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multEE
facilitating multi-level governance for Energy Efficiency

European best practices on monitoring and verification - Results from the Horizon 2020 project multEE

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CRES

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Project outline

facilitating multi-level governance for Energy Efficiency

multEE is an H2020 project (2015-2017).

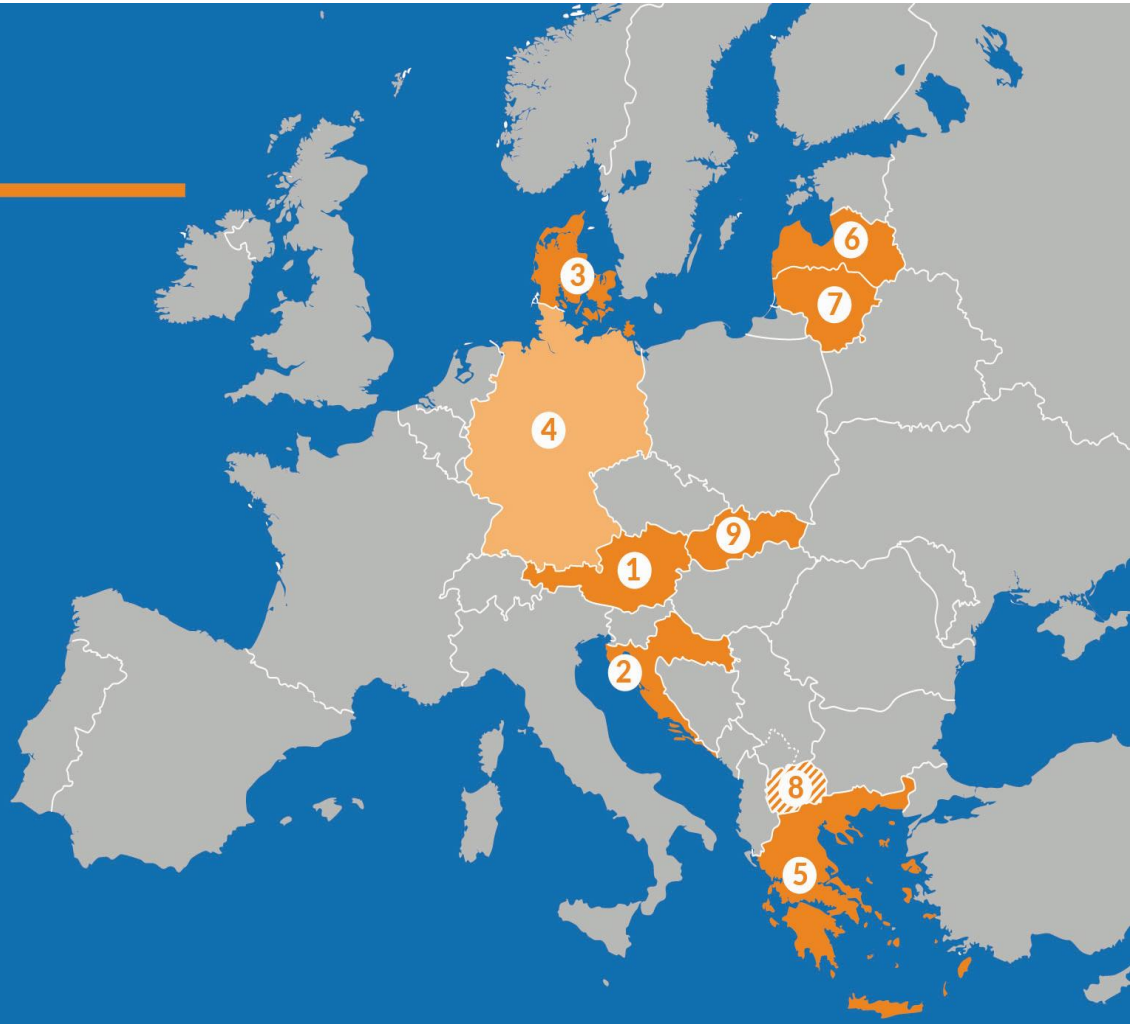
multEE aims to improve the **consistency and quality** of energy efficiency policy planning and implementation through:

- **Innovative monitoring and verification schemes**
- **Improved coordination** between different administrative levels

The multEE Consortium

Consortium Members

1 Austria
2 Croatia
3 Denmark
4 Germany*
5 Greece
6 Latvia
7 Lithuania
8 FYR of Macedonia
9 Slovakia



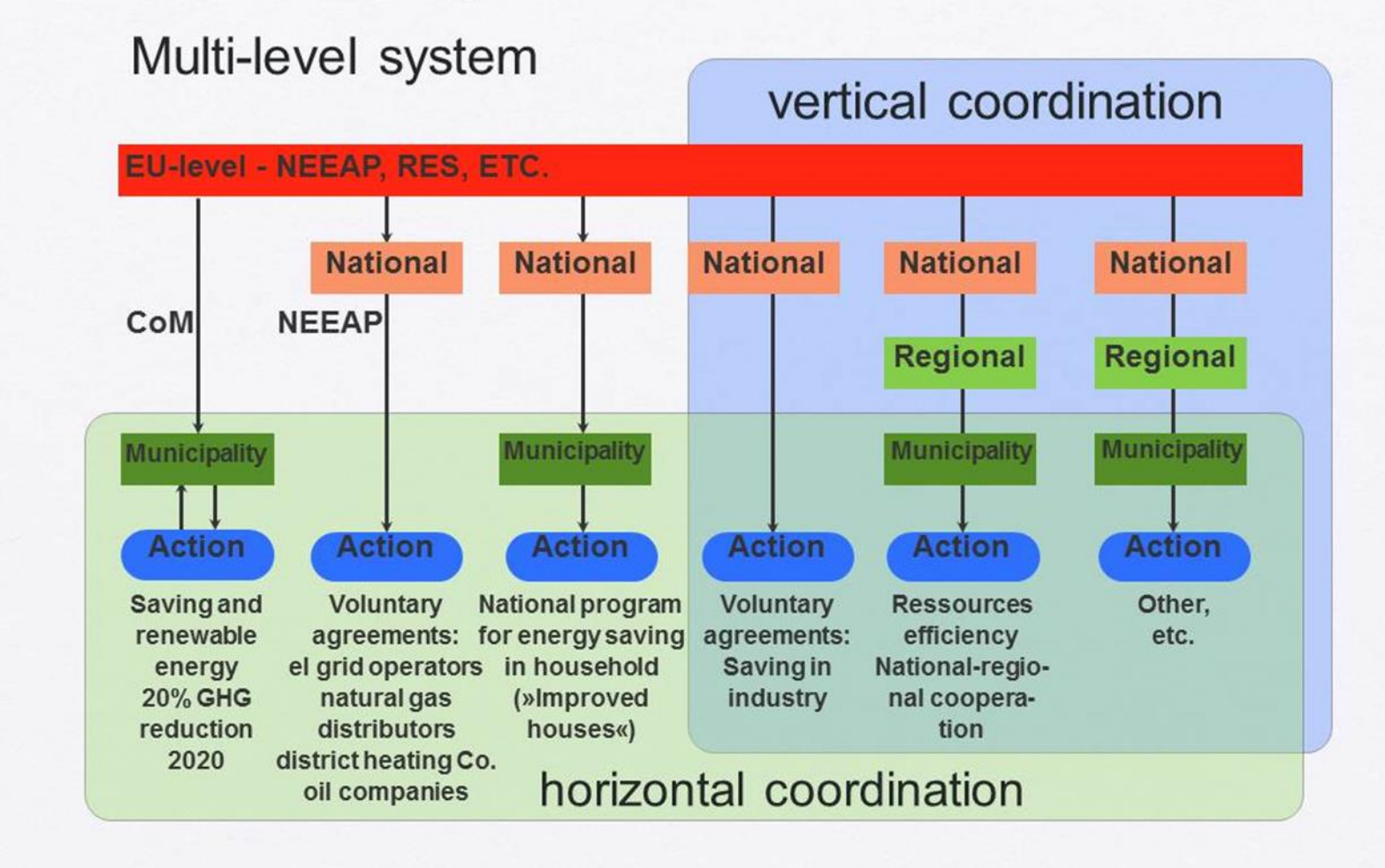
The multEE Consortium

Participant organization name	Short Name	Country
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	GIZ	DE
Roskilde University	RUC	DK
Ecologic Institute	EI	DE
Austrian Energy Agency	AEA	AT
Energy Institute Hrovje Požar	EIHP	HR
Institute for Physical Energetics	IPE	LV
Lithuanian Energy Institute	LEI	LT
Macedonian Center for Energy Efficiency	MACEF	MK
Center for Renewable Energy Sources and Saving	CRES	GR
Slovak Innovation and Energy Agency	SIEA	SK

