

Second biennial update report

process, findings and lessons learnt

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Basic data

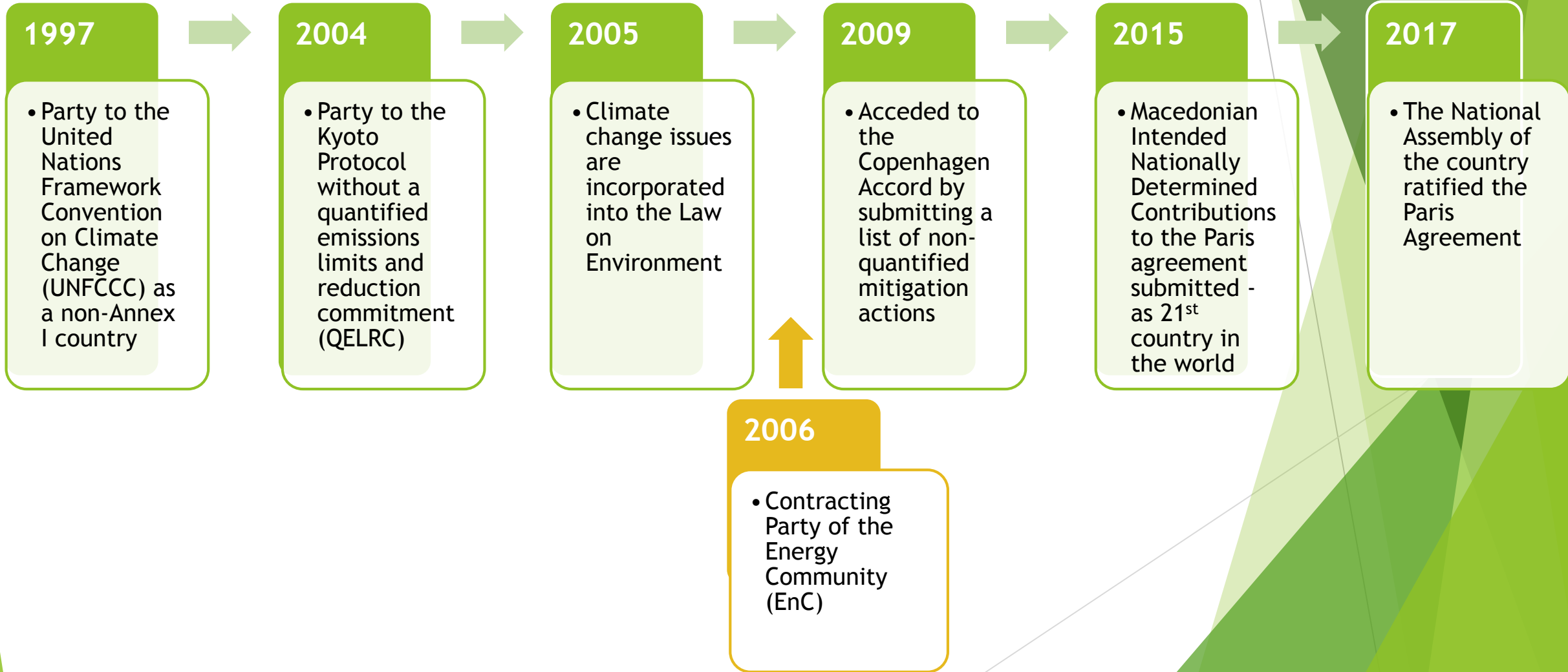
- ▶ Republic of North Macedonia is one of the smallest countries in the South-eastern Europe region, with around 2.066 million inhabitants
- ▶ Its gross domestic product (GDP) totals EUR 7.7 billion and GDP per capita is EUR 3,737
- ▶ The level of greenhouse gas emissions per capita in Macedonia is approximately 30% lower than the EU-28 average
- ▶ The energy sector generates by far the largest share of GHG emissions, with fossil fuels, primarily coal, accounting for over 80% of total energy demand
- ▶ In the past several years, the share of fossil fuels has decreased, primarily due to an increase in electricity imports, which have in turn increased import dependence (approximately 50% of electricity consumption)
- ▶ The share of renewable energy in total energy demand has increased from 10% in 2012 to 15% in 2015
- ▶ Total energy required per unit of GDP in Macedonia is around four times higher than the average of European developed countries
- ▶ The GHG emissions from IPPU sector originate from production industries (metal industry being the main contributor) or from the use of ozone depleting substances for air conditioning.



Basic data

- ▶ Agriculture is an important sector due to its contribution to GDP (nearly 10% in 2016) and the percentage of the labor force that it employs (more than 17% in 2015). It is also relatively vulnerable to climate change impacts, particularly flooding.
- ▶ Out of a total area of about 2.5 million hectares in the country, agricultural land covers approximately 1.13 million hectares.
- ▶ Forests and forest lands are the main sinks of CO₂ emissions. They cover approximately 1.3 million hectares and are characterized by great species diversity, but also by low quality and small annual growth. Total wood reserves are estimated at approximately 70 million m³, and total annual growth is around 1.7 million m³. Total forest area has increased by more than 100,000 hectares from 2010 to 2015, total pasture area has increased by more than 150,000 hectares since 2009.
- ▶ The waste sector is the second largest source of GHG emissions in Macedonia. Solid waste is mostly disposed of in landfills. In 2014, approximately 370 kg per capita of communal waste was generated, and 75% of that waste was taken to landfills. The Drisla Landfill in Skopje is the only permitted landfill in Macedonia, and there is a need to improve waste management practices at approximately 54 authorized municipal landfills and to close approximately 320 illegal dumpsites. Only 1.945 t of biological waste was composted in 2014.

