

**Template for the submission of  
examples of good practices with regard to air pollution  
related policies, strategies and measures**

**Template to facilitate the submission of examples/good practices of strategies, policies and measures employed to implement obligations under any of the protocols to the Convention on Long-range Transboundary Air Pollution**

<p><b>Country:</b> Republic of North Macedonia</p>	<p><b>Pollutant(s):</b> <i>PM10, PM2.5, TSP, BC, PAHs</i></p>
<p><b>Protocol(s):</b>  <b>Protocol to the 1979 convention on long-range transboundary air pollution on persistent organic pollutants</b></p>	<p><b>Sector:</b> <i>Energy - Combustion of fuels in administrative capacities and households</i></p>
<p><b>Type of strategy, policy or measure and the level of implementation:</b> <i>The Programs for promotion of renewable energy sources and encouragement of energy efficiency in households are implemented by the Ministry of economy. The measures defined in this program are voluntary and are implemented on national level.</i></p> <p><i>The Programs for reduction of air pollution are implemented by the Government. The measures defined in this program are voluntary and are implemented on national level.</i></p> <p><i>Preparation and obligation of local Air quality improvement plans is obligation stated in the Law on ambient air quality.</i> <i>The measures defined in this program are implemented on local level and are obligatory.</i></p>	<p><b>Method used for the current analysis:</b> <i>The status of implementation of these programs is referred to the Ministry of environment and physical planning for reporting of the progress to the SUBCOMMITTEE ON TRANSPORT, ENVIRONMENT, and ENERGY AND REGIONAL DEVELOPMENT on yearly base. Gathered information is taken into account in the analysis of reduction of emissions of PM10, PM2.5, TSP, BC and PAHs in the last several years. Emission data presented here are gathered from the emission trend analysis prepared by MEPP and also are presented in the IIR. The LSGs like city of Skopje are obliged according to the amendments of the Law on ambient air quality to report the status of the implemented measures towards MEPP on yearly base.</i></p>
<p><b>What is the main objective of the strategy, policy or measure? When has it been implemented/or will be implemented?</b></p> <p><i>The aim of the measures is to reduce emissions coming from the combustion of fossil fuels in administrative capacities and households by replacing them with clean fuels and advanced stoves and to improve energy efficiency in these capacities.</i> <i>The national programs are implemented on yearly base.</i></p>	

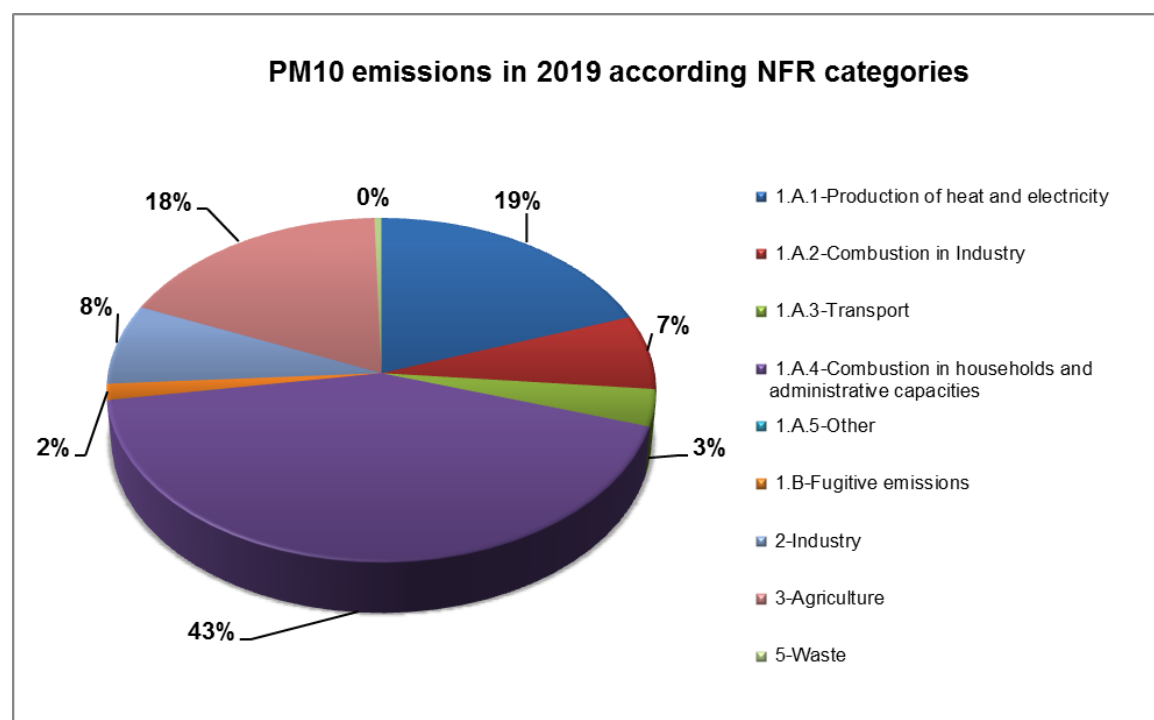
The Program for reduction of air pollution was launched in 2018. Until now programs for the years 2019, 2020 and 2021 are implemented. The activities of the programmes refer to the replacement of the existing non-ecological heating systems and the increase in energy efficiency in kindergartens, primary and secondary schools, public health facilities and municipal administrative facilities. The realisation of the activities from the 2019-2020 programmes is finalized and activities for 2021 program are still on-going.