Challenges for EE policy

- **Lack of reliable data on EE measures and their results**
  - No homogeneous availability of data
- **Lack of vertical and horizontal coordination of EE planning & implementation**
  - Lack of coherence between national targets and targets set by EEAP on municipal and regional level
  - Lack or underdeveloped mechanisms or for coordinating energy efficiency policy between different governmental layers
- **Lack of capacities of public authorities for planning and implementing EE measures in a multi-governance setting**

Multi-level governance for EE



Objective of the multEE Project

multEE aims to improve the **consistency and quality** of EE policy planning and implementation through:

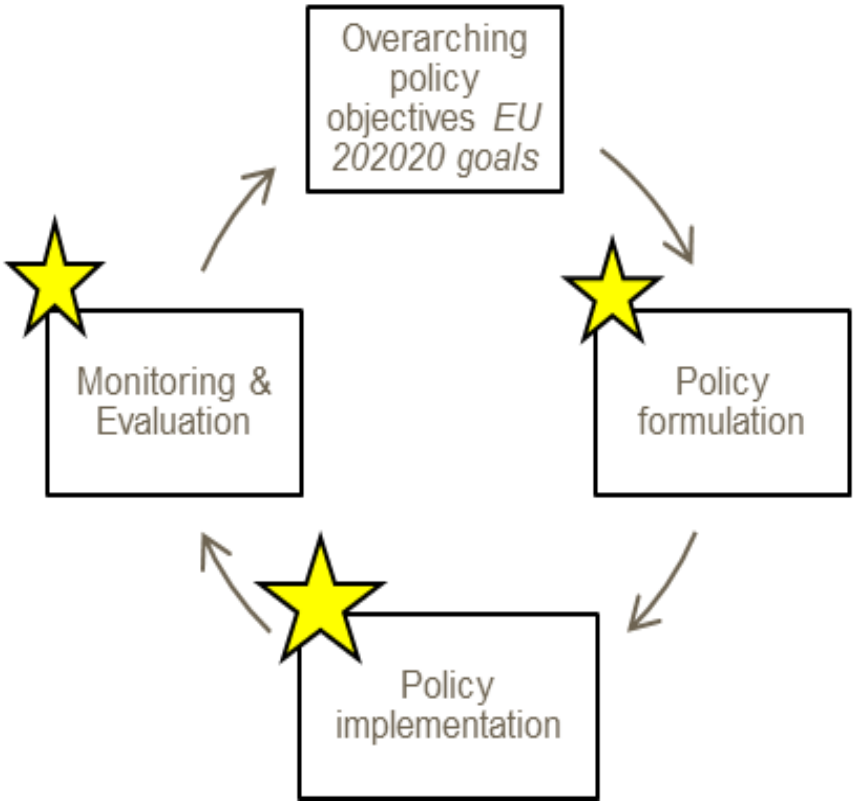
1. The introduction of innovative, bottom-up **monitoring and verification (M&V) schemes**

   These schemes are based on bottom-up data to ensure the impact of energy efficiency measures is correctly evaluated and useable for future energy efficiency planning.

2. The improvement of **vertical and horizontal coordination** between administrative levels

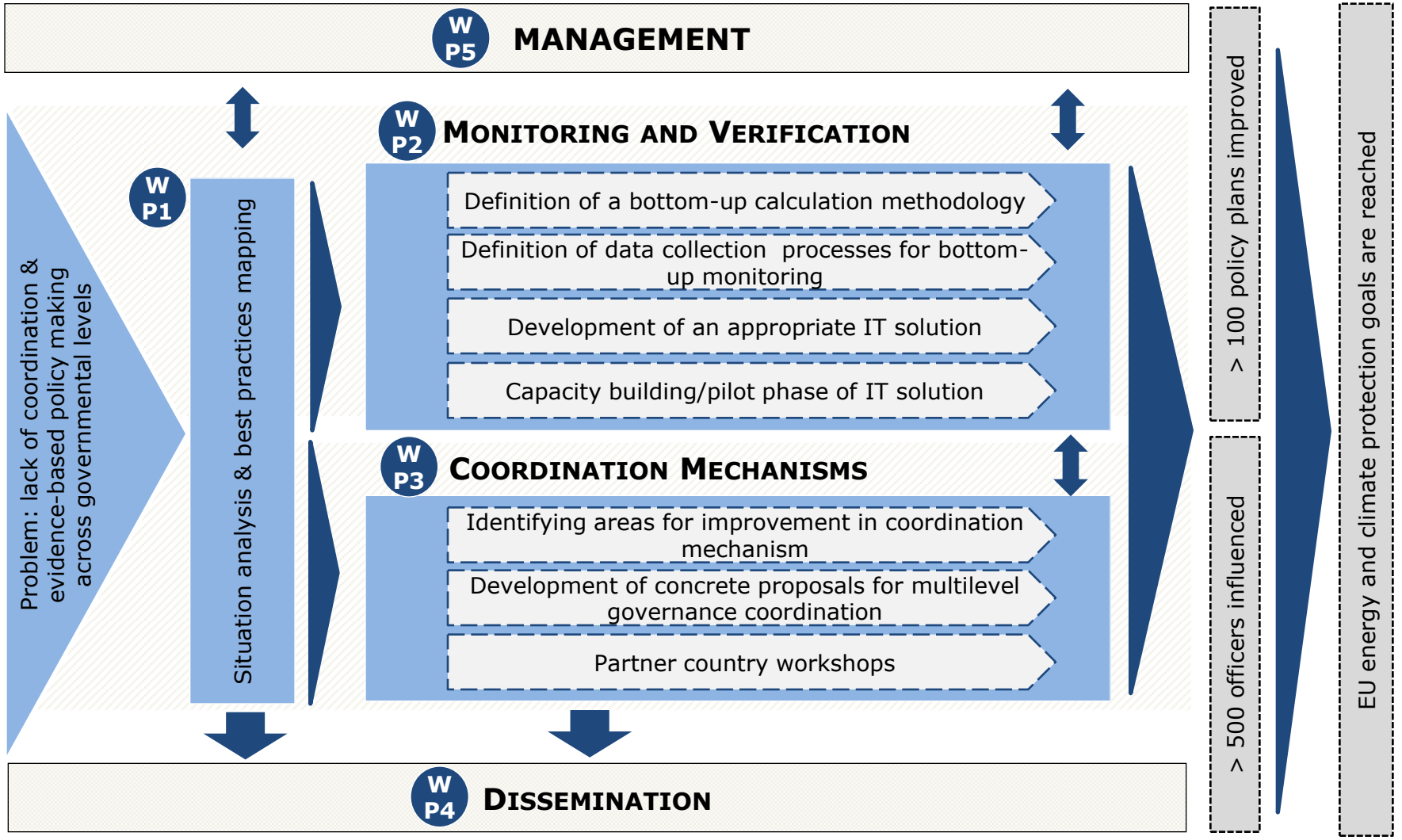
   The objective is to exploit the full potential of the integrated M&V tools developed in multEE and improve the overall quality of integrated energy efficiency policy formulation and implementation.