Status overview



Reporting

National Communication on Climate Change

- The First (submitted in 2003)
- The Second (submitted in 2008)
- The Third (submitted in 2014)

Biennial update report on climate change

- First (FBUR) (submitted in 2015 as a 11th country in the world)
- Second (SBUR) (Submitted in March 2018)

GHG Inventory

- National inventory report (2006)
- National inventory report (2013)
- National inventory report (2014)
- National inventory report (2017)

Summary of UN and EU reporting requirements

	Annex I Party	Non Annex I Party	North Macedonia
GHG Inventory Requirements			
Frequency	Submit annual inventories to the UNFCCC in an electronic format.	No set frequency; can be submitted in hard copy. Upon availability of resources	GHG inventory submitted in electronic format as part of the National Communication or Biennial Update Reports. Annex I like
Coverage	Trends in emissions of the six primary GHGs ¹ , from 1990 to the most recent year for which data is available; includes sectoral background data. Kyoto inventory systems have additional structural detail.	Trends in emissions for CO ₂ , CH ₄ , and N ₂ O only, with estimates for other gases encouraged but not required from 1990 or 1994 for the first inventory and 2000 or later for the second; sectoral background data is not required.	Trends in emissions of the six primary GHGs are reported for 1990-2012, including the sectoral background data. Annex I like
Standards	Use both the IPCC Guidelines and Good Practice Guidance and thoroughly document emissions estimation methods and data sources.	Use IPCC Guidelines; use of the Good Practice Guidance encouraged but not required. Documentation of methodologies is encouraged.	The 2006 IPCC Guidelines and Good Practice Guidance used for reporting; Emissions estimation methods and data sources are thoroughly documented. Annex I like
Methods	Generally adopt higher-tier methods	Generally adopt lower-tier methods	Higher-tier methods are generally adopted. Annex I like
Review	Subject to annual review by expert teams following agreed upon review guidelines. At least once every five years, inventory systems are subject to a more detailed in-country review. Parties to the Kyoto Protocol are subject to more rigorous review, and if review teams determine a Party's inventory report or system is deficient, the Party may be judged to be out of compliance and subject penalties	No subject to review	Voluntary review by experts under Global Supporting Programme (GSP) conducted. Tends to Annex I like

Summary of UN and EU reporting requirements

	Annex I Party	Non Annex I Party	North Macedonia
National Communications, BURs, and Mitigation Action Requirement			
NC Frequency	Submitted every five years	No specified frequency	Voluntary, submitted every five years Tends to Annex I like
NC Content	National Communications include a description of each mitigation policy and measure, organized by sector and gas. Description includes status, implementing body, and, if possible, estimated effect on emissions to date and in the future.	Encouraged but not required to report on mitigation policies and measures.	National Communications include a description of each mitigation policy and measure, organized by sector and gas. Tends to Annex I like
BR/BUR Frequency	First one on 1 January 2014, then every two years	First one in December 2014, then every two years	First one in December 2014, then every two years Annex I like
Content BR/BUR	Outline progress in achieving emission reductions and the provision of financial, technology and capacity-building support to non-Annex I Parties.	GHG inventory not more than four years old Information on mitigation actions	GHG Inventory from 1990-2014 Information on mitigation actions Steps towards Annex I like
Actions	Subject to binding national emissions targets, and international monitoring and reporting requirements to verify the achievement of these targets	None	Voluntary international monitoring and reporting requirements Steps towards Annex I like
Review of NC	National Communications are also subject to international expert review, conducted in accordance with internationally-agreed guidelines	Not subject to review	Not subject to review Non Annex I
Review of BR/BUR	Subject to international expert review, conducted in accordance with internationally-agreed guidelines.	Process of international consultation and analysis (ICA)	Process of international consultation and analysis (ICA) Non Annex I

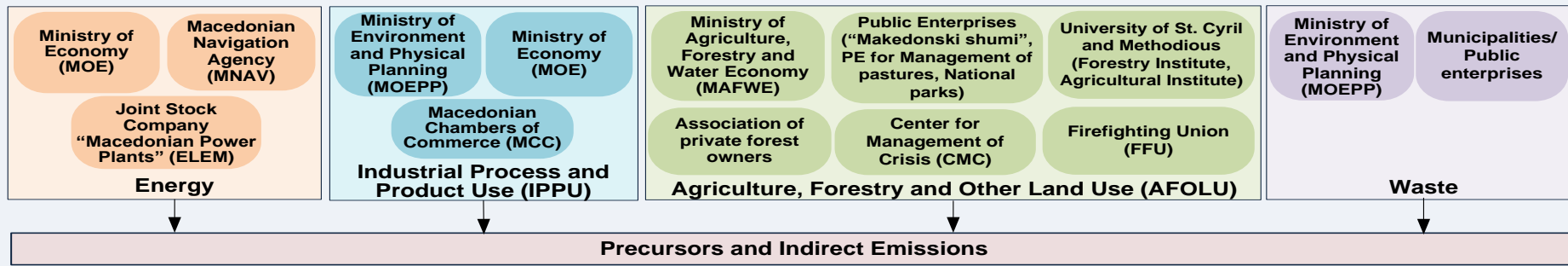
INTERNATIONAL SUPPORT: GEF and UNDP

NATIONAL INVENTORY PROCESS

DATA SUPPLY

STATE STATISTICAL OFFICE (SSO)

INTERNATIONAL DATABASES:
UN, FAO,
CORINE LC,
IPCC EF



GHG INVENTORY DEVELOPMENT

Ministry of Environment and Physical Planning (MOEPP)



VERIFICATION

REPORTING

Other Uses:



- National Strategic and Planning Documents

*Only for sectors developed by external experts

Process behind GHG inventory preparation

- ▶ Prepared by a highly qualified team of 17 national experts (41% women)
- ▶ A wide participatory approach has been used, involving 30 institutions
- ▶ Most of the activity data used for preparation of national inventory were taken from official national documents
- ▶ A set of standardized procedures for Quality Assurance and Quality Control (QA/QC) has been implemented.
- ▶ Sustainability has also been ensured by training of two new persons for development of GHG inventories. One person successfully completed the UNFCCC training courses for review experts, thus becoming 4th national review expert in the UNFCCC roster of experts.

