 2.1 (nursery schools), investments in the expansion of the capacities of existing nursery schools or the construction of new nursery schools, including improvements in the energy efficiency of buildings. Under investment priority 2.1.3 (secondary vocational schools), the energy efficiency of secondary vocational schools, vocational education and training centres, vocational training centres, practical teaching centres, and school holdings is improved; An indicator has been established – the reduction in annual primary energy consumption in public buildings, which is calculated as the difference between consumption before and after modernisation or reconstruction
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy savings for projects where measured energy consumption data is still not available after the implementation of the measure, expert estimates will be used in the preparation of the project by professionally competent persons (energy auditors or designers) according to the type of project by determining the energy consumption after the implementation of the measure, by applying relative energy savings further to knowledge of the state of the art and projected developments in science and technology.
Monitoring, control and verification of the energy savings made	Energy savings will be monitored by requiring support beneficiaries (engaging in projects to construct or make structural and technical alterations to buildings) to enter/transmit data to the energy efficiency monitoring system (in accordance with Act No 476/2008 on energy efficiency) operated by the Slovak Innovation and Energy Agency.
Overall evaluation and way forward	The measure will continue in the coming period.
Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that the energy savings presented are monitored on a project-by-project basis.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.

[50] EED – Directive 2012/27/EU on energy efficiency

Complementarity of the measure	Complementarity is not applicable in the buildings sector. Savings from this measure are counted only if building modernisation is based on the acceptance of a grant and support via financial instruments (loans). The measure takes into account total energy savings representing the difference between the original and the new condition of the building.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The IROP's financial plan, by source and regional category, has the following co-financing rate: - a less developed region has 85 % of financing from the European Regional Development Fund; - a more developed region has 50 % of financing from the European Regional Development Fund; National co-financing by regional category is 15 % or 50 % of total financing
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.26.1**	**Title of measure:**	**Improvements in the thermal performance of public buildings**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	IROP 2014-2020

$$ÚS_{i\_plán} = (S_{pred} - S_{po}) \bullet CPP$$

where:

$ÚS_{i\_plán}$ – planned energy saving (primary energy consumption) in the year of building modernisation [kWh/a];

S_{pred} – energy requirement for the building prior to modernisation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

S_{po} – energy required for a building after modernisation – standardised heat requirement for the post-renovation condition [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Note: If the energy saving is provided by the managing authority as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Measure	**3.26.3**		**Title of measure:**		**Improvements in the thermal performance of public buildings – nursery schools, primary schools, social and community facilities**
MSEE ID:					
Sector:	**Public sector**		Financial mechanism:		Operational Programme Bratislava Region, Measure 1.1
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Agriculture and Rural Development		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Form of energy:	Natural gas	Electricity	Heat	Other:	
Breakdown (%) by fuel	57.37 %	7.28 %	35.05 %	0.31 %	Analysis of energy-saving potential in the public sector – December 2015

Characteristics of the measure (including eligible activities)	Versatile area development to improve the quality of life enjoyed by the inhabitants of the Bratislava Region in accordance with the principles of sustainable development.
	Nature of measure: (b) support schemes – Structural Funds, grant from the Operational Programme Bratislava Region. Energy-saving activities are financed up to a maximum of 85 % of the total reconstruction cost in the form of a grant in accordance with the rules set out in the System for the Financial Management of the Structural Funds and the Cohesion Fund for the 2007-2013 Programming Period (hence financing is accompanied by the beneficiary's own resources and commercial banks). 15 % co-financing:
	Supported/eligible activities are mainly focused on: (a) improvements in the thermal performance of buildings (b) improvements in the technical facilities of buildings (c) energy-saving lighting;
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[51] and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings – the original and new condition of a building is determined on the basis of a project evaluation of the heat required for space heating, drawn up by a professionally competent person (designer) according to technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, STN 730540) by reference to the existing and proposed thermal performance of the building.
Detailed description of the method to calculate energy savings	1. Savings are determined on the basis of annual energy consumption data prior to the implementation of the measure and energy consumption planned after the implementation of the measure. Data on energy consumption is included in the grant application. The credibility of the data is confirmed by professional evaluators in the evaluation of the application. 2. Projects focusing exclusively on the installation of facilities for the use of renewable sources of energy are not included in this measure because, in this case, there is no reduction in final energy consumption, only the replacement of one form of energy with another. No potential reduction in losses during energy distribution is applied. 3. The date of physical completion of implementation (if available) or the date for the completion of implementation entered in the ITMS system is taken as the decisive factor.
Use of expert estimates and assumptions in the calculation of energy savings	Yes In the calculation of energy requirements for activity (a), the average degree days applicable to the whole of Slovakia and other technical coefficients specified in the relevant technical standards (in particular STN EN ISO 13790/NA, STN EN 15603, and STN 730540) are used.
Monitoring, control and verification of the energy savings made	Monitoring is arranged in accordance with rules on the use of financial resources from Structural Funds for the 2007-2013 programming period. This entails the disclosure of data on the fulfilment of the impact indicator (the annual energy saving) five years after project implementation. Beneficiaries provide data via the ITMS monitoring system. The beneficiary is responsible for the data provided. The intermediate body (the Slovak Innovation and Energy Agency) monitors the fulfilment of the indicator (energy savings) and, if it is not being met, applies the sanction mechanisms specified in the grant agreement.
Overall evaluation and way forward	1. The final deadline for the receipt of grant applications was 25 July 2013. Project implementation may take as long as 24 months, with a possible extension, but must be completed no later than 31 December 2015. 2. The overall evaluation of the effectiveness of the measure also includes the financial resources used to achieve energy savings. In this measure, it is impossible to separate financial resources directly linked to a reduction in the energy intensity of buildings from the total financial resources used to increase their operability. The investment intensity per unit of energy savings may therefore report a significant deviation from other similar energy efficiency measures in the buildings sector.

[51] EED – Directive 2012/27/EU on energy efficiency

Projected overlapping with another measure – duplication	Not applicable to this measure. Potential overlaps with buildings of the same category where major renovation is accompanied by the issuance of an energy performance certificate (EPC) are handled by the appropriate measures
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that the energy savings presented are monitored on a project-by-project basis. If an EPC is found to exist, the calculated saving is deducted from the relevant measure, i.e. as a matter of priority it is counted towards this measure.
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	Project implementation contributes to savings for the final customer.
Complementarity of the measure	Complementarity is not applicable in the buildings sector. Savings from this measure are counted only if renovation is based on the acceptance of a grant. The measure takes into account total energy savings representing the difference between the original and the new condition of the building.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with the procedure laid down in legislation of general application on the use of the European Structural Funds in the 2007-2013 programming period, in particular the European Regional Development Fund and State aid rules. Quality control and sanctions are set out in specific grant agreements.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development. (c) Savings are determined transparently according to method (a) *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**3.26.3**	**Title of measure:**	**Improvements in the thermal performance of public buildings – nursery schools, primary schools, social and community facilities**
MSEE ID:			
Sector:	**Public sector**	Financial mechanism:	Operational Programme Bratislava Region, Measure 1.1

$$ÚS_{i\_plán} = (P_{pred} - P_{po}) \bullet CPP$$

where:

ÚSi_plán – planned energy saving (final energy consumption) in the year of building renovation [kWh/a];

Ppred – energy requirement for the building prior to renovation – standardised energy requirement for the original condition of the building [kWh/(m^2.a)];

Ppo – energy required for a building after renovation – standardised heat requirement for the post-renovation condition of the building [kWh/(m^2.a)];

CPP – total floor area of the building [m^2].

Note: If the energy saving is provided by the managing authority/the intermediate body as a resultant value in GJ or %, that value is used, after conversion to a unified physical unit, in the pursuit of the target under Article 7 of the Directive.

Transport

Measure	**4.1.1 a**		**Title of measure:**		**Renewal and modernisation of the fleet – rail transport**
MSEE ID:					
Sector:	**Transport**		Source of financing:		Operational Programme Transport 2007-2013
Measure lasting from: (year)	2007		to: (year)		2015 (2013+2)
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	0 %	100 %	0 %	0 %	
Characteristics of the measure (including eligible activities)	The principle pursued by the measure is the purchase of new electric and diesel train units for deployment in regional transport and the replacement of the obsolete fleets of carriers responsible for urban public rail transport in the public interest in Bratislava, Košice, Prešov and Žilina. Energy savings will be achieved by reducing the consumption of fuel and electricity (if electric traction units are used) by new more efficient fleet units replacing the current outdated units/vehicles. The complementary effect will also increase the comfort and attractiveness of public passenger transport, which will make a positive contribution to the slowdown in the growth of automotive developments. Nature of measure: b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is expected (Operational Programme Transport 2017-2013). The remaining 15 % is co-financed by the central government budget, the budgets of higher territorial units, municipalities and towns, and private sources.				
	Supported/eligible activities are mainly focused on: - an increase in the attractiveness of public passenger transport through the procurement of new resources to provide public passenger transport by rail;				
Evaluation of the measure	- Bottom-up, via individual projects				
Methods for the calculation of savings (in accordance with Annex V(1) to the EED[52] and Implementing Decree No 327/2015)	Methods for the calculation of savings: (a) *ex ante* – by means of a calculation				
Detailed description of the method to calculate energy savings	The methodology used to calculate energy savings is based on a comparison of the fuel consumed on the annual capacities reached by more energy-efficient vehicles with consumption on annual capacities reported for the existing outdated fleet. The specific energy saving is expressed as a reduction in the consumption of the fuel and electricity of new vehicles/units compared to the original outdated fleet. The calculation is tied to specific towns and territories where new vehicles and transport units are deployed and is derived from the transport capacity reported per vehicle/unit achieved annually in the analysed territory, or from the driving capacity of the group of new vehicles. A prerequisite applied in the calculation is the saving in electricity and fuel among newly acquired vehicles compared to the original vehicles in use.				