Interventions in the Policy Cycle



- multEE improves **knowledge about concrete effects** of energy efficiency policy measures through M&V systems based on bottom-up data.
- multEE improves the **quality of energy efficiency plans** by feeding in evidence into the **formulation process**
- **Implementation of efficiency plans** and evaluation is improved by improved coordination between and among governmental layers

Methodology



WP1: Analyse status quo and best practices

Analysis of status quo and development of inventory of best practices concerning M&V schemes and coordination mechanisms

Objective: Conduct a thorough analysis of the status quo in EU member states regarding:

- Implemented M&V schemes and
- Established coordination mechanisms

The aim of this analysis is to:

- Identify best practices and use them for activities in WP2
- Provide a basis for the formulation of recommendations for country-specific coordination mechanisms in WP3

WP2: Develop and implement bottom-up monitoring systems

Development and implementation of a methodology for bottom-up calculation, data collection and integrated M&V schemes including capacity building

Objective: introduce or refine bottom-up monitoring systems in participant countries

Specific objectives:

- Develop country specific bottom-up calculation methods
- Define data collection processes
- Develop and implement an appropriate IT solution for bottom-up monitoring
- Provide capacity building in the partner countries

WP3: Recommend coordination mechanisms

Development of recommendations for country-specific coordination mechanisms and capacity building

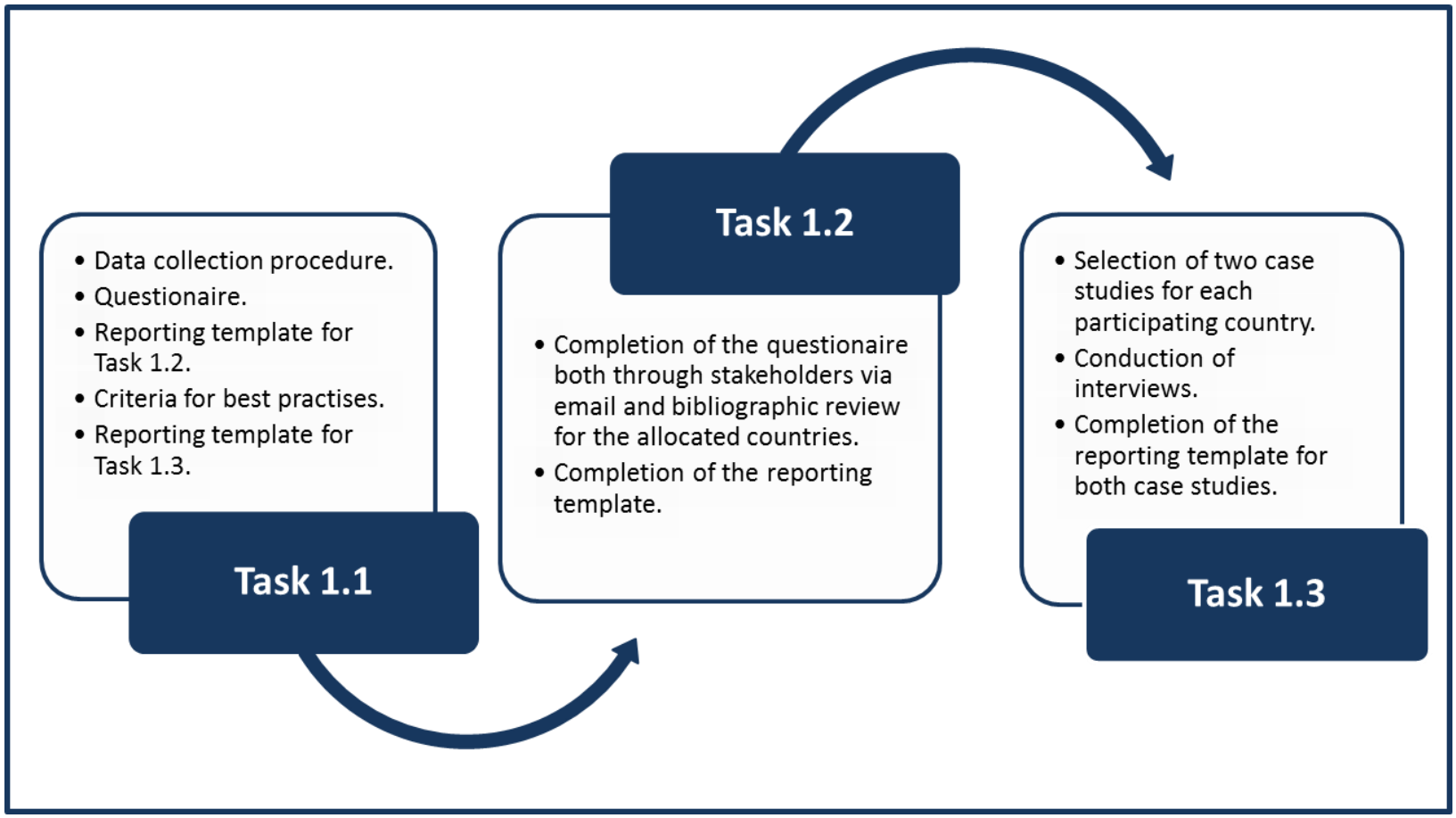
Objective: Develop and improve country specific coordination mechanisms in energy efficiency, based on:

- the examination of the implemented M&V schemes and coordination mechanisms (WP 1)
- the development of an improved bottom-up methodology, data collection and integrated M&V schemes (WP 2)

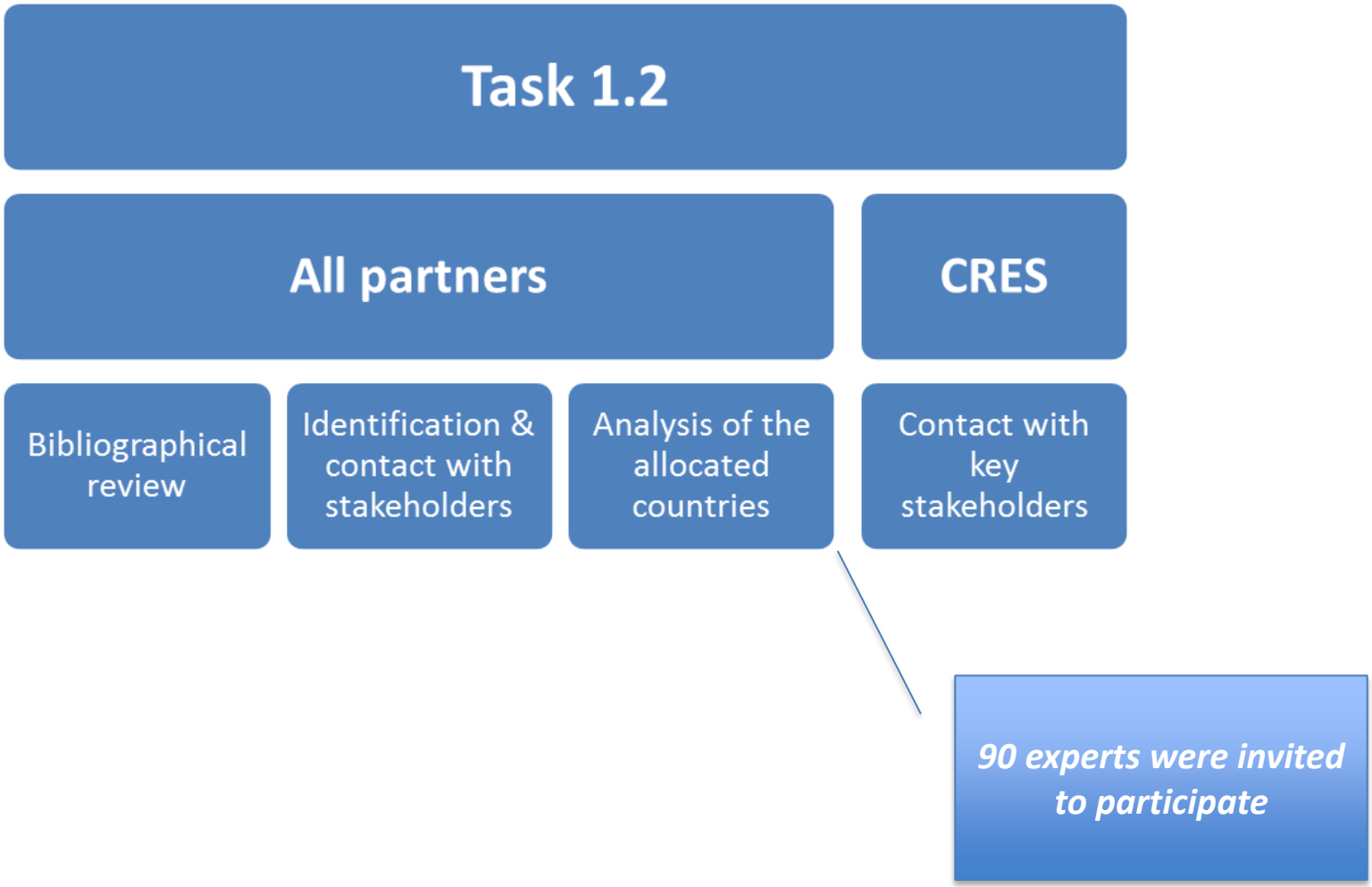
Specific objectives:

- Develop concrete proposals for multilevel governance procedures for each partner country
- Improve coordination among the administrative levels for a better implementation of energy efficiency policies & measures

WP1's tasks


Task 1.1
• Data collection procedure.
• Questionaire.
• Reporting template for Task 1.2.
• Criteria for best practises.
• Reporting template for Task 1.3.
Task 1.2
• Completion of the questionaire both through stakeholders via email and bibliographic review for the allocated countries.
• Completion of the reporting template.
Task 1.3
• Selection of two case studies for each participating country.
• Conduction of interviews.
• Completion of the reporting template for both case studies.