GHG Inventory

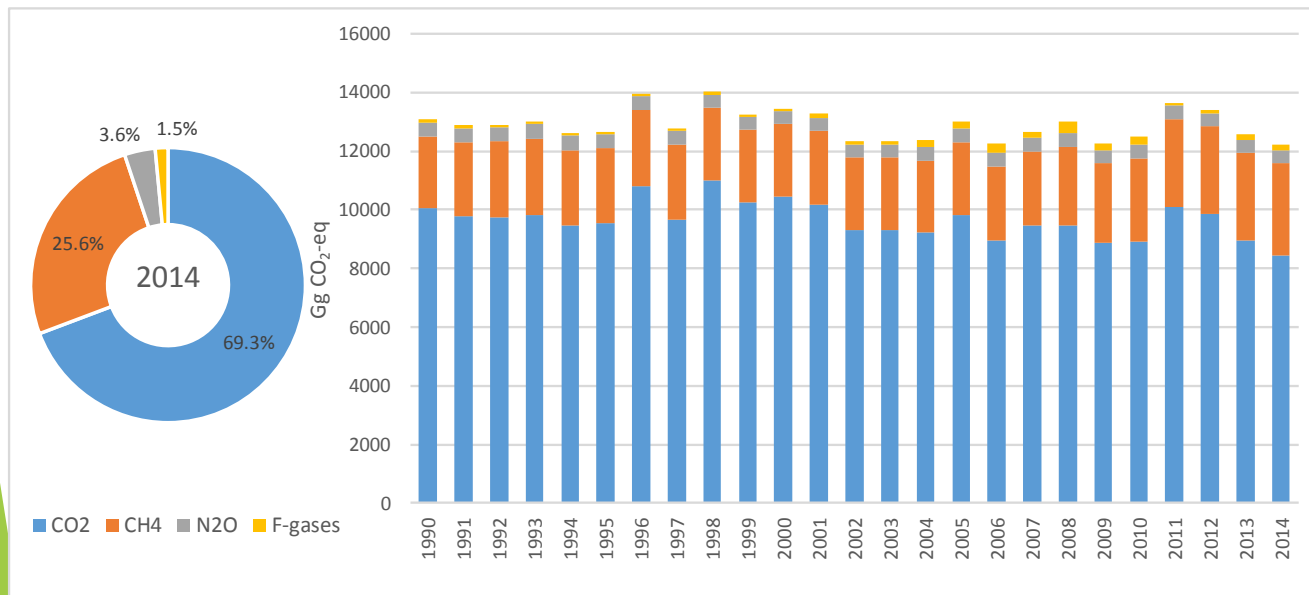
▶ Methodology

- ▶ 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- ▶ IPPC Inventory Software Ver. 2.17 - (from November 22, 2016)
- ▶ GWP values - IPCC Second Assessment Report (SAR), 1996, 100-year time horizon (https://www.ipcc.ch/ipccreports/sar/wg_i/ipcc_sar_wg_i_full_report.pdf)
- ▶ Sectors covered: Energy, IPPU, AFOLU and Waste
- ▶ Gases: CO₂, CH₄, N₂O, PFCs, and HFCs, as well as precursors and indirect emissions of CO, NO_x, NMVOC and SO₂
- ▶ Years: 2012 (revised and updated as necessary), 2013 and 2014
- ▶ The emission factors used to estimate the GHG emissions were calculated by using either the Tier 1 or Tier 2 approach depending on data availability.

GHG Inventory

► GHG emissions and removals by sector (in Gg CO₂-eq)

Sector	1990	2003	2008	2012	2013	2014
Energy	9,415.5	8,887.7	9,026.7	9,450.6	8,419.4	7,957.5
Industrial Processes and Product Use	941.8	845.2	1,132.1	776.4	923.1	921.6
Agriculture (without FOLU)	1,327.7	1,071.6	1,072.3	1,019.4	989.2	1,001.8
FOLU	-220.0	-3,757.9	1,351.0	1,914.8	-1,837.0	-3,181.1
Waste	1,391.5	1,550.7	1,765.5	2,146.8	2,226.1	2,323.4
Total (incl. FOLU) – Net emissions	12,856.5	8,597.3	14,347.7	15,308.0	10,720.7	9,023.2
Total (excl. FOLU)	13,076.6	12,355.2	12,996.7	13,393.3	12,557.7	12,204.3



► Total GHG emissions by gas, excluding FOLU (in Gg CO₂-eq)

Incorporation of UNFCCC recommendations from the TA of the FBUR - GHGI (1/4)

Decision	Reporting requirements	Yes/Partly/No	Comments on the extent of the information provided	Response to the comments
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available	Yes	The inventory covers the period 1990-2012	
Decision 2/CP.17, annex III, paragraph 5	The updates of the sections on the national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines for National GHG Inventories, the IPCC good practice guidance and Uncertainty Management in National GHG Inventories, and the IPCC good practice guidance for LULUCF; any change to the emission factor may be made in the subsequent full national communication	Partly	The Party reports in the BUR that the activity data were updated and the 2006 IPCC Guidelines were used for the period 1990-2012. However, neither the updated activity data nor the emission factors used are provided in the BUR	AFOLU sector: Activity data is provided in Annex I, and all emission factors are specified in the chapter 6.6 Methodology and emission factors, for AFOLU sector
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of a national inventory report as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:	Partly	The BUR provides an update of the inventory section in the third national communication submitted in 2014, in which 2003-2009 is the inventory time frame. However, some information in tables 1 and 2 is missing	Summary inventory tables are provided in Annex II, for years 1990, 1994, 2000, 2003, 2008, 2012, 2013 and 2014
	<ul style="list-style-type: none"> Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors) 	Partly	Provided for 1990 and 2012. Macedonia includes table 1 in annex 2 to the BUR, but the table does not provide the disaggregated information for LULUCF	The LULUCF activity data are provided for general categories, further breakdown is not provided
	<ul style="list-style-type: none"> Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆) 	Partly	A table containing F-gases is provided in annex 2 to the BUR, but only PFCs from the metal industry are estimated	PFC emissions from aluminium production are estimated and included in the national GHG inventory. HFC emissions from refrigeration and air-conditioning are estimated and included in the national GHG inventory.
Decision 2/CP.17, annex III, paragraph 6	Non-Annex I Parties are encouraged to include, as appropriate and to the extent that capacities permit, in the inventory section of the BUR:			
	<ul style="list-style-type: none"> Tables included in annex 3A.2 to chapter 3 of the IPCC good practice guidance for LULUCF 	No	The tables are not reported in the BUR	Tables are not provided, but in due time can be generated
	<ul style="list-style-type: none"> The sectoral report tables annexed to the Revised 1996 IPCC Guidelines 	No	The tables are not reported in the BUR	Tables are not provided, but in due time can be generated