[52] EED – Directive 2012/27/EU on energy efficiency

Use of expert estimates and assumptions in the calculation of energy savings	Yes A prerequisite applied in the calculation is the percentage-based saving in electricity and fuel among newly acquired vehicles compared to the original vehicles in use. These savings, expressed as a percentage, are presented by manufacturers and verified by means of comparative projects at undertakings where the new vehicles are in routine use. If new electric double-decker multiple units are deployed, a unit saving of 0.004017 kWh/(place.km) is projected.[53] With the new diesel units, the assumption is that they will have 10 %[6] lower consumption compared to the original train units. It is estimated that these sets will be in daily circulation for 250 km (approximately 8 hours), with the passenger load of the units defined by the manufacturer. If new trolleybuses are deployed, the calculation of savings is based on a projection derived from a comparative before-and-after project in such a manner that the new trolleybus reports annual electricity consumption which is 164 MWh (30 %) lower.[54] New buses with hybrid engines have 39 % lower consumption[55] than ordinary buses. With new trams, a 25 % reduction in consumption is taken into account.[56]
Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented and the energy savings which have actually been measured. Information on energy consumption or energy savings will be monitored by means of a series of measurements in the field, taken to compare electricity and fuel consumption before and after the implementation of the measure.
Overall evaluation and way forward	Measure 4.1.1.a proved its worth. This measure is replaced by the new Measure 4.1.1.b, which will continue as long as the public passenger transport projects defined under the Operational Programme Integrated Infrastructure 2014-2020 are implemented and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.
Method to avoid duplication	-
Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	The responsible entity, the Ministry of Transport and Construction, is the managing authority of the Operational Programme Transport (2007-2013), which announces calls for grant applications. The measure is consistent with measures under the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity does not apply at either national or EU level. (a) National level: Energy would not be saved if the measure is not implemented. Non-implementation of the measure would confirm declining trends in the use of public passenger transport in favour of individual transport and transport would thus be more energy intensive. (b) Complementarity with EU legislation: EU legislation does not directly define savings in rail transport.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the documentation for the Operational Programme Integrated Infrastructure 2014-2020. Applicants are required to ensure that rolling stock is deployed, thus ensuring the increased attractiveness of public passenger transport.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project

[53] Project to renew railway rolling stock, available online at: http://www.slovakrail.sk/sk/o-spolocnosti/projekty-eu/projekt-obnovy-zkv.html?no-graphics=0&print&print&print.
[54] Available online at: <http://www.zilina.sk/dokumenty/DokumentyProgramyMZ_20130619103328.pdf>
[55] Available online at: <http://www.busportal.sk/modules.php?name=article&sid=9384>
[56] Expert estimate by the Transport Research Institute.
[6] Available online at: <http://www.zilina.sk/dokumenty/DokumentyProgramyMZ_20130619103328.pdf>

	basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formulas for calculating savings for individual energy efficiency measures

Formula to calculate energy savings – electric double-decker units			
Measure	**4.1.1 a**	**Title of measure:**	**Renewal and modernisation of the fleet**
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Transport 2007-2013

$$ÚE = úe * O * L$$

where

ÚE – annual energy saving [kWh];

úe – unit-based energy saving [kWh/(place.km)];

O – unit capacity [place];

L – annual driving capacity [km].

The conversion factor for electricity is used to convert to primary energy consumption

Formula to calculate energy savings – diesel multiple units			
Measure	**4.1.1 a**	**Title of measure:**	**Renewal and modernisation of the fleet**
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Transport 2007-2013

$ÚE = S_{phm} * L * 0{,}1$ * calorific value of diesel (kWh/l)

where

ÚE – annual energy saving [kWh];

S_{phm} – average fuel consumption [l/km];

L – annual driving capacity [km].

The conversion factor for diesel fuel is used to convert to primary energy consumption

Formula to calculate energy savings – trolleybuses			
Measure	**4.1.1 a**	**Title of measure:**	**Renewal and modernisation of the fleet**
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Transport 2007-2013

$$ÚE = \text{suma}\left(úe * n * \frac{m}{12}\right)$$

Where (average monthly saving * sum from 1 to n for m)

ÚE – annual energy saving [kWh];

úe – average annual saving per trolleybus [kWh];

n – number of trolleybuses;

m – number of months of trolleybus operation.

The conversion factor for electricity is used to convert to primary energy consumption

Formula to calculate energy savings – trams			
Measure	**4.1.1 a**	**Title of measure:**	**Renewal and modernisation of the fleet**
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Transport 2007-2013

$$ÚE = S_{ee} * L * 0{,}25$$

where

ÚE – annual energy saving [kWh];

S_{ee} – average electricity consumption [kWh/km];

L – annual driving capacity [km].

The conversion factor for electricity is used to convert to primary energy consumption

Measure	**4.1.1 b**		**Title of measure:**		Fleet renewal Renewal and modernisation of the fleet – rail transport
MSEE ID:					
Sector:	**Transport**		Source of financing:		Operational Programme Integrated Infrastructure 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	0 %	0 %	0 %	100 % (diesel)	

Characteristics of the measure (including eligible activities)	The principle pursued by the measure is the purchase of new electric and diesel train units for deployment in regional transport and the replacement of the obsolete fleets of carriers responsible for urban public rail transport in the public interest in Bratislava, Košice, Prešov and Žilina. Energy savings will be achieved by reducing the consumption of fuel and electricity (if electric traction units are used) by new more efficient fleet units replacing the current outdated units/vehicles. The complementary effect will also increase the comfort and attractiveness of public passenger transport, which will make a positive contribution to the slowdown in the growth of automotive developments. Nature of measure: (b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is projected. The remaining 15 % is co-financed by the central government budget, the budgets of higher territorial units, municipalities and towns, and private sources.
	Supported/eligible activities are mainly focused on: - an increase in the attractiveness of public passenger transport through the procurement of new resources to provide public passenger transport by rail;
Evaluation of the measure	- Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings: (a) *ex ante* – by means of a calculation.
Detailed description of the method to calculate energy savings	The methodology used to calculate energy savings is based on a comparison of the fuel consumed on the annual capacities reached by more energy-efficient vehicles with consumption on annual capacities reported for the existing outdated fleet. The specific energy saving is expressed as a reduction in the consumption of the fuel and electricity of new vehicles/units compared to the original outdated fleet. The calculation is tied to specific towns and territories where new vehicles and transport units are deployed and is derived from the transport capacity reported per vehicle/unit achieved annually in the analysed territory, or from the driving capacity of the group of new vehicles. A prerequisite applied in the calculation is the saving in electricity and fuel among newly acquired vehicles compared to the original vehicles in use.
Application of expert estimates and assumptions	Yes
Assumptions and estimates used in the calculation of energy savings	A prerequisite applied in the calculation is the percentage-based saving in electricity and fuel among newly acquired vehicles compared to the original vehicles in use. These savings, expressed as a percentage, are presented by manufacturers and verified by means of comparative projects at undertakings where the new vehicles are in routine use. If new electric double-decker multiple units are deployed, a unit saving of 0.004017 kWh/(place.km) is projected.[57] With the new diesel units, the assumption is that they will have 10 %[6] lower consumption compared to the original train units. It is estimated that these sets will be in daily circulation for 250 km (approximately 8 hours), with the passenger load of the units defined by the manufacturer. If new trolleybuses are deployed, the calculation of savings is based on a projection derived from a comparative before-and-after project in such a manner that the new trolleybus reports annual electricity consumption which is 164 MWh (30 %) lower.[58] New buses with hybrid engines have 39 % lower consumption[59] than ordinary buses. With new trams, a 25 % reduction in consumption is under consideration.[60] In the financing of the investment costs of projects under the measure, 85 % coverage from EU sources (the Operational

[57] Project to renew railway rolling stock, available online at: http://www.slovakrail.sk/sk/o-spolocnosti/projekty-eu/projekt-obnovy-zkv.html?no-graphics=0&print&print&print.
[58] Available online at: <http://www.zilina.sk/dokumenty/DokumentyProgramyMZ_20130619103328.pdf>
[59] Available online at: <http://www.busportal.sk/modules.php?name=article&sid=9384>
[60] Expert estimate by the Transport Research Institute.

	Programme Transport 2007-2013 and the Operational Programme Integrated Infrastructure 2014-2020) is projected.
Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented and the energy savings which have actually been measured. Information on energy consumption or energy savings will be monitored by means of a series of measurements in the field, taken to compare electricity and fuel consumption before and after the implementation of the measure.
Overall evaluation and way forward	This measure will continue as long as the public passenger transport projects defined under the Operational Programme Integrated Infrastructure 2014-2020 are implemented and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.
Method to avoid duplication	-

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	The responsible entity, the Ministry of Transport and Construction, is the managing authority of the Operational Programme Integrated Infrastructure 2014-2020, which announces calls for grant applications. The measure is consistent with measures under the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity does not apply at either national or EU level. (a) National level: - Energy would not be saved if the measure is not implemented. Non-implementation of the measure would confirm declining trends in the use of public passenger transport in favour of individual transport and transport would thus be more energy intensive. (b) Complementarity with EU legislation: - There are no requirements in this area at EU level.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the documentation for the Operational Programme Integrated Infrastructure 2014-2020. Applicants are required to ensure that rolling stock is deployed, thus ensuring the increased attractiveness of public passenger transport.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formulas for calculating savings for individual energy efficiency measures

Formula to calculate energy savings – electric double-decker units			
Measure	**4.1.1 b**	**Title of measure:**	Fleet renewal Renewal and modernisation of the fleet – rail transport
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Integrated Infrastructure 2014-2020

$$ÚE = úe * O * L$$

where

ÚE – annual energy saving [kWh];

úe – unit-based energy saving [kWh/(place km)];

O – unit capacity [places];

L – annual driving capacity [km].