Methodological approach for data collection



Questionnaire

QUESTIONNAIRE	
Objective	*Evaluating the current situation and mapping the existing monitoring and verification (M&V) schemes for Energy Efficiency Action Plans and coordination mechanisms for Energy Efficiency Policy Formulation and Implementation between different governmental layers*
	Project: multEE - Facilitating multi-level governance for energy efficiency
The Questionnaire shall be completed by (Addressees): *)	Representatives of ministries or other agencies responsible for the implementation and control of M&V schemes and coordination of energy efficiency policies within the country

Purpose and Objective of the Questionnaire
1. To map and analyse existing -M&V schemes /coordination mechanism implementation in EU and selected candidate countries
2. To identify best practices for M&V schemes and coordination mechanisms and to analyse the most successful methodologies

The Questionnaire is completed by (Addressee)?	
Name and Surname, Position	
E-mail address	Phone number
Institution / Organisation	
Department / Office / Branch	

Deadline for the return of the completed Questionnaire:
Contact persons responsible for the acquirement and interpretation of the completed Questionnaire:
Christos Tourkolias (ctourkolias@cres.gr), Minas Iatridis (miatri@cres.gr), Filip Prebeg (fprebeg@eihp.hr), Lovorko Marić (lmaric@eihp.hr)

Please tick the green boxes with an "x" and write your more comprehensive answers in the larger green boxes.

multEE - Facilitating multi-level governance for energy efficiency

Questionnaire for the analysis of existing Monitoring and Verification (M&V) schemes for Energy Efficiency Action Plans and coordination mechanisms for Energy Efficiency Policy Formulation in EU and selected candidate countries

The two main objectives of the questionnaire are:

1. To map and analyse existing M&V schemes / Coordination mechanism implementation in EU and selected candidate countries

2. To identify best practices for M&V schemes and Coordination mechanisms and to analyse the most successful methodologies

The Questionnaire is completed by (please fill out all boxes):

Name and Surname, Position

E-mail address

Institution / Organisation

Department / Office / Branch

Country

PART 1 - M&V SCHEMES

A Monitoring and Verification (M&V) scheme is an integrated mechanism for the continuous monitoring of specific energy efficiency measures, schemes or programs. The purpose of the M&V scheme is the measurement of their impact in terms of energy savings and the verification of the measured impacts.

For example, one M&V scheme can undertake within the period of 5 years the measurement and verification of a program which consists of three different energy efficiency measures such as 1) the implementation of 40,000 energy efficiency interventions in households (e.g. high efficient window frames, insulation, high efficient boilers etc), 2) the implementation of 1,000 energy efficiency interventions in industrial processes (e.g. high efficient motors and boilers etc) and 3) the promotion of 15,000 high efficient vehicles in transport sector.

The purpose of the questions in Part 1 is to clarify the type of M&V scheme and its use in your country.

1.1. Is there a M&V scheme (or a certain number of M&V schemes) for energy efficiency measures currently being implemented in your country? *

- Yes.
- No.
- Currently in development phase.
- Currently in implementation phase.
- Depending on the programme. Please specify how the energy efficiency measures are allocated and the status of different M&V schemes for different programmes (write here below):

Reporting templates

VI Annex III: Reporting template for the analysis of the M&V schemes and coordination mechanisms

M&V schemes and coordination mechanisms

Country: **Flag**

I. M&V schemes

1. General framework

Analysis of questions 1.1, 1.2 & 1.3 from the questionnaire of Annex I

2. Design

2.1 Administrative authority

Analysis of question 1.4 from the questionnaire of Annex I

2.2 Sectoral and spatial analysis

Analysis of questions 1.5 & 1.6 from the questionnaire of Annex I

2.3 Energy efficiency measures and technologies

Analysis of questions 1.7 & 1.8 from the questionnaire of Annex I

3. Implementation

3.1 Data collection and measurement procedures

Analysis of questions 1.9, 1.10, 1.11 & 1.12 from the questionnaire of Annex I

VII Annex IV: Annotated Reporting template for the analysis of best practices[1]

I. Monitoring and Verification schemes

0. Executive summary

1. General framework

- Please provide information about the current M&V scheme for EE policy implementation
- Describe how the M&V scheme has been set up and introduced in the energy efficiency policy of the country providing the necessary historical evidence
- How does the M&V scheme meet the needs for fulfilling the reporting obligations from the EED/ESD Directives?

2. Design

2.1 Administrative authority

- Which is the monitoring body responsible for the administration and coordination of the M&V scheme?
- What specific responsibilities and duties does this monitoring body have?

[1] The annotated reporting template includes guiding questions for the researchers conducting the analysis. They further illustrate the rationale behind the different sub-chapters to be completed.

Completed questionnaires & factsheets

Completed questionnaires by key stakeholders	Completed questionnaires by bibliographical review	Completed factsheets
18 States	**11 States**	**29 factsheets**
Austria, Bulgaria, Croatia, Cyprus, Czech, France, FYR of Macedonia, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Portugal, Romania, Slovakia, Slovenia, Spain	Belgium, Denmark, Estonia, Finland, Germany, Ireland, Luxembourg, Netherlands, Poland, Sweden, UK	All countries mentioned in Column 1 and 2

Fact sheets

M&V schemes and coordination mechanisms

Country: Austria

I. M&V schemes

1. General framework

In Austria, a national M&V scheme for energy efficiency measures was established firstly during the implementation of Directive 2006/32/EC on energy end-use efficiency and energy services (ESD). The M&V scheme consisted of an online database, which was used by all parties affected by the ESD to report the initiated energy efficiency measures (mostly through subsidy schemes) in the energy end-use sectors. For reporting the progress in achieving the 9% target of the ESD, Austria chose to follow a bottom-up approach and to calculate energy savings from energy efficiency measures mostly with nationally approved default values per individual measure through means of the online database. With the repeal of the ESD and the adoption of Directive 2012/27/EU on energy efficiency (EED), Austria has set up a new system for monitoring the implementation of the EED, which is compliant with the requirements of the EED and the Austrian Energy Efficiency Law transposing this Directive into the national legislation.

2. Design

2.1 Administrative authority

The M&V scheme in Austria is administered and coordinated by the Austrian Energy Agency, which qualifies as a third party non-governmental contractor. The Austrian Energy Agency was designated by the Austrian Federal Ministry of Science, Research and Economy as national monitoring body in May 2015 after a national competitive bidding process.

2.2 Sectoral and spatial analysis

The regional and national administrative levels participate actively in the Austrian M&V scheme for energy efficiency, reporting energy efficiency measures they have subsidized to the national monitoring body on a yearly basis. Obliged parties of the M&V scheme are however only the federal bodies and the parties of the energy efficiency obligation scheme (energy providers) according to Article 7 of the EED. Local authorities and companies not falling under Article 7 of the EED are not required to implement and report energy efficiency measures. However, if local authorities and companies have received subsidies for implementing energy efficiency measures in their sphere of action, the effects of these measures are reflected in the savings reported by the national agency funding these measures.

M&V schemes and coordination mechanisms

Country: Greece

I. M&V schemes

1. General framework

In Greece the implementation of the M&V schemes for energy efficiency measures depends on the implemented programs. Specifically, several M&V schemes have been designed and established within the framework of the implemented energy efficiency measures according to their discrete requirements and characteristics. The main categories of energy efficiency measures, which are already on progress, consist of the provision of financial incentives mainly from the Operational Programs within the framework of National Strategic Framework and the exploitation of the available Structural Funds and the imposition of legislative and regulatory measures. Even if the implemented M&V schemes have been established independently, it can be considered that they are in compliance with the Directives 2006/32/EC (ESD) and 2012/27/EU (EED). Specifically, the proposed M&V schemes were established and introduced in the energy efficiency policy for the effective monitoring of the energy efficiency measures during the preparation of the National Energy Efficiency Action Plans according to the requirements of the ESD.