Incorporation of UNFCCC recommendations from the TA of the FBUR - GHGI (2/4)

Decision	Reporting requirements	Yes/Partly/No	Comments on the extent of the information provided	Response to the comments
Decision 2/CP.17, annex III, paragraph 7	Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in the previous national communications	Yes	Provided in table 3-1 of the BUR	
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their national communications are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000)	Partly	Annex 2 to the BUR contains this information; however, it includes it only for the years 1990 and 2012. The previously submitted national communications cover the periods 1990–1998, 1999–2002 and 2003–2009	Summary inventory tables are provided in Annex II, for years 1990, 2003, 2008, 2012, 2013 and 2014
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex	Yes	Sector-specific information is provided in sections 3.3–3.6 of the BUR	/
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved	Yes	The information is provided in section 3.1 of the BUR	/
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of the following gases by sources and removals by sinks:			Summary inventory tables are provided in Annex II, for years 1990, 2003, 2008, 2012, 2013 and 2014
	• CO ₂	Yes	Provided for 1990 and 2012 in table 1 of annex 2 to the BUR	/
	• CH ₄	Yes	Provided for 1990 and 2012 in table 1 of annex 2 to the BUR	/
	• N ₂ O	Yes	Provided for 1990 and 2012 in table 1 of annex 2 to the BUR	/
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of HFCs, PFCs and SF ₆	Partly	A table containing F-gases is provided in annex 2 to the BUR, but only PFCs from the metal industry are estimated	PFC emissions from aluminium production are estimated and included in the national GHG inventory. HFC emissions from refrigeration and air-conditioning are estimated and included in the national GHG inventory.
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:			
	• International aviation	Yes	Provided for 1990 and 2012	/
	• Marine bunker fuels	Yes	Provided for 1990 and 2012	NA for Macedonia

Incorporation of UNFCCC recommendations from the TA of the FBUR - GHGI (3/4)

Decision	Reporting requirements	Yes/Partly/No	Comments on the extent of the information provided	Response to the comments	
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emissions by sources of other GHGs such as:				
	<ul style="list-style-type: none"> • CO 	No	Although the BUR indicates that CO is included in the inventory database	Included in summary inventory tables in Annex I	
	<ul style="list-style-type: none"> • NO_x 	No	Although the BUR indicates that NO _x is included in the inventory database	Included in summary inventory tables in Annex I	
	<ul style="list-style-type: none"> • NMVOCs 	No	Although the BUR indicates that NMVOCs are included in the inventory database	Included in summary inventory tables in Annex I	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as SO _x , included in the Revised 1996 IPCC Guidelines, may be included at the discretion of the Parties	No	Although the BUR indicates that SO ₂ is included in the inventory database	Emissions of SO ₂ are included in the inventory	
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of emission factors and activity data. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, emission factors and activity data used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:				
	<ul style="list-style-type: none"> • Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol 	Partly	The methodological tier used (1 or 2) for most sources and sinks is indicated in the BUR. However, this information is missing for some sources (e.g. managed soils), and the calculation equations are not provided	The methodologies applied in the inventory are summarized in A II.2, Table 82. All emissions are generated by IPCC Inventory Software. Explanation for the software background equations is needed.	
	<ul style="list-style-type: none"> • Explanation of the sources of emission factors 	Yes			
	<ul style="list-style-type: none"> • Explanation of the sources of activity data 	Yes			
	<ul style="list-style-type: none"> • If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe: <ul style="list-style-type: none"> ○ Source and/or sink categories ○ Methodologies ○ Emission factors ○ Activity data 	NA	The Party did not report on any country-specific sources or sinks	NA	
	<ul style="list-style-type: none"> • Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building 	Yes	An improvement plan is presented		

Incorporation of UNFCCC recommendations from the TA of the FBUR - GHGI (4/4)

Decision	Reporting requirements	Yes/Partly/No	Comments on the extent of the information provided	Response to the comments
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:			
	<ul style="list-style-type: none"> Level of uncertainty associated with inventory data 	Yes	Although very general, a summary is provided on the level of uncertainty for the inventory and also the trend of uncertainties. Uncertainties at the sector or subsector levels are not provided	
	<ul style="list-style-type: none"> Underlying assumptions 	No	No information is provided on assumptions applied, such as the use of IPCC default values	Detailed tables with assumptions applied are provided in the chapter for Uncertainty analysis
	<ul style="list-style-type: none"> Methodologies used, if any, for estimating these uncertainties 	Yes	The use of the IPCC Inventory Software to apply a Monte Carlo algorithm is indicated, but additional details are not provided	

Process behind CC mitigation analysis

- ▶ Builds upon and continues the analyses in the TNC, FBUR and INDC (MARKAL model used)
- ▶ Same sectors (categories) as the national GHG inventory has been modeled and integrated in one modeling system
- ▶ Bottom-up approach has been used for mitigation measures
 - ▶ From national strategic and planning documents
- ▶ The identification and selection of the mitigation policies and measures has been (PAMs) done in a wide participatory process
- ▶ Three scenarios developed over the **period 2012 - 2035**:
 - ▶ a reference scenario - the scenario without masures (WOM)
 - ▶ a mitigation scenario -the scenario with existing masures (WEM)
 - ▶ a more ambitious scenario - the scenario with additional masures (WAM)
- ▶ **Marginal Abatement Cost (MAC) Curve** (a tool for prioritization of measures)
- ▶ **Co-benefits**: Green jobs creation by measures
- ▶ Comparison w/ other countries by different indicators (SDG, EU)
- ▶ Comparison of FBUR/INDC/SBUR