The conversion factor for electricity is used to convert to primary energy consumption

Formula to calculate energy savings – diesel multiple units			
Measure	**4.1.1 b**	**Title of measure:**	Fleet renewal Renewal and modernisation of the fleet – rail transport
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Integrated Infrastructure 2014-2020

$$ÚE = S_{phm} * L * 0{,}1$$

where

ÚE – annual energy saving [l];

Sphm – average fuel consumption [l/km];

L – annual driving capacity [km].

The conversion factor for diesel fuel is used to convert to primary energy consumption

Formula to calculate energy savings – trolleybuses			
Measure	**4.1.1 b**	**Title of measure:**	Fleet renewal Renewal and modernisation of the fleet – rail transport
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Integrated Infrastructure 2014-2020

$$ÚE = \text{suma}\,(úe * n * \frac{m}{12})$$

where

ÚE – annual energy saving [l];

Sphm – average fuel consumption [l/km];

L – annual driving capacity [km].

The conversion factor for electricity is used to convert to primary energy consumption

Formula to calculate energy savings – trams			
Measure	**4.1.1 b**	**Title of measure:**	Fleet renewal Renewal and modernisation of the fleet – rail transport
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Integrated Infrastructure 2014-2020

$\acute{U}E = S_{ee} * L * 0{,}25$
where ÚE – annual energy saving [kWh]; See – average electricity consumption [kWh/km]; L – annual driving capacity [km]. The conversion factor for electricity is used to convert to primary energy consumption

Measure	**4.1.1 c**		**Title of measure:**		Fleet renewal – buses/trolleybuses
MSEE ID:					
Sector:	**Transport**		Source of financing:		Operational Programme Environment 2007-2013 IROP 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment, Ministry of Agriculture and Rural Development, Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(d)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	0 %	0 %	0 %	100 %	
Characteristics of the measure (including eligible activities)	The principle pursued by the measure is the purchase of new hybrid buses to be deployed in urban transport in Žilina. Energy savings will be achieved by reducing the consumption of fuel by means of new more efficient fleet vehicles replacing the current outdated vehicles. The complementary effect will also increase the comfort and attractiveness of public passenger transport, which will make a positive contribution to the slowdown in the growth of automotive developments. Nature of measure: (b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is expected (Operational Programme Environment 2017-2013). The remaining 15 % is co-financed by the central government budget, the budgets of higher territorial units, municipalities and towns, and private sources.				
	Supported/eligible activities are mainly focused on: - an increase in the attractiveness of public passenger transport through the procurement of new resources to provide public passenger transport;				
Evaluation of the measure	- Bottom-up, via individual projects				
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings: (a) *ex ante* – by means of a calculation				
Detailed description of the method to calculate energy savings	The methodology used to calculate the estimated energy savings is based on a comparison of fuel consumption in past annual traffic by more energy-efficient vehicles with consumption in annual traffic reported for the existing outdated fleet. The specific energy saving is expressed as a reduction in the consumption of the fuel (diesel) and electric traction of new vehicles/units compared to the original outdated fleet. The calculation is tied to specific towns and territories where new vehicles and transport units are deployed and is derived from the average volume of traffic reported per vehicle/unit used annually in the analysed territory.				
Application of expert estimates and assumptions	Yes				
Assumptions and estimates used in the calculation of energy savings	A prerequisite applied in the calculation is the percentage-based saving in electricity and fuel among newly acquired vehicles compared to the original vehicles in use. These savings, expressed as a percentage, are presented by manufacturers and verified by means of comparative projects at undertakings where the new vehicles are in routine use. If new electric double-decker multiple units are deployed, a unit saving of 0.004017 kWh per place per km is projected.[61] With the new diesel units, the assumption is that they will have 10 %[6] lower consumption compared to the original train units. It is estimated that these sets will be in daily circulation for 250 km (approximately 8 hours), with the passenger load of the units defined by the manufacturer. If new trolleybuses are deployed, the calculation of savings is based on a projection derived from a comparative before-and-after project in such a manner that the new trolleybus reports annual electricity consumption which is 164 MWh (30 %) lower.[62] New buses with hybrid engines have 39 % lower consumption[63] than ordinary buses. With new trams, a 25 % reduction in consumption is under consideration.[64] In the financing of the investment costs of projects under the measure, 85 % coverage from EU sources (the Operational Programme Transport 2007-2013 and the Operational Programme Integrated Infrastructure 2014-2020) is projected.				
Monitoring, control and verification of the energy	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects				

[61] Project to renew railway rolling stock, available online at: http://www.slovakrail.sk/sk/o-spolocnosti/projekty-eu/projekt-obnovy-zkv.html?no-graphics=0&print&print&print.
[62] Available online at: <http://www.zilina.sk/dokumenty/DokumentyProgramyMZ_20130619103328.pdf>
[63] Available online at: <http://www.busportal.sk/modules.php?name=article&sid=9384>
[64] Expert estimate by the Transport Research Institute.

savings made	under the measure which have actually been implemented and the energy savings which have actually been measured. Information on energy consumption or energy savings will be monitored by means of a series of measurements in the field, taken to compare electricity and fuel consumption before and after the implementation of the measure.
Overall evaluation and way forward	This measure will continue as long as the public passenger transport projects defined under the Operational Programme Integrated Infrastructure 2014-2020 are implemented and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.
Method to avoid duplication	-

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	The responsible entities, the Ministry of the Environment, as the managing authority of the Operational Programme Environment (2007-2013), and the Ministry of Agriculture and Rural Development, as the managing authority of the IROP (2014-2020), announce calls for grant applications. The measure is consistent with measures under the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020. It falls within the remit of the Ministry of Transport and Construction, which is responsible for implementing it. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	(a) Complementarity does not apply at either national or EU level. National level: Energy would not be saved if the measure is not implemented. Non-implementation of the measure would confirm declining trends in the use of public passenger transport in favour of individual transport and transport would thus be more energy intensive. (b) Complementarity with EU legislation: There are no requirements in this area at EU level.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the documentation for the Integrated Regional Operational Programme 2014-2020. Applicants are required to ensure that rolling stock is deployed, thus ensuring the increased attractiveness of public passenger transport.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of the Environment, Ministry of Agriculture and Rural Development, Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at the level of the Ministry of Transport and Construction level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings – hybrid buses			
Measure	**4.1.1 c**	**Title of measure:**	Fleet renewal – buses/trolleybuses
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Environment 2007-2013 IROP 2014-2020
$\acute{U}E = S_{phm} * L * 0{,}39$			
where ÚE – annual energy saving [l];			

Sphm – average fuel consumption [l/km];

L – annual driving capacity [km].

The conversion factor for electricity is used to convert to primary energy consumption

Measure	**4.1.1 d**		**Title of measure:**		Fleet renewal – buses
MSEE ID:					
Sector:	**Transport**		Source of financing:		Operational Programme Environment 2007-2013 IROP 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment, Ministry of Agriculture and Rural Development, Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(d)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	0 %	0 %	0 %	100 % (diesel)	

Characteristics of the measure (including eligible activities)	The principle of the measure consists of the purchase of new (diesel, CNG or electric) buses and trolleybuses designed primarily for urban public transport and scheduled bus services in the context of public-interest activities not covered by any of the aforementioned sub-measures. Energy savings will be achieved by reducing the consumption of fuel by means of new more efficient fleet vehicles replacing the current outdated vehicles. The complementary effect will also increase the comfort and attractiveness of public passenger transport, which will make a positive contribution to the slowdown in the growth of automotive developments. Nature of measure: Nature of measure: (b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is expected (Operational Programme Environment 2017-2013). The remaining 15 % – co-financing: higher territorial units.
	Supported/eligible activities are mainly focused on: - an increase in the attractiveness of public passenger transport through the procurement of new resources to provide public passenger transport by rail;
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings: (a) *ex ante* – by means of a calculation
Detailed description of the method to calculate energy savings	The methodology used to calculate the estimated energy savings is based on a comparison of fuel consumption in past annual traffic by more energy-efficient vehicles with consumption in annual traffic reported for the existing outdated fleet. The specific energy saving is expressed as a reduction in the consumption of the fuel (diesel) and electric traction of new vehicles/units compared to the original outdated fleet. The calculation is tied to specific towns and territories where new vehicles and transport units are deployed and is derived from the average volume of traffic reported per vehicle/unit used annually in the analysed territory.
Application of expert estimates and assumptions	Yes
Assumptions and estimates used in the calculation of energy savings	A prerequisite applied in the calculation is the percentage-based saving in electricity and fuel among newly acquired vehicles compared to the original vehicles in use. These savings, expressed as a percentage, are presented by manufacturers and verified by means of comparative projects at undertakings where the new vehicles are in routine use. If new electric double-decker multiple units are deployed, a unit saving of 0.004017 kWh per urban km is projected.[65] With the new diesel units, the assumption is that they will have 10 %[6] lower consumption compared to the original train units. It is estimated that these sets will be in daily circulation for 250 km (approximately 8 hours), with the passenger load of the units defined by the manufacturer. If new trolleybuses are deployed, the calculation of savings is based on a projection derived from a comparative before-and-after project in such a manner that the new trolleybus reports annual electricity consumption which is 164 MWh (30 %) lower.[66] New buses with hybrid engines have 39 % lower consumption[67] than ordinary buses. With new trams, a 25 % reduction in consumption is under consideration.[68] In the financing of the investment costs of projects under the measure, 85 % coverage from EU sources (the Operational Programme Transport 2007-2013 and the Operational Programme Integrated Infrastructure 2014-2020) is projected.