Although the EED has not been transposed into the national legislation, the appropriate M&V schemes have already been developed in order to monitor the energy efficiency measures. Especially, all the necessary procedures for the efficient monitoring and verification of the foreseen alternative measures until 2020 within the framework of Article 7 of the EED have already been established for the existing measures and have been designed for the planned energy efficiency measures ensuring the fulfilment of the energy saving target.

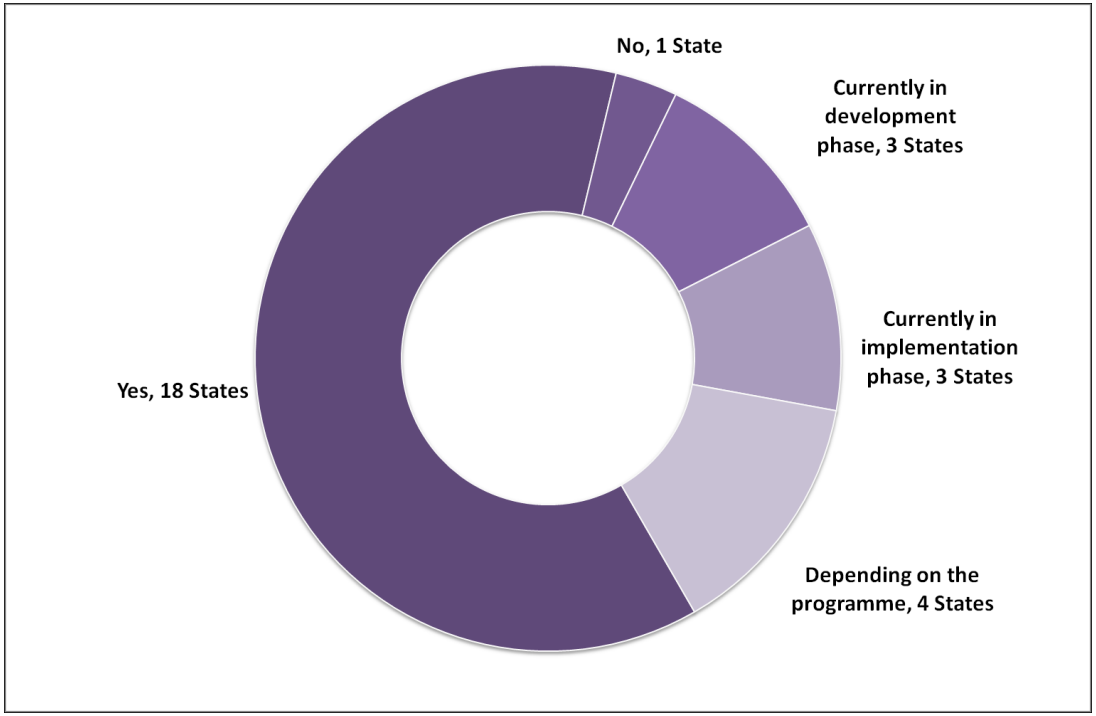
2. Design

2.1 Administrative authority

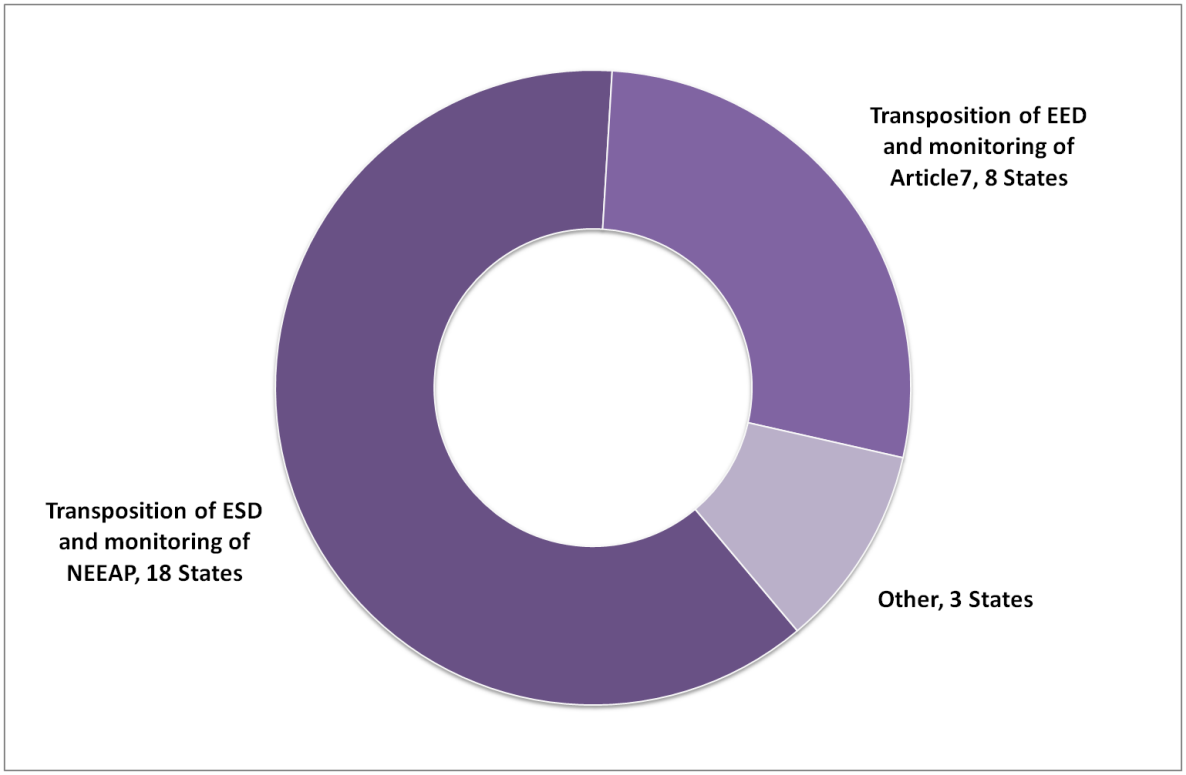
The Ministry of Environment and Energy is responsible for the implementation of the ESD and EED at national level for the design, facilitation and monitoring of the implemented energy efficiency measures and for the establishment, administration and coordination of the required M&V schemes.

Mapping-Main conclusions

- The vast majority of the States **have already introduced** a M&V scheme or a certain number of M&V schemes.
- Almost all the examined States declared that the developed M&V schemes are **in compliance with the requirements of the EED and ESD**.