The Program for promotion of renewable energy sources and encouragement of energy efficiency in households started to be implemented from 2018. This program include subsidies for purchase stoves on pellets, for purchased and installed solar thermal collector systems, for purchased and installed PVC or aluminium windows and for the purchase and installation of photovoltaic panels for the production of electricity up to 4 kW for own consumption. The programs for period 2007-2017 refer only to subsidies for purchased and installed solar thermal collector systems.

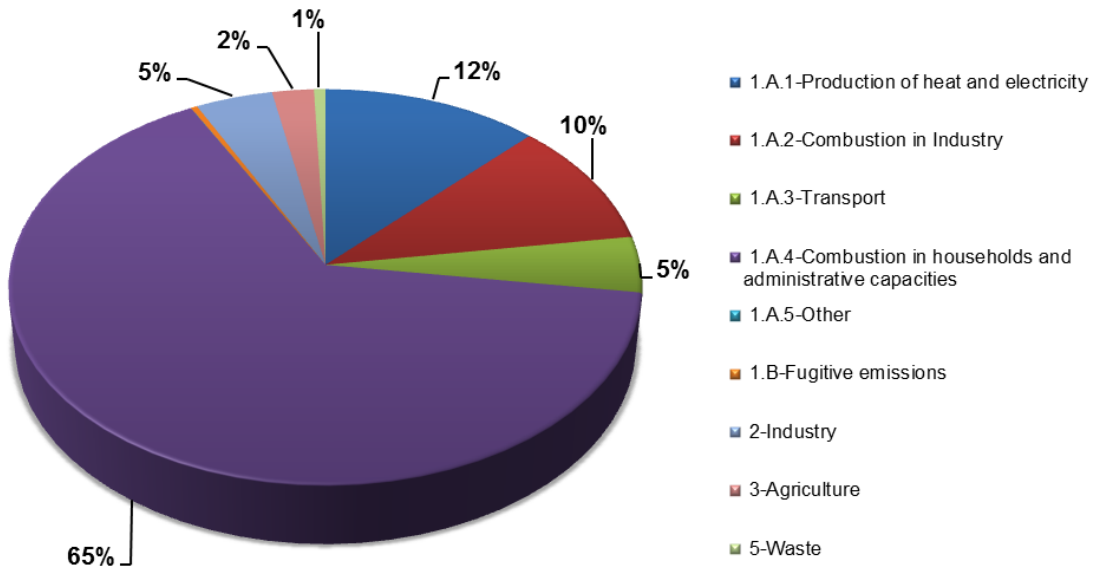
On local level measures implemented in this sector are part of the Air quality improvement plan for city of the capital Skopje for the period 2017-2022. The plan was prepared and adopted in 2017 by the Counsel of Skopje. There are several other cities implementing these types of measures but due to the fact that the around half of the inhabitants live in the capital only measures implemented by city of Skopje are presented here since their implementation has impact on the overall emissions