Mitigation measures and their individual effect

- ▶ A total of 46 measures selected and evaluated
- ▶ Energy sector - 36 measures
 - Energy industries - 11 measures
 - Residential and Non-specified - 15 measures
 - Manufacturing industries and construction - 2 measures
 - Transport - 8 measures
- ▶ Agriculture, forestry and other land use - 8 measures
 - Livestock - 3 measures
 - Forestry - 2 measures
 - Land use - 3 measures
- ▶ Waste - 3 measures

All measures/policies presented in a tabular format

Mitigation action: Small hydro power plants
 Main objective: **Increase of the domestic generation capacity from renewable energy sources**
 Description: **Construction of new small hydro power plants and introduction of flexible feed-in premium tariffs to stimulate the construction**

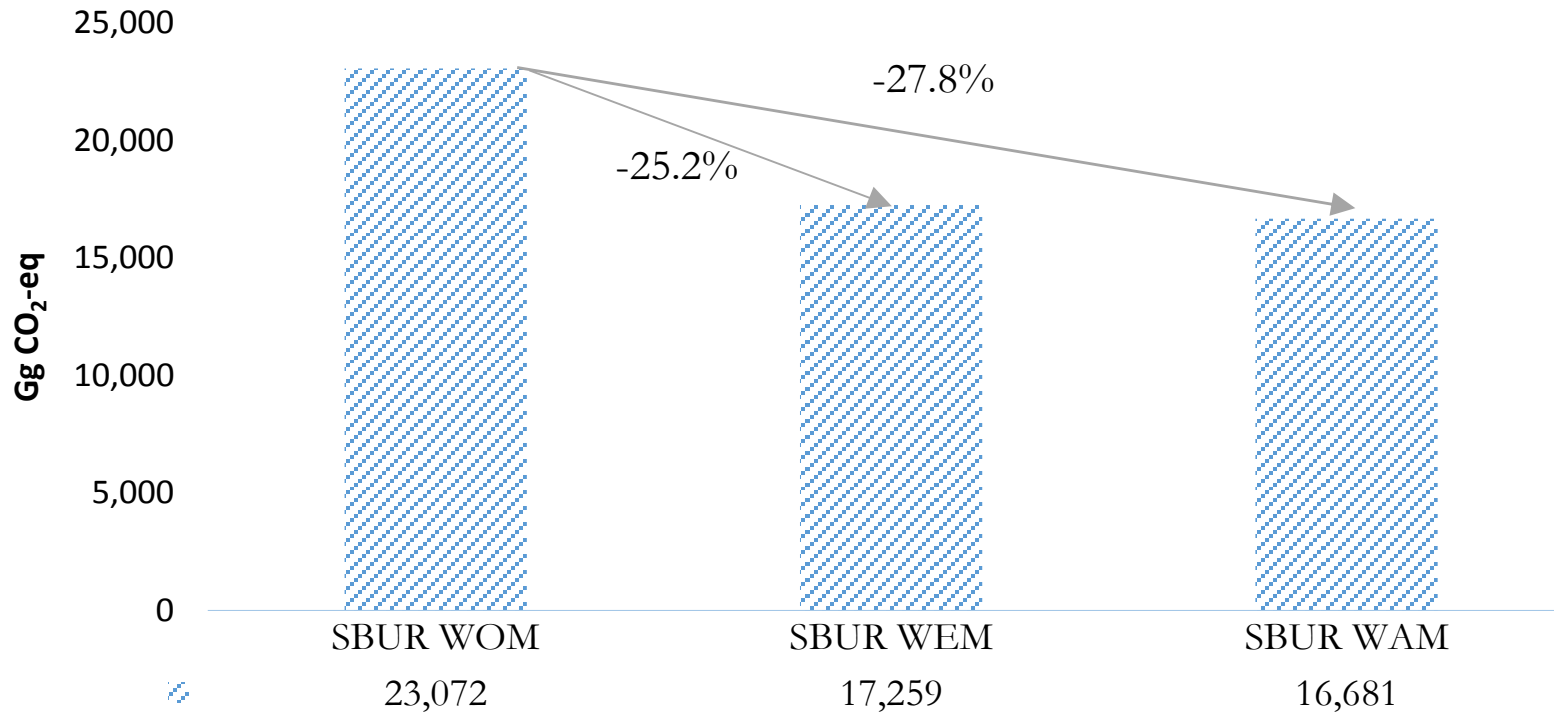
Information	Type	Technical				
	Sector	Energy – Energy industries				
	Relevant planning documents, legal and regulatory acts	<ul style="list-style-type: none"> ▶ Strategy for Energy Development in the Republic of Macedonia ▶ Strategy for Utilization of Renewable Energy Sources in the Republic of Macedonia ▶ Renewable Energy Action Plan ▶ Law on Energy 				
	Gases	CO ₂ , CH ₄ , N ₂ O				
	Methodology	Small hydro power plants construction and preparation of regulation on feed-in premium tariffs. Bottom-up modeling and least-cost optimization using the MARKAL model. IPCC Methodology.				
Assumptions	Through stimulation with feed-in premium tariffs, it is envisaged that by 2035 additional capacity of 85 MW in small hydro power plants will be constructed, compared to the Reference scenario (or total capacity of 147 MW).					
Progress of implementation	Steps taken or envisaged to achieve the action	<table border="1"> <tr> <td>Steps taken</td> <td>Regulation on feed-in tariffs adopted (17.04.2013)</td> </tr> <tr> <td>Steps envisaged</td> <td> <ul style="list-style-type: none"> ▶ Construction of all small hydro power plants with a provisional status of a privileged producer ▶ Announcement of a new tender for allocation of construction locations for new small hydro power plants ▶ Modification of the Regulation on feed-in tariffs to introduce flexible feed-in premium tariffs </td> </tr> </table>	Steps taken	Regulation on feed-in tariffs adopted (17.04.2013)	Steps envisaged	<ul style="list-style-type: none"> ▶ Construction of all small hydro power plants with a provisional status of a privileged producer ▶ Announcement of a new tender for allocation of construction locations for new small hydro power plants ▶ Modification of the Regulation on feed-in tariffs to introduce flexible feed-in premium tariffs
	Steps taken	Regulation on feed-in tariffs adopted (17.04.2013)				
	Steps envisaged	<ul style="list-style-type: none"> ▶ Construction of all small hydro power plants with a provisional status of a privileged producer ▶ Announcement of a new tender for allocation of construction locations for new small hydro power plants ▶ Modification of the Regulation on feed-in tariffs to introduce flexible feed-in premium tariffs 				
	Results achieved and estimated outcomes	Achieved installed capacity and average annual electricity generation: <ul style="list-style-type: none"> ▶ 67 MW and 237 GWh by 15.05.2017 Expected installed capacity and electricity generation: <ul style="list-style-type: none"> ▶ 51 MW and 171 GWh in 2025 ▶ 73 MW and 246 GWh in 2030 ▶ 85 MW and 287 GWh in 2035 				
	Estimated emission reductions	<ul style="list-style-type: none"> ▶ 113 Gg CO₂-eq in 2025 ▶ 229 Gg CO₂-eq in 2030 ▶ 189 Gg CO₂-eq in 2035 				
	Timeframe	2017 – 2035				
	Costs (in 2030)	Costs for the Reference scenario: <ul style="list-style-type: none"> ▶ 1,332.4 M€ Costs for the Scenario with implemented measure: <ul style="list-style-type: none"> ▶ 1,330.7 M€ Specific costs: <ul style="list-style-type: none"> ▶ -7.4 €/t CO₂-eq 				
Implementing entity	<ul style="list-style-type: none"> ▶ Government of the Republic of Macedonia ▶ Energy Regulatory Commission ▶ Ministry of Environment and Physical Planning ▶ Ministry of Economy, Energy Agency of the Republic of Macedonia ▶ Private investors 					
Progress indicators:	<ul style="list-style-type: none"> ▶ Increase in installed capacity (MW) ▶ Increase in electricity generation (GWh) ▶ Emissions reduction (Gg CO₂-eq) 					