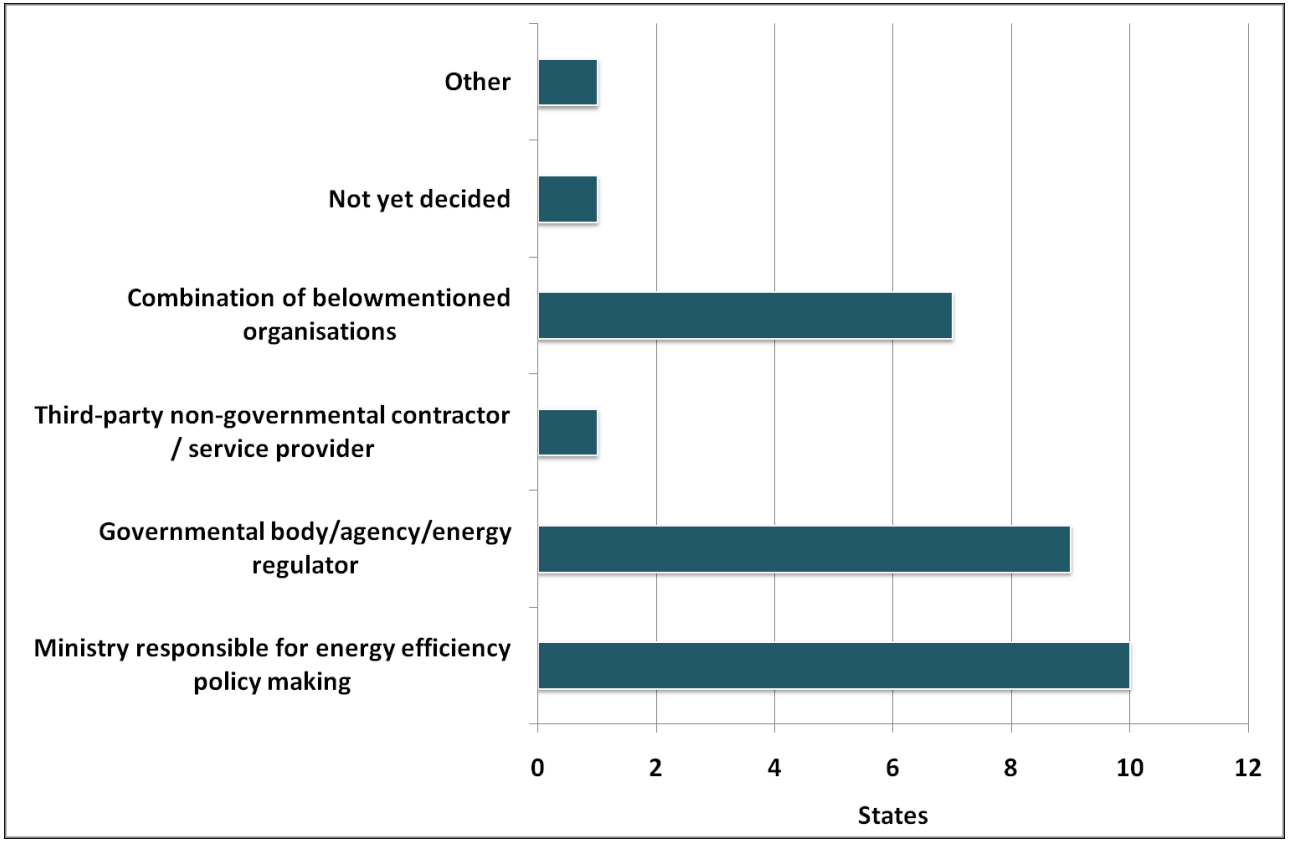


Mapping-Main conclusions



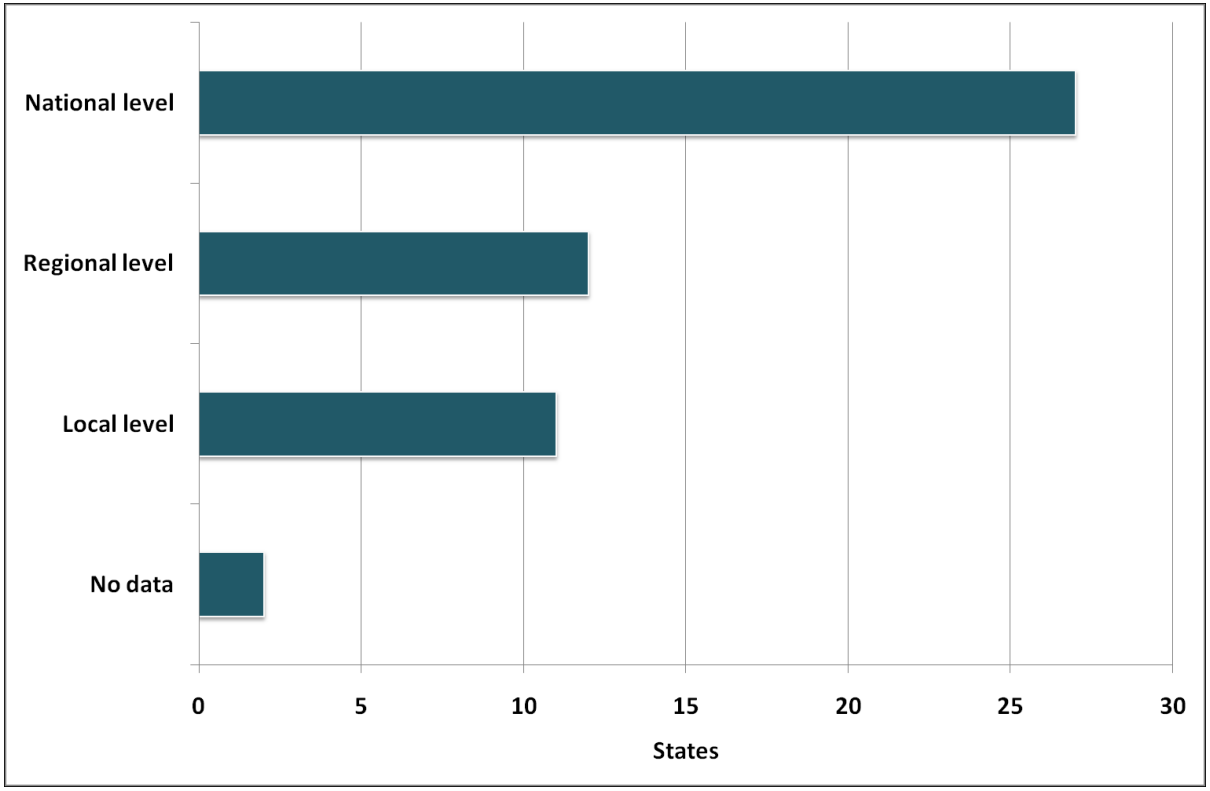
Mapping-Main conclusions

Ministries responsible for the formulation of the EE policy are in general also responsible for **administration and coordination** of the M&V scheme.



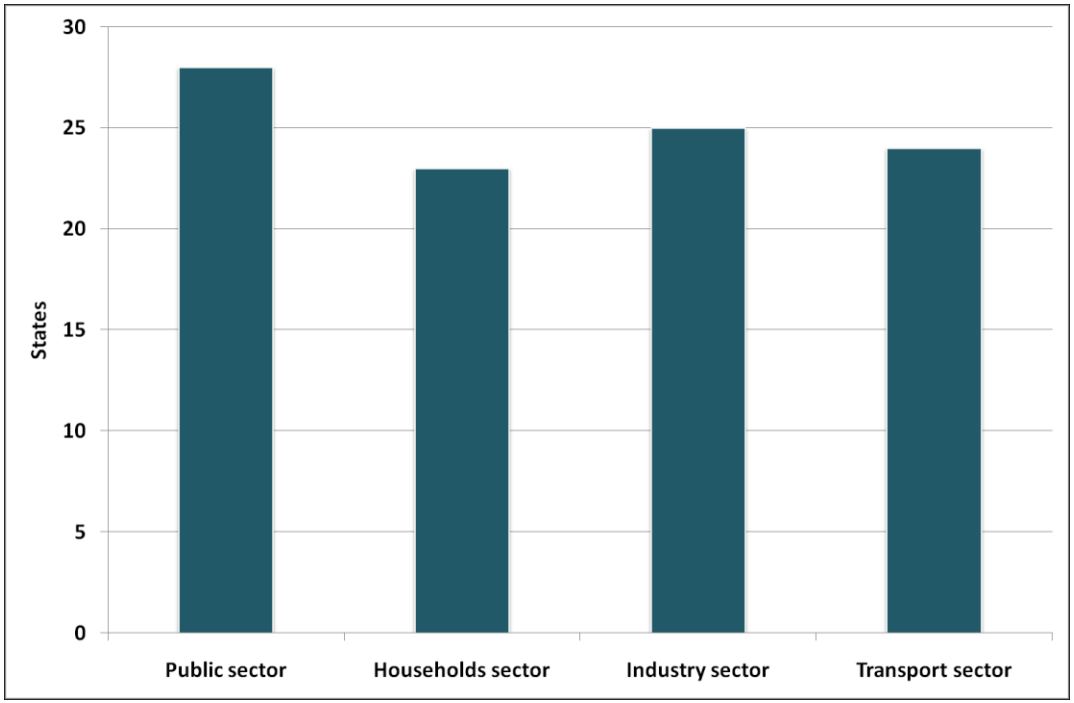
Mapping-Main conclusions

The **administration** of the M&V schemes is performed mainly **at a national level**.