[65] Project to renew railway rolling stock, available online at: http://www.slovakrail.sk/sk/o-spolocnosti/projekty-eu/projekt-obnovy-zkv.html?no-graphics=0&print&print&print.
[66] Available online at: <http://www.zilina.sk/dokumenty/DokumentyProgramyMZ_20130619103328.pdf>
[67] Available online at: <http://www.busportal.sk/modules.php?name=article&sid=9384>
[68] Expert estimate by the Transport Research Institute.

Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented and the energy savings which have actually been measured. Information on energy consumption or energy savings will be monitored by means of a series of measurements in the field, taken to compare electricity and fuel consumption before and after the implementation of the measure.
Overall evaluation and way forward	This measure will continue as long as the public passenger transport projects defined under the Operational Programme Integrated Infrastructure 2014-2020 are implemented and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.
Method to avoid duplication	-

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	The responsible entities, the Ministry of the Environment, as the managing authority of the Operational Programme Environment (2007-2013), and the Ministry of Agriculture and Rural Development, as the managing authority of the IROP (2014-2020), announce calls for grant applications. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported. The measure is consistent with measures under the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020. It falls within the remit of the Ministry of Transport and Construction, which is responsible for implementing it. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	(a) Complementarity does not apply at either national or EU level. National level: Energy would not be saved if the measure is not implemented. Non-implementation of the measure would confirm declining trends in the use of public passenger transport in favour of individual transport and transport would thus be more energy intensive. (b) Complementarity with EU legislation: There are no requirements in this area at EU level.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the Energy Efficiency Action Plan for 2014-2016, with an outlook up to 2020. Applicants are required to ensure that rolling stock is deployed, thus ensuring the increased attractiveness of public passenger transport. This will change the overall distribution of transport work in favour of public transport.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of the Environment, Ministry of Agriculture and Rural Development, Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at the level of surveying by the Ministry of Transport and Construction level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings – buses			
Measure	**4.1.1 d**	**Title of measure:**	Fleet renewal – buses
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Environment 2007-2013 IROP 2014-2020

$$\acute{U}E = \left(S_{phmSV} * L\right) - \left(S_{phmNV} * L\right)$$

where

ÚE – annual energy saving [kWh];

SphmSV – average fuel consumption of old vehicle [l/km];

SphmNV – average fuel consumption of new vehicle [l/km];

L – annual driving capacity [km].

Measure	**4.1.2**		**Title of measure:**		Renewal and modernisation of the fleet – Bus/coach transport
MSEE ID:					
Sector:	**Transport**		Source of financing:		Operational Programme Environment 2007-2013 IROP 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of the Environment, Ministry of Agriculture and Rural Development, Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(d)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel	0 %	0 %	0 %	100 % (diesel)	

Characteristics of the measure (including eligible activities)	The 'Fleet renewal' measure is an ongoing measure following on seamlessly from the measure 'Bus and passenger rail transport policy – restriction on vehicle age', defined in the Energy Efficiency Action Plan for 2011-2013. Eligible project applicants are public passenger transport carriers in Slovakia, higher territorial units, towns, public passenger transport organisers, etc. This measure will be financed with funds from the IROP 2014-2020. Implementation of the measure is derived from the Slovak Public Passenger Transport Development Strategy up to 2020 and contains all 'green' fleet renewal projects identified by the strategy document. This measure comprises the implementation of the following project: 'Purchase of low-floor hybrid buses for Žilina (30 units)'. This is a continuous measure of no fixed duration. The principle pursued by the measure is the purchase of new low-floor hybrid buses to replace the outdated fleet of a carrier providing mass transportation in the public interest in Žilina. Energy savings will be achieved by reducing the consumption of fuel by means of new more efficient fleet units replacing the current outdated vehicles.
	Nature of measure: (b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is expected (Operational Programme Environment 2017-2013). The remaining 15 % is co-financed by the central government budget, the budgets of higher territorial units, municipalities and towns, and private sources.
Evaluation of the measure	- Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings (choice of options): (a) *ex ante* – by means of a calculation
Detailed description of the method to calculate energy savings	The methodology used to calculate the estimated energy savings is based on a comparison of fuel consumption in past annual traffic by more energy-efficient vehicles with consumption in annual traffic reported for the existing outdated fleet. The specific energy saving is expressed as a reduction in the consumption of the fuel (diesel) of new vehicles compared to the original outdated fleet. The calculation is tied to a specific territory where new vehicles will be deployed and is derived from the average volume of traffic reported per vehicle used annually in the analysed territory (the area served is the city of Žilina).
Application of expert estimates and assumptions	Yes
Assumptions and estimates used in the calculation of energy savings	A prerequisite applied in the calculation is the percentage-based saving in fuel among newly acquired vehicles compared to the original vehicles in use. These savings, expressed as a percentage, are presented by manufacturers and verified by means of comparative projects at undertakings where the new vehicles are in routine use. If new buses with hybrid engines are deployed, the calculation of savings draws on the assumption that the new vehicles will have 39 % lower consumption than ordinary buses. In the financing of the investment costs of projects under the measure, 85 % coverage for projects implemented under the IROP 2014-2020 is expected.
Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented. Information on energy consumption or energy savings will be monitored by means of a series of measurements in the field, taken to compare fuel consumption before and after the implementation of the measure. Control measurements will be taken by the public transport operators and carriers who are beneficiaries of aid.
Overall evaluation and way forward	This measure will continue as long as the public passenger transport projects defined under the Integrated Regional Operational Programme 2014-2020 are implemented and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.

Method to avoid duplication	-

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	The principle of the measure consists of the purchase of new buses designed primarily for urban public transport and scheduled bus services in the context of public-interest activities. Energy savings will be achieved by reducing the consumption of fuel by means of new more efficient fleet vehicles replacing the current/outdated vehicles. The complementary effect will also increase the comfort and attractiveness of public passenger transport, which will make a positive contribution to the slowdown in the growth of automotive developments. The responsible entities, the Ministry of the Environment, as the managing authority of the Operational Programme Environment (2007-2013), and the Ministry of Agriculture and Rural Development, as the managing authority of the IROP (2014-2020), announce calls for grant applications. The measure is implemented further to the Slovak Strategic Public Passenger Transport Development Plan up to 2020. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported. The measure is consistent with measures under the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020.
Complementarity of the measure	Complementarity does not apply at either national or EU level. (a) National level: Energy would not be saved if the measure is not implemented. Non-implementation of the measure would confirm declining trends in the use of public passenger transport in favour of individual transport and transport would thus be more energy intensive. (b) Complementarity with EU legislation: There are no requirements in this area at EU level.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the management documentation for the relevant operational programmes in the 2014-2020 programming period. Applicants are required to ensure that rolling stock is deployed, thus ensuring the increased attractiveness of public passenger transport. This will change the overall distribution of transport work in favour of public transport.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of the Environment, Ministry of Agriculture and Rural Development, Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at the level of the Ministry of Transport and Construction level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings – buses			
Measure	**4.1.2**	**Title of measure:**	Renewal and modernisation of the fleet – Bus/coach transport
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Environment 2007-2013 IROP 2014-2020

$$\acute{U}E = \left(S_{phmSV} * L\right) - \left(S_{phmNV} * L\right)$$

where

ÚE – annual energy saving [kWh];

SphmSV – average fuel consumption of old vehicle [l/km];

SphmNV – average fuel consumption of new vehicle [l/km];

L – annual driving capacity [km].

Measure	**4.2**		**Title of measure:**		Building and upgrading the transport infrastructure (contd.)
MSEE ID:					
Sector:	**Transport**		Source of financing:		Operational Programme Transport 2007-2013 Operational Programme Integrated Infrastructure 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(d)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Other fuels:	Other fuels:	
Breakdown (%) by fuel	xx	58.31 %	16.14 % (petrol)	25.54 % (diesel)	