**Background and driving forces:**

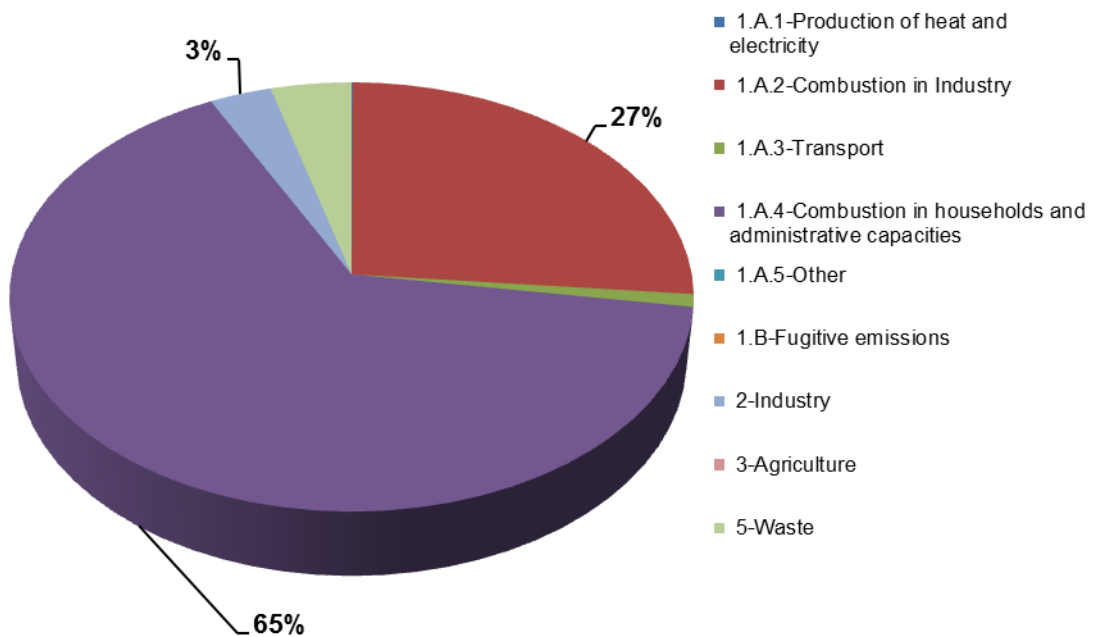
The main driving sources are the measured concentrations of PM10 and PM2.5 by the monitoring stations as well as the need to increase the energy efficiency. With regards to PAHs the indicative measurements carried out in on one measurement location in Skopje in the period 2015-2016 showed that the target value for benzo(a)pyren is exceeded. Moreover according to the emission inventory results the key category source for PM10, PM2.5, TSP, BC, PAHs is Combustion of fuels in the households and administrative capacities. The contribution of this source in different pollutants is shown on the following graphs. With regards to the capital Skopje a source apportionment study as part of the Air Quality plan adopted in 2017 showed that contribution of this source is around 32% in PM10 and 36% in PM2.5. Therefore some of the measures of the plan referred to emission reduction of these substances coming from this sector.