Additional values of SBUR

- ▶ A good practice for MRV capacity building is to start with the measures for which the MRV system is easy to be implemented i.e. the relevant data to evaluate the achievement exist and are easy to be collected
- ▶ In the framework of the SBUR, through a demonstration exercise for the measure number 4 - Solar power plants it was presented how the proposed scheme for establishing national MRV system will work.
- ▶ The identified CB needs within the SBUR development and the ICA process have been captured and summarized in a new GEF funded project “Strengthening institutional and technical Macedonian capacities to enhance transparency in the framework of the Paris Agreement” (signing project document underway).

Mitigation analysis, modelling results

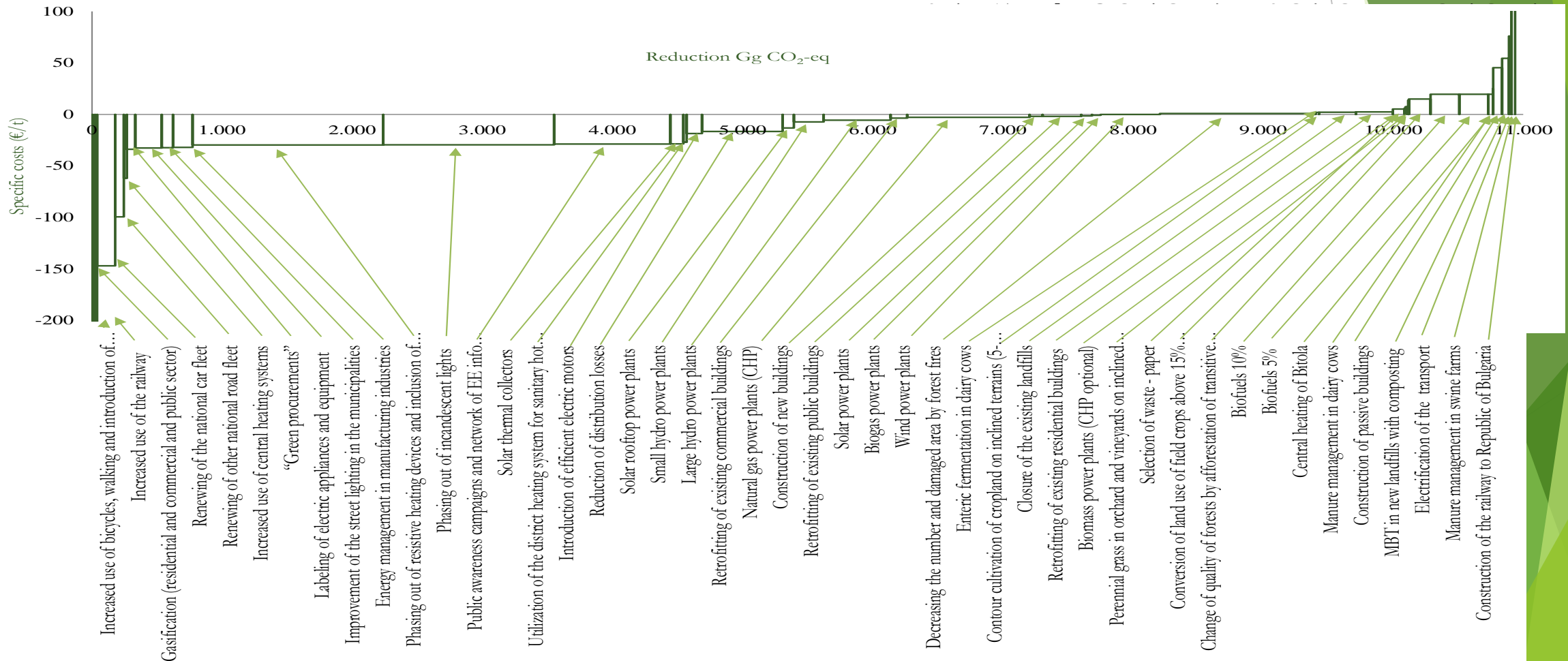
Comparison of total GHG emissions from all sectors in WOM, WEM and WAM scenarios, 2030 (in Gg CO₂-eq)



- ▶ In the WEM and WAM Scenarios, total GHG emissions in 2030 drop by 25.2% and 27.8% respectively, when compared to the WOM scenario. The GHG emissions occurring in WEM in 2035 are only 2.6% higher than in 2012, while the 2035 emissions in WAM decrease by 14% when compared to 2012.