Characteristics of the measure (including eligible activities)	The 'Building and upgrading the transport infrastructure' measure is an ongoing measure following on seamlessly from a measure defined in the Energy Efficiency Action Plan for 2011-2013. Eligible project applicants are transport infrastructure managers in Slovakia, i.e. NDS, a.s., the Slovak Road Administration (SSC) and Railways of the Slovak Republic (ŽSR). Implementation of the measure is derived from the Operational Programme Integrated Infrastructure 2014-2020, the Transport Infrastructure Development Strategy Plan up to 2020, and projects financed under the Operational Programme Transport 2007-2013 which will not be put into operation until the 2014-2016 reporting period. This is a continuous measure of no fixed duration. The principle pursued by the measure is the building of new large-capacity sections of road infrastructure, the removal of defects in class I roads and the upgrading of the railway infrastructure. Energy savings are achieved by reducing the fuel consumption of road infrastructure users on new technically more refined infrastructure compared to the original technically outdated road infrastructure. In rail transport, energy savings are generated by reducing the number of bursts of speed on the transport infrastructure, made possible by the upgrading of the track, and by enhancing comfort, winning over passengers from individual motorised transportation.
	Nature of measure: (b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is expected (Operational Programme Transport 2017-2013). The remaining 15 % is co-financed by the central government budget and the budgets of higher territorial units, municipalities and towns.
Evaluation of the measure	Select from the options: - Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings (choice of options): (a) *ex ante* – by means of a calculation
Detailed description of the method to calculate energy savings	The reduction in specific energy consumption after the completion and upgrading of transport infrastructure is derived from the transfer of motorised vehicles to motorways and expressways from class I roads running parallel to the newly completed sections. The calculation draws on information about the length of the sections of newly built road, information on the traffic intensity on the roads in question, and the vehicle fuel consumption and price. Unit prices per litre of fuel in the reference period were taken from the Statistical Office of the Slovak Republic. Intensity on newly built sections was determined on the basis of the projected percentage of traffic distribution (class I roads, motorways and expressways) after the sections of motorway and expressway are put into operation; no induced traffic period is projected. The annual fuel savings in litres and the annual savings in the cost of fuel (in EUR) were determined for the reference period by means of a table-based calculation. The fuel saving in litres was subsequently converted into TJ. With railway infrastructure, the saving is expressed as a direct saving and as the fuel saving generated by the switching of passengers and cargoes from individual motorised transportation and road freight vehicles.
Application of expert estimates and assumptions	Yes
Assumptions and estimates used in the calculation of energy savings	The basic assumption used in the calculation is the unit consumption of vehicle fuel on the new and original infrastructure, as measured on a trial section: The average fuel consumption of a 3.5 t - 7.5 t vehicle on a class I road is 18 l/100 km, the average fuel consumption of a 3.5 t - 7.5 t vehicle on a motorway/expressway is 15 l/100 km, the average fuel consumption of a 7.5 t - 12 t vehicle on a class I road is 23 l/100 km, the average fuel consumption of a 7.5 t - 12 t vehicle on a motorway/expressway is 19 l/100 km, the average fuel consumption of a vehicle over 12 t on a class I road is 45 l/100 km, the average fuel consumption of a vehicle over 12 t on a motorway/expressway is 40 l/100 km, the average fuel consumption of a petrol-driven passenger car on a class I road is 8.5 l/100km, the average fuel consumption of a petrol-driven passenger car on a motorway/expressway is 7.5 l/100km, the average fuel consumption of a diesel-driven passenger car on a class I road is 5.5 l/100km, and the average fuel consumption of a diesel-driven passenger car on a motorway/expressway is 5

	l/100km. The weighted proportion of diesel-powered vehicles in traffic flow is considered to be 67 %, with petrol-driven vehicles accounting for 33 %.
Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented. Information on energy consumption or energy savings will be monitored by means of periodic five-year nationwide traffic surveys and the subsequent recalculation of the savings based on the actually determined intensity on the new infrastructure. In rail transport, the quantified planned savings will be verified by monitoring the actual energy consumption of rail passenger and freight carriers, quantified per unit of capacity.
Overall evaluation and way forward	This measure will continue as long as the projects defined under the Operational Programme Integrated Infrastructure 2014-2020 are implemented and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.
Method to avoid duplication	-

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	Project implementation contributes to savings for the final customer. The principle of the measure consists of the construction of top-class infrastructure ensuring the unobstructed mobility of rolling stock without drops in speed leading to increased fuel consumption. In road transport, the negative impact of construction – induced traffic – must also be taken into account. The responsible entity, the Ministry of Transport and Construction, is the managing authority of the Operational Programme Transport (2007-2013) and Operational Programme Integrated Infrastructure (2014-2020), which announces calls for grant applications. The measure is implemented further to the Slovak Strategic Public Passenger Transport Development Plan up to 2020. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity does not apply at either national or EU level.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the documentation for the Operational Programme Integrated Infrastructure 2014-2020. Applicants are required to ensure that rolling stock is deployed, thus ensuring the increased attractiveness of public passenger transport. This will change the overall distribution of transport work in favour of public transport.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings – road infrastructure			
Measure	**4.2**	**Title of measure:**	Building and upgrading the transport infrastructure (contd.)
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Transport 2007-2013 Operational Programme Integrated Infrastructure 2014-2020

$$\acute{U}E = PDP * \left\{ \left[D_{CI.tr} * \left(\left(RPDI_{OV_{CI.tr}} * S_{PHM_{OV\,CI.tr}} \right) + \left(RPDI_{NV_{CI.tr}} * S_{PHM_{NV\,CI.tr}} \right) \right) \right] - \left[\left(D_{CI.tr} * P_{CI.tr} * \left(\left(RPDI_{OV_{CI.tr}} * S_{PHM_{OV\,CI.tr}} \right) + \left(RPDI_{NV_{CI.tr}} * S_{PHM_{NV\,CI.tr}} \right) \right) \right) + \left(D_{D/R} * P_{D/R} \left(\left(RPDI_{OV_{D/R}} * S_{PHM_{OV\,D/R}} \right) + \left(RPDI_{NV_{D/R}} * S_{PHM_{NV\,D/R}} \right) \right) \right) \right] \right\}$$

$$\acute{U}E_{celkom} = \acute{U}E - S_{PHM indukovaná\ doprava}$$

$$\acute{U}_{km_O} = \frac{(P_O * 0{,}082)}{O_{OV}}$$

$$\acute{U}_{km_N} = \frac{(P_N * 0{,}082)}{q}$$

where

PDP – number of days the newly built motorway/expressway is in operation over the reference period;

$RPD_{CI.tr}$ – annual average of the daily passenger vehicle intensity on Class I roads [vehicles/24 h];

$RPD_{CI.tr}$ – annual average of the daily freight vehicle intensity on Class I roads [vehicles/24 h];

$RPDIov_{D/R}$ – annual average of the daily passenger vehicle intensity on motorways/expressways [vehicles/24 h];

$RPD_{InvD/R}$ – annual average of the daily freight vehicle intensity on motorways/expressways [vehicles/24 h];

$SPHM_{OVCI.tr}$ – average passenger vehicle fuel consumption on Class I roads [l/km];

$SPHM_{NVCI.tr}$ – average freight vehicle fuel consumption on Class I roads [l/km];

$SPHM_{OVD/R}$ – average passenger vehicle fuel consumption on motorways/expressways [l/km];

$SPHM_{OVD/R}$ – average freight vehicle fuel consumption on motorways/expressways [l/km];

$D_{CI.tr}$ – length of the continuous section of Class I road [km];

$D_{D/R}$ – length of the newly constructed motorway/expressway [km].

$P_{CI.tr}$ – percentage of reallocation of traffic intensity to Class I roads [%];

$P_{D/R}$ – percentage of reallocation of traffic intensity to motorways/expressways [%];

$ÚE_{celkom}$ – final energy saving over the period under assessment [l];

ÚE – energy saving due to the construction of a new section [l];

$S_{PHM\ indukovaná\ doprava}$ – energy consumption as a result of induced traffic [l];

$Ú_{kmo}$ – passenger transport saving in kilometres travelled [km];

P_O – road passenger transport distance [passenger-kilometres];

O_{OV} – average occupancy of passenger vehicles [persons/vehicle]

$Ú_{kmo}$ – freight transport saving in kilometres travelled [km];

P_O – road freight transport distance [tkm];

q – average quantity of goods transported [t].

Formula to calculate energy savings – railway infrastructure			
Measure	**4.2**	**Title of measure:**	Building and upgrading the transport infrastructure (contd.)
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Transport 2007-2013 Operational Programme Integrated Infrastructure 2014-2020

$$\acute{U}E = \left(\acute{U}_{km_O} * S_{PHM_b} * P_b\right) + \left(\acute{U}_{km_O} * S_{PHM_d} * P_d\right) + \left(\acute{U}_{km_N} * S_{PHM}\right)$$

where

ÚE – energy saving [l];

Úkmo – road passenger transport saving in kilometres travelled [km];

SPHMb – average fuel consumption of petrol-powered passenger vehicles [l/km];

Pb – percentage of petrol-powered passenger vehicles in traffic flow [%];

SPHMd – average fuel consumption of diesel-powered passenger vehicles [l/km];

Pd – percentage of diesel-powered passenger vehicles in traffic flow [%];

ÚkmN – road freight transport saving in kilometres travelled [km];

SPHM – average fuel consumption of freight vehicles [l/km].