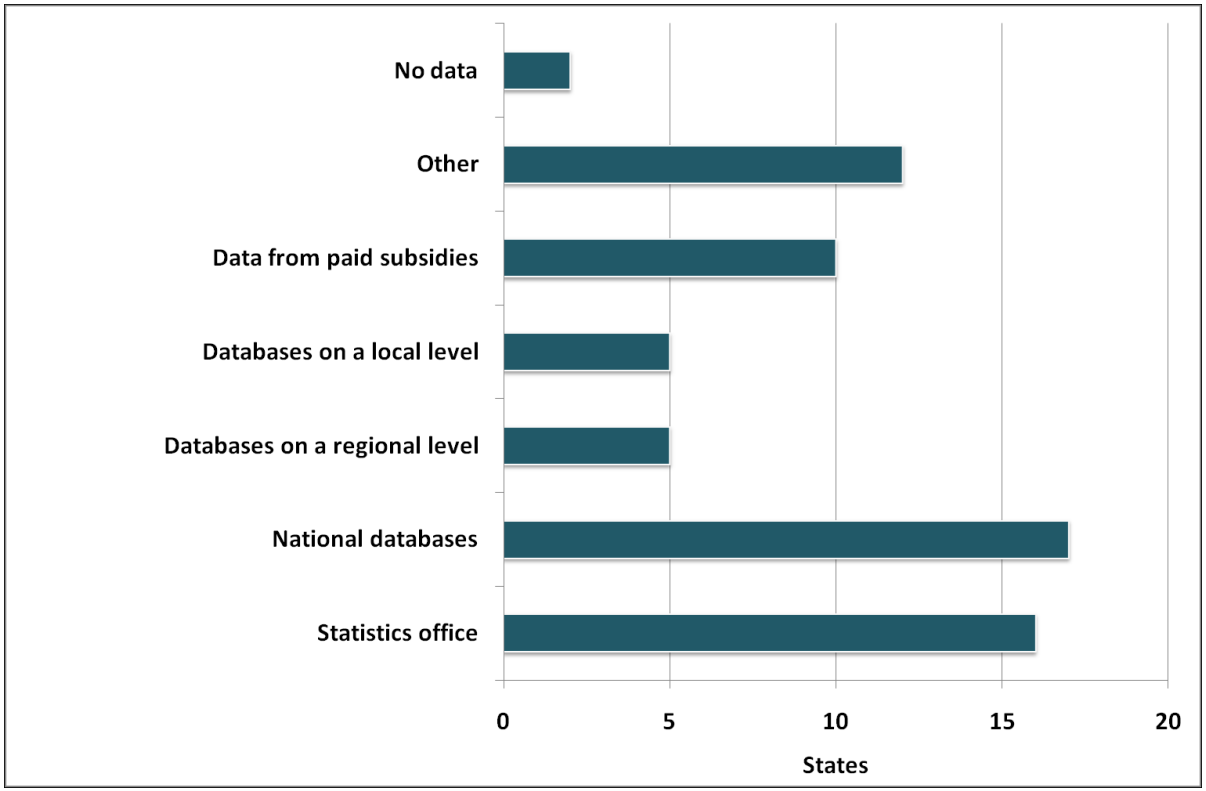
Mapping-Main conclusions

- **All sectors** of final energy consumption are covered by the existing M&V schemes.
- The majority of the examined States have introduced **EE measures in all examined sectors**.



Mapping-Main conclusions

The **official national statistics office, national databases and data from paid subsidies** comprise the most common utilized data sources.



Mapping-Main conclusions

- The participation in the M&V scheme is **mandatory** for the most cases especially within the framework of EEO schemes.

- **Variety of energy efficiency measures:**
  - *Energy upgrade of the building envelope in the residential and tertiary sector, increase of the energy efficiency in the industrial sector, penetration of high efficient vehicles, conduction of energy audits, installation of smart meters, deployment of high efficient street lighting, establishment of energy management systems, promotion of high efficient cogeneration of electricity and heat etc.*

- **Variety of energy efficiency technologies:**
  - *Envelope's insulation, upgrade of new heating/cooling and hot water systems, further penetration of heat pumps and renewable energy sources etc.*

Mapping-Main conclusions

- All the States have already established **bottom-up procedures** for the monitoring of the energy efficiency measures and the measurement of the achieved energy savings.
- Almost half of the States continue to utilize **top-down approaches** for the monitoring of the energy savings targets as foreseen by the ESD.
- A **diversification** of the implemented bottom-up approaches was identified in their attempt to comply with the requirements of Annex V of the EED.
- The authorities, which are responsible for the **administration and coordination** of the M&V scheme and for the implementation of the **data collection procedure**, have also undertaken the development of the methodology and indicators used in the bottom-up procedures.

Mapping-Main conclusions

- The most common utilized approach for the **verification** of the measured energy savings comprises the conduction of inspections to a representative sample of the implemented energy efficiency measures by **certified and qualified experts independently**.
- The **reporting period** has been established on annual basis.
- No experience exists regarding the **effectiveness and the applicability** of the existing M&V schemes due to the short implementation period of the EED and the lack of relative assessment reports.
- The established bottom-up approaches have introduced many **different methodological issues and aspects** due to the fact that the proposed methods from the EED seem to be too general without specific guidelines allowing the development of diversified approaches.

Mapping-Main conclusions

- Totally, **15 States** have **no an integrated tool** for the homogeneous monitoring and reporting of the M&V schemes.
- **Few States** have introduced various types of databases and on-line questionnaires for the monitoring of the implemented energy efficiency measures.
- **Lack of homogeneity on the utilized tools** among the examined States.

Criteria for selection of best practices

M&V scheme	Coordination mechanism
I. Existence of a fully operating M&V scheme **II.** Consistency and agreement with the respective National EE Action Plans and with the legislative framework of the ESD and EED **III.** Highest sectoral coverage **IV.** Highest spatial coverage **V.** Utilization of bottom-up monitoring **VI.** Regular reporting periods	**I.** Existence of formal or informal coordination bodies between the national and regional level **II.** Active involvement of local authorities in national energy formulation **III.** Priorities and needs of the different involved authorities are taken into consideration **IV.** Defined sufficient financial and human resources dedicated to plan and implement the measures **V.** Assessment of the energy efficiency measures among the involved authorities in order to redesign them

Ranking of examined States

	Q1.1	Q1.2	Q1.5	Q1.6	Q1.11	Q1.15	Q2.8	Total score
Austria	3	3	3	2	2	1	1	**14**
Belgium	3	3	3	2	2	1	1	**14**
Bulgaria	3	3	2	1	3	1	3	**13**
Croatia	2	3	3	3	3	1	3	**15**
Cyprus	2	3	1	1	3	1	3	**11**
Czech	2	3	1	1	1	1	1	**9**
Denmark	3	3	3	1	2	1	1	**13**
Esthonia	2	3	3	1	2	1	1	**12**
Finland	3	3	3	2	3	1	1	**15**
France	3	3	3	1	2	1	3	**13**
FYROM	3	3	3	2	2	1	3	**14**
Germany	3	2	3	3	2	1	3	**14**
Greece	3	3	2	2	2	1	3	**13**
Hungary	2	3	3	1	3	1	3	**13**
Ireland	3	3	2	3	2	1	1	**14**
Italy	3	3	3	1	3	1	3	**14**
Latvia	3	3	2	1	2	1	3	**12**
Lithuania	1	3	2	3	3	1	3	**13**
Luxembourg	2	3	3	1	3	1	1	**13**
Malta	3	3	3	1	3	1	1	**14**
Netherlands	3	3	3	3	2	1	3	**15**
Poland	3	3	3	2	3	1	3	**15**
Portugal	3	1	3	1	2	1	3	**11**
Romania	3	3	2	1	3	1	3	**13**
Slovakia	3	3	3	3	3	1	3	**16**
Slovenia	3	3	2	1	3	1	3	**13**
Spain	3	3	3	2	3	1	3	**15**
Sweden	3	3	3	3	2	1	1	**15**
UK	3	3	3	3	2	1	3	**15**

Political structure in relation with efficiency of the schemes

- Countries with tend to have introduced more efficient M&V schemes if they have:
  - **parliamentary government**
  - **other types of self-governance than unitary, such as federal, devolved, federate, and**
  - **monarchy government**

- The **federal countries** have established more effective M&V schemes.