Mitigation analysis, measures prioritization

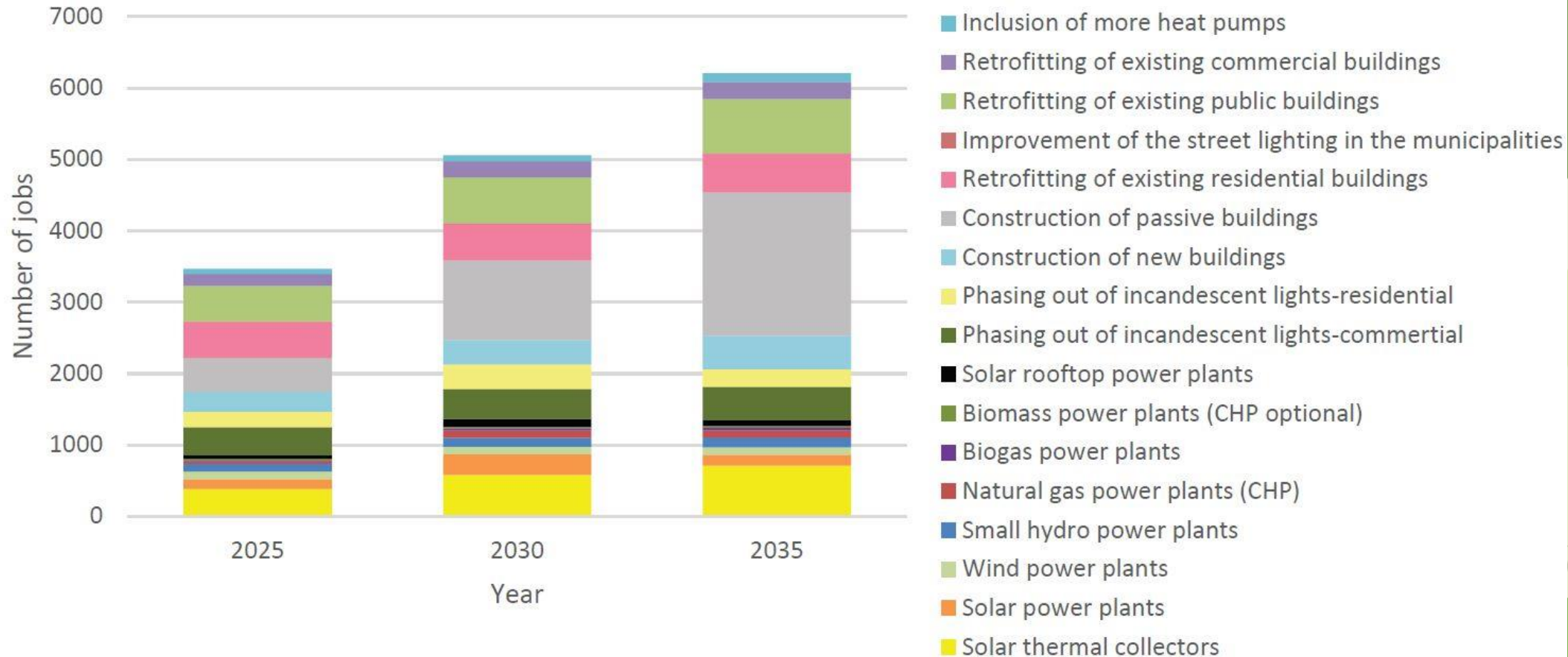
Marginal abatement cost curve for 2030



- ▶ 80% of all emission reductions can be achieved through the implementation of 'win-win' measures, i.e. policies and measures that will not only reduce emissions but also create financial savings

Co-benefits

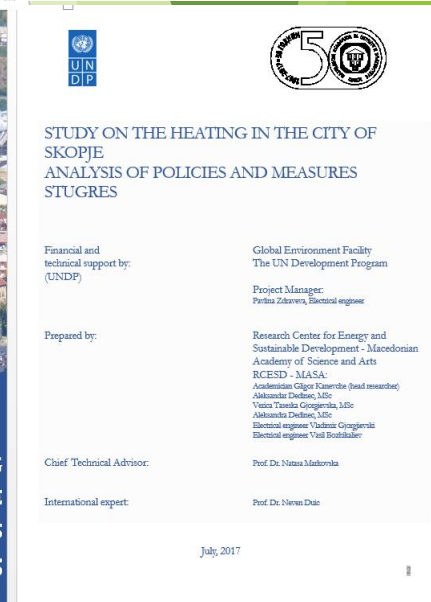
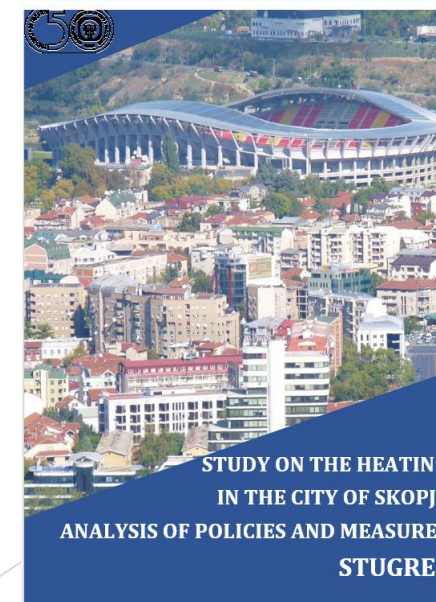
Number of domestic green jobs



Over 6,200 green jobs could be created by 2035 as a result of energy efficiency measures in buildings and the low-carbon energy market. This makes the measures 'win-win-win' measures, since they generate economic, environmental and other additional benefits.