Measure	**4.3**		**Title of measure:**		Support for the development and use of public passenger transport, including support for the creation of integrated transport systems
MSEE ID:					
Sector:	**Transport**		Source of financing:		Operational Programme Transport 2007-2013 Operational Programme Integrated Infrastructure 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b) Article 7(9)(d)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Other fuels:	Other fuels:	
Breakdown (%) by fuel	0 %	0 %	32.96 % (petrol)	67.06 % (diesel)	

Characteristics of the measure (including eligible activities)	The 'Support for the development and use of public passenger transport, including support for the creation of integrated transport systems' measure is an ongoing measure following on seamlessly from the measure 'Support for the development and use of public passenger transport', defined in the Energy Efficiency Action Plan for 2011-2013. Eligible project applicants are Slovak towns, transport enterprises and the railway infrastructure manager, i.e. ŽSR. This measure will be financed with funds from the Operational Programme Transport 2007-2013 and the Operational Programme Integrated Infrastructure 2014-2020. Implementation of the measure is derived from the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020 and contains all 'green' projects supporting the development of public passenger transport and the development of integrated transport systems, as identified by the strategy document. This measure comprises the implementation of the following specific projects: 'Pivotal urban public transport system, traffic section: Janíkov dvor - Šafárikovo nám., Part 1: Šafárikovo nám. – Bosákova ulica', 'Dúbravka Tramway in the Hanulova – Pri kríži section', 'Pivotal urban public transport system, Stage 1, Hlavná stanica – Janíkov dvor, traffic section: Bosákova ulica - Janíkov dvor, Part 2: Bosákova – Janíkov dvor', 'Tramway upgrade: Karloveská, Vajnorská and Račianska Radial Road', 'ŽSR, Integrated Passenger Transport Terminals (TIOP) in Bratislava, Section: Bratislava hlavná stanica – Podunajské Biskupice (implementation)', 'ŽSR, Integrated Passenger Transport Terminals (TIOP) in Bratislava, Section: Bratislava hlavná stanica – Devínska Nová Ves (implementation)', 'Pivotal urban public transport system, Stage 1: Hlavná stanica – Janíkov dvor, traffic section: Hlavná stanica – Šafárikovo námestie', 'ŽSR, Integrated Passenger Transport Terminals (TIOP) in Košice Self-governing Region, Stage I: (Design + documentation)', 'Tramway upgrade in Košice, Stage 2'. The contribution of other 'smaller' projects defined by the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020 is not taken into account in the quantification of the measure's planned benefit. This is a continuous measure of no fixed duration. The principle pursued by the measure is the implementation of new and the upgrading of outdated public passenger transport infrastructure required to give passengers the incentive to switch from motorised transport (especially individual motorised transportation) to less energy intensive modes of public passenger transport. Energy savings will be achieved by reducing fuel consumption. This will take the form of a reduction in the share of individual motorised transportation and the replacement thereof with public bus transport employing low-energy trolley buses and trams.
	Nature of measure: (b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is expected (Operational Programme Transport 2017-2013). The remaining 15 % is co-financed by the central government budget and the budgets of higher territorial units, municipalities and towns.
Evaluation of the measure	Select from the options: - Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure);
Detailed description of the method to calculate energy savings	The methodology for the calculation of energy savings is based on the quantification of a projected reduction in fossil fuel consumption, i.e. fuel currently consumed in the transportation of passengers travelling within Slovakia by means of private road vehicle use or public bus transport and, after implementation of this measure's projects, making use of trams, trolleybuses and the integrated transport systems. This methodology does not anticipate an increase in electricity consumption associated with the expansion of the tram and trolley bus transport system.
Application of expert estimates and assumptions	Yes

Assumptions and estimates used in the calculation of energy savings	The calculation is based on the methodological approach prepared by the Transport Research Institute in its handling of the assignment 'Analysis of an assessment of the impacts of proposed activities funded by the EU for the 2014-2020 programming period in terms of the contribution to a low-carbon economy'. Prerequisites in the calculation of planned energy savings are: • The proportion of individual motorised transportation in traffic is taken to be an average of 70 % for petrol cars and 30 % for diesel vehicles. • The average consumption for an urban public transport bus is taken to be 30 l/100 km, while the average consumption for passenger cars is 8.5 l/100 km (petrol) or 5.5 l/100 km (diesel) • The average occupancy of the replaced urban public transport buses is 34 passengers and the average occupancy of replaced individual motorised transportation is 1.8 persons. • In the project to implement the Bratislava pivotal urban public transport system (the construction of a tramway), it is expected that the new tram system will take over 90 % of passengers from the current urban public bus transport system and 10 % of individual motorised transportation users. Given these switches, the average vehicle occupancy considered, and the journey length (8 km) that will be replaced by the new tramway, annual fossil fuel savings associated with the need for approximately 1.5 million vehicle kilometres in the urban public bus transport system and 3.1 million vehicle kilometres in individual motorised transportation can be anticipated. • In the projects to construct integrated transport system terminals in Bratislava, it is estimated that the entire urban public transport system in Bratislava carried 252 million passengers in 2012. It is projected that the construction of new terminals and the expansion of the integrated transport systems in Bratislava will attract a number of passengers from individual motorised transportation to the extent that the annual fossil fuel consumption associated with the need for approximately 17.75 million vehicle kilometres currently travelled by individual motorised transportation will be saved. • In the projects to construct integrated transport system terminals in Košice, it is estimated that the entire urban public transport system in Košice carried 86.8 million passengers in 2012. It is projected that the construction of new terminals and the commissioning of the integrated transport systems in Košice will attract a number of passengers from individual motorised transportation to the extent that the annual fossil fuel consumption associated with the need for approximately 7 million vehicle kilometres currently travelled by individual motorised transportation will be saved. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is projected.
Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented.
Overall evaluation and way forward	This measure will continue as long as the projects defined under the Slovak Public Passenger Development Strategy Plan are implemented and are incorporated into the Operational Programme Integrated Infrastructure 2014-2020 and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.
Method to avoid duplication	-

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	Project implementation contributes to savings for the final customer. The principle of the measure consists of the upgrading of railway infrastructure in towns and the construction of integrated passenger transport terminals in order to make public passenger transport (especially rail transport) more attractive and to mitigate the negative effects resulting from the current situation. The responsible entity, the Ministry of Transport and Construction, is the managing authority of the Operational Programme Transport (2007-2013) and Operational Programme Integrated Infrastructure (2014-2020), which announces calls for grant applications. The measure is implemented further to the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity does not apply at either national or EU level.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the documentation for the Operational Programme Integrated Infrastructure 2014-2020. Applicants are required to ensure that rolling stock is deployed, thus ensuring the increased attractiveness of public passenger transport. This will change the overall distribution of transport work in favour of public transport.
Compliance with criteria (under Article 7(10) of the	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and

Directive)	compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings – public passenger transport			
Measure	**4.3**	**Title of measure:**	Support for the development and use of public passenger transport, including support for the creation of integrated transport systems
MSEE ID:			
Sector:	**Transport**	Source of financing:	Operational Programme Transport 2007-2013 Operational Programme Integrated Infrastructure 2014-2020

$$\acute{U}E = \left(L_{IAD} * S_{PHM_b} * P_b\right) + \left(L_{IAD} * S_{PHM_d} * P_d\right) + \left(L_{BUS} * S_{PHM_{bus}}\right)$$

where

ÚE – energy saving [l];

L_{IAD} – driving capacity of individual motorised transportation vehicles that needs to be provided [km];

$SPHM_b$ – average fuel consumption of petrol-powered passenger vehicles [l/km];

P_b – percentage of petrol-powered passenger vehicles in traffic flow [%];

$SPHM_d$ – average fuel consumption of diesel-powered passenger vehicles [l/km];

P_d – percentage of diesel-powered passenger vehicles in traffic flow [%];

L_{BUS} – driving capacity of bus transport that needs to be provided [km];

$SPHM_{bus}$ – average fuel consumption of buses [l/km].

Measure	**4.4**		**Title of measure:**		Support for the development of non-motorised transport, especially cycling
MSEE ID:					
Sector:	**Transport**		Source of financing:		IROP 2014-2020
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	Ministry of Agriculture and Rural Development, Ministry of Transport and Construction		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Other fuels:	Other fuels:	
Breakdown (%) by fuel	0 %	0 %	29.40 %	58.95 %	

Characteristics of the measure (including eligible activities)	The 'Support for the development of non-motorised transport, especially cycling' measure is an ongoing measure following on seamlessly from the measure 'Improvements in support for non-motorised modes of transport (cycling)', defined in the Energy Efficiency Action Plan for 2011-2013. Eligible project applicants are Slovak towns and higher territorial units. This measure will be financed with funds from the IROP 2014–2020. Implementation of the measure is derived from the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020 and the National Strategy for the Development of Cycling in the Slovak Republic and contains all 'green' cycling and non-motorised infrastructure projects identified by the strategy document. This measure comprises the implementation of the following specific projects: **'Construction of the cycle path Eurovelo 13, Devínska cesta (Karlova Ves – Devín)' , 'Construction of the H2 cycle road in Žilina (Solinky – centre)', 'Construction of the V6 cycle road in Žilina (Veľký Diel – Vlčince, trolley bus final stop)', 'Construction of the V9 cycle road in Žilina V9 (Vlčince – Vodné dielo)' and 'Cycle path Podlavice – Hušták – Bus station and railway station – City of Banská Bystrica'.** This is a continuous measure of no fixed duration. The principle pursued by the measure is the construction of new cycle paths and roads in order to provide suitable infrastructure to give passengers the incentive to switch from motorised transport (especially private car use) to energy non-intensive modes of non-motorised transport, especially cycling. Energy savings will be achieved by reducing fuel consumption. This will take the form of a reduction in the share of private car use in the overall breakdown of transport within the city.
	Nature of measure: (b) support schemes. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is projected. The remaining 15 % is co-financed by the central government budget and the budgets of higher territorial units, municipalities and towns.
Evaluation of the measure	Select from the options: - Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings (choice of options): (a) *ex ante* – projected savings (standard savings for each measure);
Detailed description of the method to calculate energy savings	The methodology for the calculation of energy savings is based on the quantification of a projected reduction in fossil fuel consumption, i.e. fuel currently consumed in the transportation of passengers travelling within the city by means of private road vehicle use or public bus transport who, on completion of quality cycling infrastructure, will switch to non-motorised cycling. This will reduce the share of individual motorised transportation in the breakdown of transportation in the cities concerned.
Application of expert estimates and assumptions	Yes
Assumptions and estimates used in the calculation of energy savings	The calculation is based on the conclusions of a mobility survey conducted in 2011 in selected Slovak cities – Žilina and Prešov. The basic assumption of the calculation is that in other Slovak cities where a mobility survey has not been conducted, the mobility of the local population is represented in much the same way as in these selected cities. The assumptions under consideration are as follows: the number of journeys regularly taken in the city per head of population is 2.45 per day; the current modal split in the city is 3 % cycling and 33 % individual motorised transportation; the average length of a cycling trip in the city is 2.8 km and, on average, a bicycle can be used for transportation approximately 150 days per year. In keeping with the fundamental vision of the National Strategy for the Development of Cycling in the Slovak Republic, the aim is to ensure that, by implementing all of the defined measures, the share of cycling in the overall breakdown of transportation in cities in Slovakia will be 10 % by 2020. Another key measure is to build sufficient, safe cycling infrastructure. By implementing this measure, it would be possible, according to an expert estimate, to increase the current modal split in the relevant Slovak cities from the current level of 3 % to 4 %-5 %. In the financing of the investment costs of projects under the measure, 85 % coverage from EU resources is anticipated in accordance with IROP rules.
Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented. Data on energy consumption and