Database

Country	Political System	Best vs Good practice	Element	Brief description
Denmark	Decentralized	Good	Administrative authorities and their responsibilities	Shared responsibilities - Role of Danish Energy Agency
Slovakia	Decentralized	Best	Administrative authorities and their responsibilities	Shared responsibilities - Slovak Innovation and Energy Agency
Austria	Federal	Best	Administrative authorities and their responsibilities	Shared responsibilities - Austrian Energy Agency
Slovenia	Centralised	Good	Administrative authorities and their responsibilities	Shared responsibilities - Energy Agency
Croatia	Centralised	Best	Administrative authorities and their responsibilities	Shared responsibilities - Croatian Institution Center for Monitoring Business Activities in the Energy Sector and Investments
Sweden	Decentralized	Best	Administrative authorities and their responsibilities	Shared responsibilities - Swedish Energy Agency
FYR of Macedonia	-	Best	Administrative authorities and their responsibilities	Shared responsibilities - Energy Agency of Republic of Macedonia
Spain	Centralised	Best	Administrative authorities and their responsibilities	Shared responsibilities - Institute for Energy Diversification and Saving
Latvia	Centralised	Good	Administrative authorities and their responsibilities	Non-shared responsibilities - Role of Ministry of Economics
UK	Regionalised	Best	Administrative authorities and their responsibilities	Non-shared responsibilities - Role of Department of Energy and Climate Change
Greece	Centralised	Good	Administrative authorities and their responsibilities	Non-shared responsibilities - Role of Ministry of Environment and Energy
Austria	Federal	Best	Administrative authorities and their responsibilities	Legislation about the specification of the Austrian Energy Agency's role
France	Regionalised	Good	Administrative authorities and their responsibilities	Diversification of the imposed responsibilities among the involved authorities in the different measures
Austria	Federal	Best	Sectoral and spatial analysis	Involvement of all sectors and regional level
Croatia	Centralised	Best	Sectoral and spatial analysis	Involvement of all sectors and levels
Slovenia	Centralised	Good	Sectoral and spatial analysis	Involvement of local authorities

Database

Country	Political System	Best vs Good practice	Element	Brief description
FYR of Macedonia	-	Best	Sectoral and spatial analysis	Involvement of all sectors
Slovakia	Decentralized	Best	Sectoral and spatial analysis	Involvement of all sectors and levels
France	Regionalised	Good	Sectoral and spatial analysis	Involvement of all sectors and authorities from all the administrative levels
Austria	Federal	Best	Energy efficiency measures	Interventions on building shell and heating systems
Denmark	Decentralized	Good	Energy efficiency measures	Interventions on process equipment, envelope and boilers
FYR of Macedonia	-	Best	Energy efficiency measures	CHP production, promotion of sustainable transport systems in urban areas and reconstruction of existing buildings
Greece	Centralised	Good	Energy efficiency measures	"Energy Savings at Home" and "Substitution of old private cars with new high efficient" programs
Spain	Centralised	Best	Energy efficiency measures	Aid Program for the Energy Renovation of Existing Buildings, the Efficient vehicle incentive program, the Aid Program for municipal public lighting, the Aid Program for SME and large companies of the industrial sector and the Aid Program for transport
Austria	Federal	Best	Measurement and monitoring procedures	Wide range of bottom-up and top-down methods
FYR of Macedonia	-	Best	Measurement and monitoring procedures	Development of 20 different bottom-up methodologies
Slovenia	Centralised	Good	Measurement and monitoring procedures	Development of 29 different bottom-up methodologies
Croatia	Centralised	Best	Measurement and monitoring procedures	Development of 20 different bottom-up methodologies
Spain	Centralised	Best	Measurement and monitoring procedures	Development of specialized bottom-up monitoring approaches for each measure

Database

Country	Political System	Best vs Good practice	Element	Brief description
Slovakia	Centralised	Best	Measurement and monitoring procedures	Development of specialized bottom-up monitoring methodologies
Denmark	Decentralized	Good	Measurement and monitoring procedures	Calculation either by standard values, by a specific inventory of the saving following the activity or by the effect of a specific market impact
France	Regionalised	Good	Measurement and monitoring procedures	Development of specialized bottom-up monitoring approaches for each measure
Greece	Centralised	Good	Measurement and monitoring procedures	Development of specialized bottom-up monitoring approaches for each measure
Austria	Federal	Best	Data collection procedures	Role of regional and national funding agencies
France	Regionalised	Good	Data collection procedures	Provided data from White Certificate Scheme and the Emmy registry
Spain	Centralised	Best	Data collection procedures	Data from national databases, databases on regional level and registries from paid subsidies
Poland	Regionalised	Best	Data collection procedures	Utilization of national databases
Greece	Centralised	Good	Data collection procedures	Data from Operational Programs and the Registry of Energy Performance Certificates
FYR of Macedonia	-	Best	Data collection procedures	Combination of different sources such as provided data from public building owners and energy audits and statistical data, surveys and analyses
Austria	Federal	Best	Data collection procedures	Provided data from energy suppliers subject to the energy efficiency obligation scheme and federal bodies
Croatia	Centralised	Best	Data collection procedures	Data from paid subsidies
Slovakia	Decentralized	Best	Data collection procedures	The main data sources comprise ITMS, INFOREG and SLOVSEFF
Denmark	Decentralized	Good	Data collection procedures	Each involved party have to report to the Danish Energy Agency specific data

Database

Country	Political System	Best vs Good practice	Element	Brief description
Lithuania	Centralised	Good	Data collection procedures	The main data sources consist of the national statistical office and various national databases
Latvia	Centralised	Good	Data collection procedures	The main data sources consist of data from paid subsidies as well as national statistical data and other national information sources
Austria	Federal	Best	Verification procedures	Combination of plausibility checks and in depth sample checks of statistically significant proportions of projects
France	Regionalised	Good	Verification procedures	Through Emmy account in the corresponding registry
Sweden	Decentralized	Best	Verification procedures	Through Mure database
Slovenia	Centralised	Good	Verification procedures	Sample checks of statistically significant proportions of projects
FYR of Macedonia	-	Best	Verification procedures	Through specialized reporting procedure
Denmark	Decentralized	Good	Verification procedures	Independent sample of the involved grid- and distribution companies
Spain	Centralised	Best	Verification procedures	Check of the aid granted by means of sampling, including the control of the energy performance certificates, the invoices and the relative bank documents
Croatia	Centralised	Best	Verification procedures	Through algorithms in SMIV tool
Lithuania	Centralised	Good	Verification procedures	Random checks of the reports on the energy savings submitted by beneficiaries or administrators of the measures
Greece	Centralised	Good	Verification procedures	Conduction of random inspections to a representative sample of the interventions and establishment of specialized units in the Operational Programs

Database

Country	Political System	Best vs Good practice	Element	Brief description
Austria	Federal	Best	Reporting obligations	Reporting on annual basis according to specialized communication flow among the involved parties
Poland	Regionalized	Best	Reporting obligations	Reporting on annual basis through the establishment of a central registry
France	Good	Good	Reporting obligations	The reporting period depends on each measure
Denmark	Decentralized	Good	Reporting obligations	Utilization of specialized templates
Latvia	Centralised	Good	Reporting obligations	Utilization of specialized templates
Slovakia	Decentralized	Best	Reporting obligations	Utilization of specialized templates
Austria	Federal	Best	Administrative costs	4-6 full-time equivalent per year
Denmark	Decentralized	Good	Administrative costs	9.3% of the total cost of the energy savings for electricity grid companies and 12.7% for district heating companies
France	Regionalized	Good	Administrative costs	For the white certificates scheme about 15 people are required
Austria	Federal	Best	Integrated tools	Central online database by the Federal Computing Centre (BRZ)
Croatia	Centralised	Best	Integrated tools	SMIV tool
FYR of Macedonia	-	Best	Integrated tools	ExCITE tool
Slovakia	Centralised	Best	Integrated tools	ITMS, INFOREG and energy performance certificate database
Greece	Centralised	Good	Integrated tools	Energy performance certificate database
France	Regionalised	Good	Integrated tools	SceGES® tool and Emmy registry

Challenges

- Even if all the examined States have already introduced bottom-up approaches, their **effectiveness is questionable**.
- The established bottom-up approaches have introduced many **different methodological issues and aspects** due to the fact that the proposed methods from the EED are too general constituting as priority the **provision of more detailed guidelines** for the efficient implementation.
- Necessity for a **homogeneous bottom-up approaches** for all the States and for all the energy efficiency measures leading **to comparative and robust** estimates of the achieved energy savings.
- Target to improve the **reporting and comparability** of the MS within the framework of the EED.

Challenges

- Due to the fact that **half of the examined States** have no an integrated tool for the homogeneous monitoring and reporting of the M&V schemes, **the IT tool for the bottom-up monitoring** of the implemented energy efficiency measures, which will be developed within the framework of multEE project, can **benefit them directly**.
- The States, which have already introduced similar tools, may have an **indirect interest** for the developed IT tool improving their **architecture** and their **functionalities**.
- It is crucial the development of a **homogeneous M&V procedure** among the MS **accompanying with an IT tool** for the efficient monitoring and verification of the achieved energy savings.

Contacts

Thank you!

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