Additional studies under the SBUR

- ▶ *Study for the Transport Sector - Analyses of Policies and Measures*, or **STUTRA**, by using energy model specially developed for the city of Skopje which examines what would happen if more stringent mitigation measures in the transport sector were implemented in addition to those in the two mitigation scenarios in the SBUR, addressing also the effect on the emission of local pollutants;
- ▶ *Study on the Heating in the City of Skopje Analysis of Policies and Measures*, or **STUGRES**, which analyzes ways to reduce GHG emissions from household heating and at the same time reduce local pollution in the city of Skopje, based on findings from the household survey. This study also highlights the significant role of the municipalities in tackling the climate and energy related issues.
- ▶ This enabled wide dissemination of the results and recommendations on national/local level among the policy makers, relevant stakeholders and public in general, and enabled mainstreaming climate change into sectoral strategic and policy documents (law/bylaws on vehicles, new/improved Clean Air Plan and policies etc.).



Additional values of the SBUR

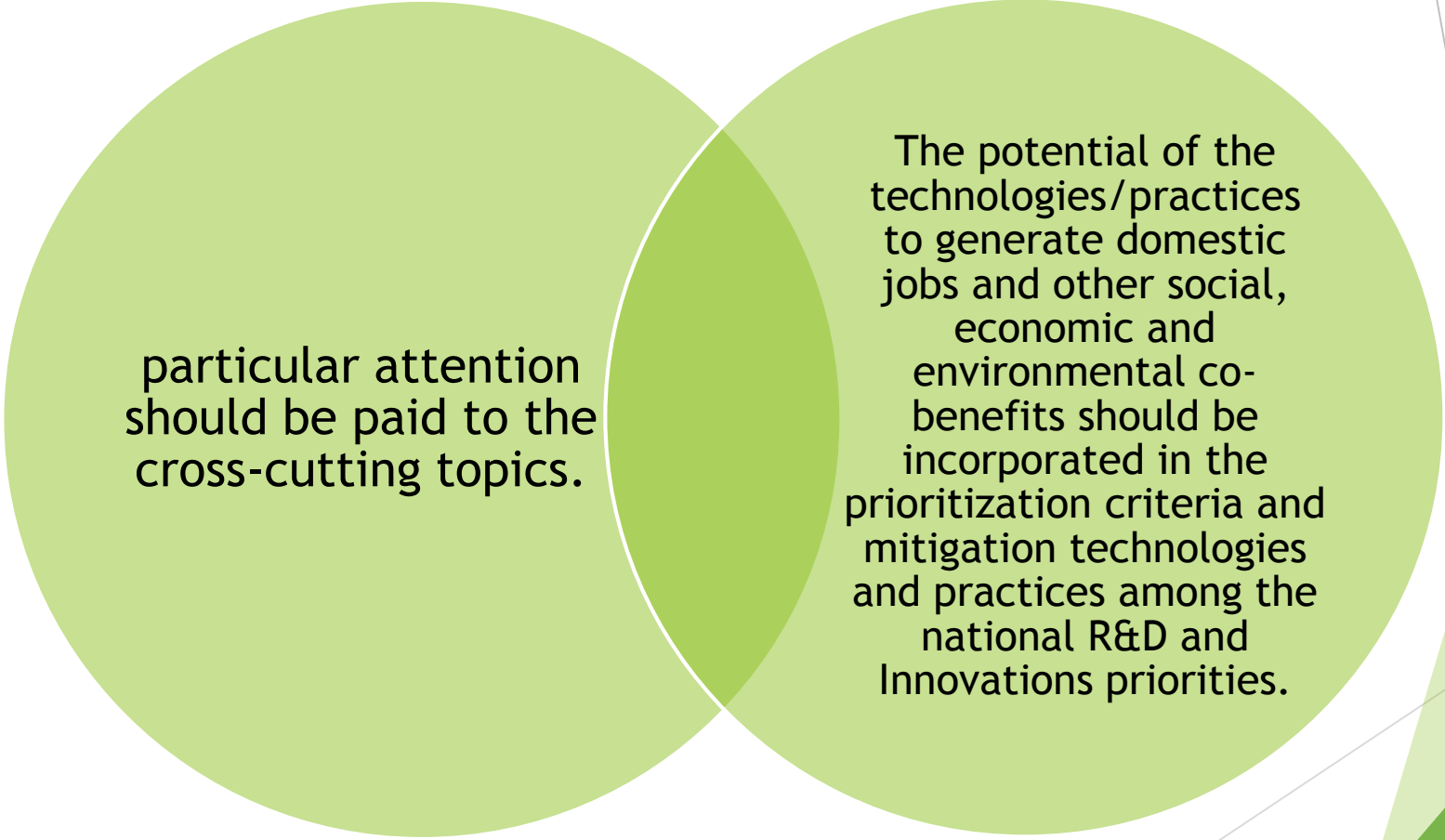
- ▶ Second Biennial Update Report was an entry point to the national integrated energy and climate planning in line with European Policy on Climate and Energy
- ▶ ***The capacity, both, analytical and institutional, and the participatory process*** brought the country in the group of sixteen countries (out of the 197) that are reproducing their climate pledges as targets in national laws and policies
- ▶ The SBUR ***scenarios*** defined as WOM (without measures), WEM (with existing measures) and WAM (with additional measures) or Survival, Safeway and Climate runner correspond one to one to the Energy Strategy's three scenarios - Reference, Moderate Transition and Green
- ▶ Thirdly, the SBUR policies and measures (PAMs) have ***contribution to the 5 pillars of the National Energy strategy***

Conclusions - recommendations

resources for the
planning
("academia-policy-
making"
partnerships are
needed)

formulation of goals which should
support the general national
development objectives and be
responsive to the international and
European obligations, while at the same
time, being harmonised with the
national specifics and possibilities

Prioritisation of the policies



particular attention should be paid to the cross-cutting topics.

The potential of the technologies/practices to generate domestic jobs and other social, economic and environmental co-benefits should be incorporated in the prioritization criteria and mitigation technologies and practices among the national R&D and Innovations priorities.

Thank you for your attention

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