	energy savings will have to be monitored by means of transport surveys on cycling traffic using the infrastructure constructed under the non-motorised transport projects, and by subsequent verification of the projected increase in the proportion of cycling in the breakdown of city transportation, with a parallel contraction in individual motorised transportation.
Overall evaluation and way forward	This measure will continue as long as the projects of non-motorised transport infrastructure defined under the Slovak Public Passenger Development Strategy Plan up to 2020 are implemented and are incorporated into the Operational Programme Integrated Infrastructure 2014-2020 and the co-financing of measures/projects is provided by the EU.
Projected overlapping with another measure – duplication	Overlapping with another measure and the duplicate counting of savings are not expected.
Method to avoid duplication	

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	The principle of the measure consists of the development of cycling and non-motorised infrastructure in towns in order to make this type of transport more attractive and to mitigate the negative effects resulting from the current situation. The responsible entity, the Ministry of Agriculture and Rural Development, is the managing authority of the IROP (2014-2020), which announces calls for grant applications. The measure is carried out further to the Slovak Strategic Public Passenger Transport Development Plan up to 2020, which is implemented by the Ministry of Transport and Construction. These facts indicate that activities under the measure are demonstrably material to the achievement of the energy savings reported.
Complementarity of the measure	Complementarity does not apply at either national or EU level.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	The requirement to draw on ESIF financial resources meets the result indicators defined in the documentation for the Integrated Operational Programme 2014-2020.
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Agriculture and Rural Development, Ministry of Transport and Construction. (c) Savings are determined transparently according to method (b) savings measured. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements/yes, these are voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at ITMS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings – public passenger transport			
Measure	**4.4**	**Title of measure:**	Support for the development of non-motorised transport, especially cycling
MSEE ID:			
Sector:	**Transport**	Source of financing:	IROP 2014-2020

$$\acute{U}E = \left(\acute{U}_{km} * S_{PHM_b} * P_b\right) + \left(\acute{U}_{km} * S_{PHM_d} * P_d\right)$$

where

ÚE – energy saving [l];

$Ú_{km}$ – saving in kilometres travelled [km];

$SPHM_b$ – average fuel consumption of petrol-powered passenger vehicles [l/km];

P_b – percentage of petrol-powered passenger vehicles in traffic flow [%];

$SPHM_d$ – average fuel consumption of diesel-powered passenger vehicles [l/km];

P_d – percentage of diesel-powered passenger vehicles in traffic flow [%].

Measure	**4.5**		**Title of measure:**		Urban mass transport – trolleybuses
MSEE ID:					
Sector:	**Transport**		Source of financing:		MunSEFF
Measure lasting from: (year)	2011		to: (year)		2015
Responsible:	Ministry of Transport and Construction, EBRD, Commission		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(b)
Lifetime of measure (years):	20		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel		100 %			expert estimate

Characteristics of the measure (including eligible activities)	The main objective of the programme is to stimulate the energy-efficient renovation of municipal infrastructure, especially in public transport services within a given municipality.
	Nature of measure: (b) funding schemes – credit line to support the development of energy efficiency and renewable energy sources among towns and municipalities in Slovakia
	Supported/eligible activities are mainly focused on: (c) eligible projects under MunSEFF: component 1 – projects for the energy efficiency of municipality-owned infrastructure (other than buildings) – arrangements for urban mass transport (trolleybuses) – focusing on reductions in final electricity consumption
Evaluation of the measure	Bottom-up, via individual projects
Methods for the calculation of savings (in accordance with Annex V(1))	Methods for the calculation of savings: (a) *ex ante* – projected savings (standard savings for each measure).
Detailed description of the method to calculate energy savings	The methodology used to calculate energy savings is based on a comparison of the electricity consumed on the annual capacities reached by more energy-efficient vehicles with consumption on annual capacities reported for the existing outdated fleet. The specific electricity saving is expressed as a reduction in the consumption of the electricity of new vehicles compared to the original outdated fleet. The calculation is tied to specific towns and territories where new vehicles are deployed and is derived from the transport capacity reported per vehicle achieved annually in the analysed territory, or from the driving capacity of the group of new vehicles. A prerequisite applied in the calculation is the saving in electricity among newly acquired vehicles compared to the original vehicles in use.
Application of expert estimates and assumptions	Yes
Assumptions and estimates used in the calculation of energy savings	A prerequisite applied in the calculation is the saving (expressed as a percentage) in electricity among newly acquired vehicles compared to the original vehicles in use. These savings, expressed as a percentage, are presented by manufacturers and verified by means of comparative projects at undertakings where the new vehicles are in routine use. If new trolleybuses are deployed, the calculation of savings is based on a projection derived from a comparative before-and-after project, with a new trolleybus reporting annual electricity consumption which is 164 MWh (30 %) lower.[69]
Monitoring, control and verification of the energy savings made	Periodic evaluations of compliance with the energy-saving values planned under this measure will be carried out by means of the calculation described above, taking into account projects under the measure which have actually been implemented and the energy savings which have actually been measured. Information on energy consumption or energy savings will be monitored by means of a series of measurements in the field, taken to compare electricity consumption before and after the implementation of the measure. The energy audit will be carried out by an authorised energy auditor and the audit will be verified by the design consultant (ENVIROS, s.r.o., Czech Republic) for the MunSEFF programme.
Overall evaluation and way forward	The measure will continue in the coming period.

[69] Available online at: <http://www.zilina.sk/dokumenty/DokumentyProgramyMZ_20130619103328.pdf>

Projected overlapping with another measure – duplication	There is no overlapping with any measure.
Method to avoid duplication	The duplication of the energy savings made by overlapping measures is prevented by the fact that energy savings presented for projects aimed at the energy efficiency of infrastructure within the municipality with a MunSEFF contribution are not counted towards other measures as the processing is carried out on a project-by-project basis.

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c))	The principle of this measure consists of the purchase of new trolleybuses. Energy savings will be achieved by reducing the consumption of electricity by means of new more efficient trolleybuses replacing the current outdated trolleybuses. The complementary effect will also increase the comfort and attractiveness of public passenger transport, which will make a positive contribution to the slowdown in the growth of automotive developments. The measure is consistent with measures under the Slovak Public Passenger and Non-motorised Transport Development Strategy up to 2020, the implementation of which is the responsibility of the Ministry of Transport and Construction.
Complementarity of the measure	The complementarity of the measure is irrelevant – the measure would not be implemented without the MunSEFF support programme.
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	Grant levels relative to the loan principal are set according to the components of each project: component 1 – the grant level ranges from 10 % to 20 % of the loan principal
Compliance with criteria (under Article 7(10) of the Directive)	(a) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (b) Ministry responsible for the measure: Ministry of Transport and Construction. (c) Savings are determined transparently according to method (a) *ex ante*. (d) Energy savings are shown in final energy consumption. (e) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V. (f) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (g) Not applicable, these are not voluntary agreements. (h) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (i) The control system is implemented at MSEE IS level and as part of the preparation of action plans and annual reports. As measures are checked on a project-by-project basis, no statistically significant share of measures for checking was established. (j) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings – trolleybuses			
Measure	**4.5**	**Title of measure:**	Urban mass transport – trolleybuses
MSEE ID:			
Sector:	**Transport**	Source of financing:	MunSEFF

$$ÚS_{i\_plán} = \left(S_{pred} - S_{po}\right) x\, L$$

where:
$ÚS_{i\_plán}$ – planned energy saving (final energy consumption) in the year of trolleybus replacement [kWh/a];

S_{pred} – average electricity consumption of an old trolleybus – original condition [kWh/km];

S_{po} – average electricity consumption of a new trolleybus – new condition [kWh/km];

L – annual driving capacity [km/a].

Appliances

Measure	**2.1.**		**Title of measure:**		**Replacement of white goods**
MSEE ID:					
Sector:	**Appliances**		Source of financing:		private resources, special offers from retailers and manufacturers
Measure lasting from: (year)	2014		to: (year)		2020
Responsible:	CECED, Ministry of Economy		**Measure to comply with Article 7 of Directive 2012/27/EU:**		**Yes**
			Policy measure classification:		Article 7(9)(f)
Lifetime of measure (years):	>7		Compliance with Article 7(10)		Yes
Type of fuel:	Natural gas	Electricity	Heat	Other fuels:	
Breakdown (%) by fuel		100 %			

Characteristics of the measure (including eligible activities)	Support for the marketability of economical products, the transfer of very old products to electrical waste in the Envidom collective system. Energy savings are calculated for refrigerators, freezers (including built-in and freestanding products).
	Nature of measure: (f) consulting, seminars, conferences and information campaigns on energy-saving appliances and explanations of the importance of energy labels. EU legislation on ecodesign and labelling, as well as special offers from retailers and manufacturers, also contribute to overall savings under the measure (i.e. not only Article 7 of the EED).
	Supported/eligible activities are mainly focused on: (c) the correct choice of appliance, its importance and use for the household; (d) the replacement of old appliances with more energy efficient appliances.
Evaluation of the measure	Bottom-up
Methods for the calculation of savings (in accordance with Annex V(1) to the EED and Implementing Decree No 327/2015)	Methods for the calculation of energy savings: (a) *ex ante* – projected savings; (b) relative savings by reference to the planned energy requirement.
Detailed description of the method to calculate energy savings	Bottom up – energy savings express the reduction in energy consumption following the removal of old appliances and their replacement with new, more economical appliances. As appliances are affected by EU legislation, both the total energy saving and the energy saving further to Article 7 of Directive 2012/27/EU are counted: (a) The total energy saving is calculated by reference to the energy saving of the collected products (the energy consumption saved), from which the energy consumption of the products sold (in a given year) is deducted. (b) The energy saving further to Article 7 is calculated by deducting the total energy saving from the impact of the energy savings achieved under EU legislation (Directive 2009/125/EC, i.e. the Ecodesign Directive). The energy saving of the collected products is calculated as the average consumption of the collected products (approximately 1 000 kWh/year) multiplied by the number of products collected (i.e. electrical waste). The energy consumption of the products sold on the market is calculated on the basis of the average consumption of products sold by energy class (the average is calculated from product catalogues per calendar year for more than 20 trademarks, and the arithmetic average of consumption in each category is calculated according to the energy class). The energy saving for Article 7 is determined by the fact that, on the one hand, the energy saving of the collected products is deducted from the energy consumption of the collected products in prohibited (unauthorised) energy classes. On the other hand, the energy consumption of the products sold in prohibited energy classes is deducted from the energy consumption of the products sold (see the calculation formulas). The calculation of energy savings covers only the refrigerators and freezers of official importers (about 85-88 % of the market share); online purchases and individual imports (10-15 %) are not included.
Application of expert	Yes

estimates and assumptions in the calculation of energy savings	The average age of a collected appliance, measured from the production date, is over 15 years. The average consumption of an old refrigerator/freezer from 1992 is around 1 000 kWh per year (source: data from the Technical Testing Institute, Piešťany). Numbers of newly marketed units, share of energy classes – source: CECED SK (85-90 % on the white goods market). Number of collected pieces, their average age – source: ENVIDOM (90 % on the white goods market). Average energy consumption, by energy class, according to the catalogue products offered, containing the product models of 20 major trademarks – source: CECED SK. Although energy savings are achieved when refrigerators/freezers are replaced, it is assumed that the overall absolute household energy consumption on appliances will remain stable. Consumption will not decrease significantly in absolute terms in the wake of replacement, mainly due to the growth of new types of appliances (coffee makers, dishwashers, dryers, computers and mobile devices, such as mobile phones and tablets).
Monitoring, control and verification of the energy savings made	Monitoring – via CECED SK. Checks and verification of energy savings via the Ministry of Economy – evaluation of annually provided for the quality control of input data. Checks on energy saving calculations are also conducted as part of the preparation of action plans and annual reports.
Overall evaluation and way forward	The replacement of large white goods will continue in the future. In the future, there are also plans for statistics on the removal and sale/marketing of other large white goods, so that the savings achieved on other appliances can also be calculated for the categories of washing machines, dishwashers and vacuum cleaners.
Projected overlapping with another measure – duplication	There is a risk of overlapping or duplication with Measure 3.12 Application of the principle of energy efficiency in public procurement. However, under Measure 3.12 no savings have been reported in the long term.
Method to avoid duplication	Since, under Measure 3.12, with which there is a risk of overlapping, no energy savings have yet been reported, there has been no duplication.

Information for the purposes of Article 7 of Directive 2012/27/EU	
Materiality of the measure (Annex V, point 2(c), to the EED)	This measure is highly feasible in that awareness of the benefits of using products that are less energy intensive and more efficient is raised by CECED SK, the Slovak Innovation and Energy Agency and other organisations via information campaigns, consulting, seminars and conferences for professionals and the general public. Information campaigns are financed by the Operational Programme Environmental Quality via the national project 'Living with Energy' and by CECED's own resources. In addition, there are special offers from retailers and manufacturers. It is only through these State-initiated support measures that appliance investment activities have accelerated very quickly. As the measure reduces electricity consumption, it contributes to energy savings for the final customer.
Complementarity of the measure	Complementarity for appliances is applied in relation to EU legislation (Directive 2009/125/EC on ecodesign).
Compliance with legislation and principles of support mechanisms (including quality control and sanctions), if relevant	This measure is consistent with Act No 79/2015 on waste and Act No 529/2010 on ecodesign.
Compliance with criteria (under Article 7(10) of the Directive)	(k) Act No 321/2014 established two transitional periods. The 4AP will evaluate the contribution made by policy measures in the first transitional period (2014-2016) and compliance with the trajectory for the energy savings target under Article 7 by 2020. (l) Ministry responsible for the measure: Ministry of Economy (in conjunction with CECED). (m) Savings are determined transparently according to the *ex ante* and relative-saving methods. (n) Energy savings are shown in final energy consumption. (o) Savings are determined further to point 1(a) of Annex V, in accordance with point 2 of Annex V to the EED. (p) Not applicable; these are not policy measures under Article 7(9)(a), second subparagraph. (q) Not applicable, these are not voluntary agreements. (r) The results of the measure are continuously monitored and, if they are not sufficient, corrective measures will be taken. (s) The control system is implemented as part of the preparation of action plans and annual reports. (t) Trends in savings will be set out in the annual reports on progress achieved towards national energy efficiency targets.

Formula to calculate energy savings			
Measure	**2.1.**	**Title of measure:**	**Replacement of white goods**

MSEE ID:	-		
Sector:	**Appliances**	Source of financing:	private resources, special offers from retailers and manufacturers

Step 1: calculation of savings made by collected appliances:

$$Ú_{vyzbierané} = ks_{vyzbierané} * \overline{S_{vyzbierané}}$$

where:

Ú_vyzbierané – energy saving of collected appliances (i.e. energy unused due to removal from operation) [kWh];

ks_vyzbierané – number of appliances collected [pc];

$\overline{S_{vyzbierané}}$ – average consumption of a removed appliance [1 000 kWh/year].

Step 2: calculation of the net energy saving (i.e. adjusted for the influence of appliances sold in a given year):

$$Ú_{čistá} = Ú_{vyzbierané} - S_{predané}$$

where

$$S_{predané} = \sum_{i=1}^{6} (ks_{predané\_i} * \overline{S_{predané\_i}})$$

S_ predané – the energy consumption of appliances sold in a given year [kWh];

ks_ predané_i – number of appliances sold in a given year in individual energy classes *i* [pcs], where *i* = 1-6; *i* = {A+++, A++, A+, A, B, C};

$\overline{S_{predané\_i}}$ – the average energy consumption of an appliance sold in a given year according to the energy classes *i* [kWh].

Step 3: calculation of the net energy saving further to Article 7 of Directive 2012/27/EU (i.e. adjusted for the impact of EU legislation).

Step 3.1: calculation of the savings of collected appliances adjusted for the influence of appliances prohibited (unauthorised) on the market under Directive 2009/125/EC, the Ecodesign Directive:

$$Ú_{vyzbierané\_čl7} = Ú_{vyzbierané} - Ú_{vyzbierané\_zakázané}$$

where

$$Ú_{vyzbierané\_zakázané} = (ks_{vyzbierané} - ks_{vyzbieraném_{zakázané}}) * \overline{S_{vyzbierané}}$$

and

$$ks_{vyzbieraném_{zakázané}} = ks_{predaném_{zakázané}} * \frac{ks_{vyzbierané}}{ks_{predané}}$$

where

Ú_vyzbierané_čl7 – energy saving of collected appliances adjusted for the influence of prohibited appliances [kWh];

Ú_vyzbierané_zakázané – energy saving of collected appliances [kWh];

ks_ vyzbierané – number of collected appliances in a given year [pcs];

ks_ vyzbierané_zakázané – total number of collected appliances in prohibited energy classes in a given year [pcs];

$\frac{ks_{vyzbierané}}{ks_{predané}}$ – the share of appliances collected in the total number of appliances sold in a given year.

Step 3.2: calculation of the total net energy saving further to Article 7 of Directive 2012/27/EU

$$Ú_{čistá\_čl7} = Ú_{vyzbierané\_čl7} - S_{predané\_čl7}$$

where

$$S_{predané\_čl7} = S_{predané} - S_{predané\_zakázané}$$

S_ predané_čl7 – energy consumption of appliances sold in a given year, adjusted for the influence of prohibited appliances [kWh];

S_ predané_zakázané – energy consumption of appliances sold in a given year in prohibited energy classes [kWh], where:

$$Q_{predané\_zakázané} = \sum_{j=1}^{3} (\overline{Q_{predané\_zakázané\_j}} * ks_{predané\_zakázané\_j})$$

where

$\overline{Q_{novouvedené\_zakázané\_j}}$ – the average consumption of an appliance sold in a given year according to individual prohibited energy classes *j* [kWh].

ks_predané_zakázané_j – number of appliances sold in a given year in individual prohibited energy classes *j*, *j* = 1-3; *j* = {A, B, C}; *j* depends on the calendar year in which the individual energy classes are prohibited. The schedule of prohibited energy

classes is set out in the Commission's delegated regulations for each product category separately.

The schedule for the category of refrigerators, freezers and household wine bars is as follows:

- From 1 July 2012 – energy classes B and C prohibited;
- From 1 July 2014: energy classes A, B and C prohibited.