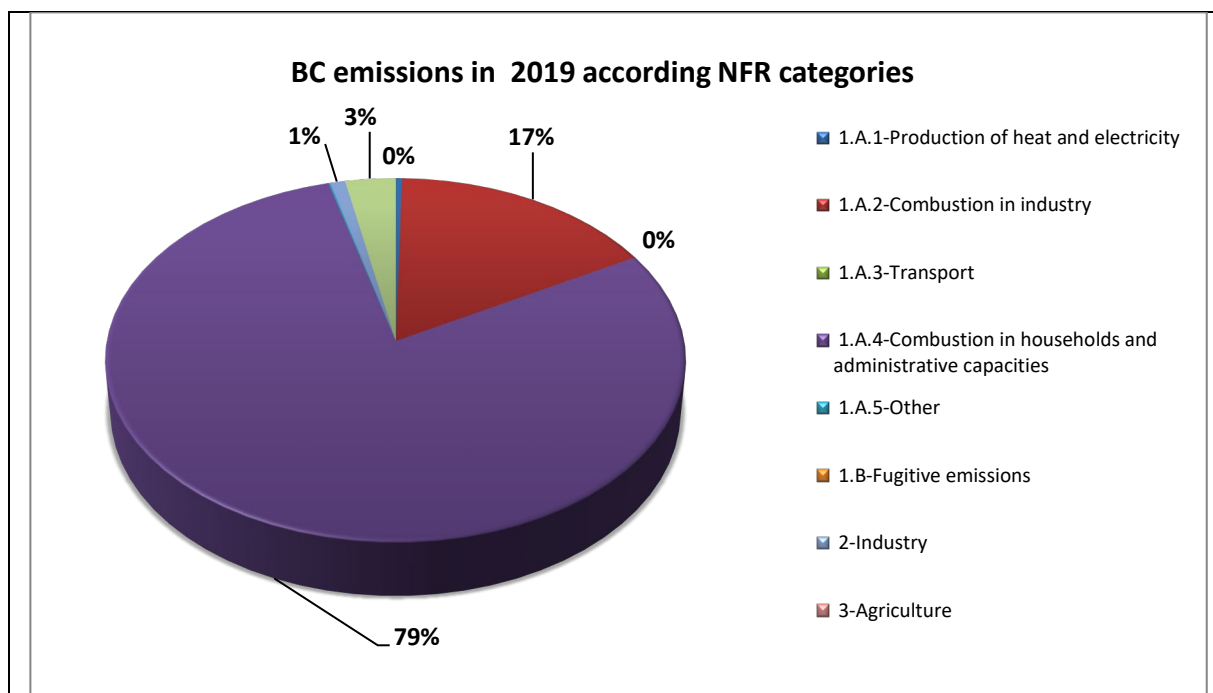


### PM2.5 emissions in 2019 according NFR categories



### PAHs Emissions for 2019 according NFR categories





**Description of the strategy, policy or measure:**

*In accordance with the measurement data and national air emission inventory results, MEPP has developed Clean Air Plan for the period 2019-2020, under which three programs were implemented the Program for reduction of air pollution for year 2019, 2020 and 2021. The activities of the program refer to the replacement of the existing non-ecological heating systems and increase of energy efficiency in kindergartens, primary and secondary schools, health facilities and administrative buildings in the municipalities.*

*The Program for promotion of renewable energy sources and encouragement of energy efficiency in households for 2018-2021 is prepared and implemented by the Ministry of economy.*

*This programs for period 2018 -2021 refers to subsidies for households to purchase stoves on pellets, for purchased and installed solar thermal collector systems, for purchased and installed PVC or aluminium windows and for the purchase and installation of photovoltaic panels for the production of electricity up to 4 kW for own consumption.*

**Costs, Funding and Revenue allocation:**

*The funds for implementation of measures in the Air quality plan for Skopje were provided from the city of Skopje.*

*The City of Skopje has started implementation of subventions for pellets stoves in 2016, when with amount of 5,868,000 MKD was granted for 196 families. In 2017 an amount of 12,816,000.00 MKD was secured for 429 families and in 2018 the city of Skopje implemented the measure of granting subsidies for the purchase of pellet stoves, for 812 families which have been subsidized with a budget of 25,000,000.00 MKD. The city conducted training for 10 chimney sweeps and 100 chimneys are cleaned free of charge, and subsidies for cleaning chimneys of 2000 households and administrative entities with a total budget of 2,000,000.00 MKD were secured.*

*In 2019 the City of Skopje continued to implement the measure of granting subsidies for the purchase of pellet stoves in the amount of 14,732,461 MKD. In 2019, subsidies were paid for the*

*purchase of more modern heating devices - 18,670,404 MKD. The City of Skopje continues to grant subsidies to households and other entities for cleaning chimneys (497,871 MKD) as financial support in training and infrastructure for starting a chimney sweep.*

*The City of Skopje continued to implement the measures from the Plan for improvement of the ambient air quality in 2020. 214,995,926.00 MKD were paid for subsidies for procurement of inverter air conditioners in 2020 and 4591 citizens were subsidized. The City of Skopje continued to provide subsidies to households and other chimney sweeps as financial support.*

*City of Skopje continued to implement the measures from the Ambient Air Quality Improvement Plan. In 2020, MKD 96.682.840,00 for subsidies for procurement of inverter air conditioners was paid and 1573 citizens were subsidized.*

*The City of Skopje continues to provide subsidies to households and other chimney cleaning entities as financial support. Subsidies in the amount of MKD 453.600,00 were awarded in 2021 subsidising 378 households in total.*

*With regards to the Program for reduction of air pollution, the funds were secured from the national budget funds in the amount of 120.000.000,00 MKD for 2019, an amount of 100.000.,000,00 MKD for 2020 and an amount of 80.000.000,00 MKD in order to finance measures to reduce air pollution.*

*In 2018 the Government of the Republic of Northern Macedonia, at the proposal of the Ministry of Economy, adopted a Program for promotion of renewable energy sources and encouragement of energy efficiency in households for 2020 and the budget provided funds in the total amount of 50,000,000 MKD for implementation of measures apply to subsidies for pellet stoves, built-in collector systems and PVC windows. From these funds, MKD 14,000,000 were realized for subsidies for the supply of pellet stoves, MKD 6,000,000.00 for built-in collector systems and MDK 30,000,000 for PVC window.*

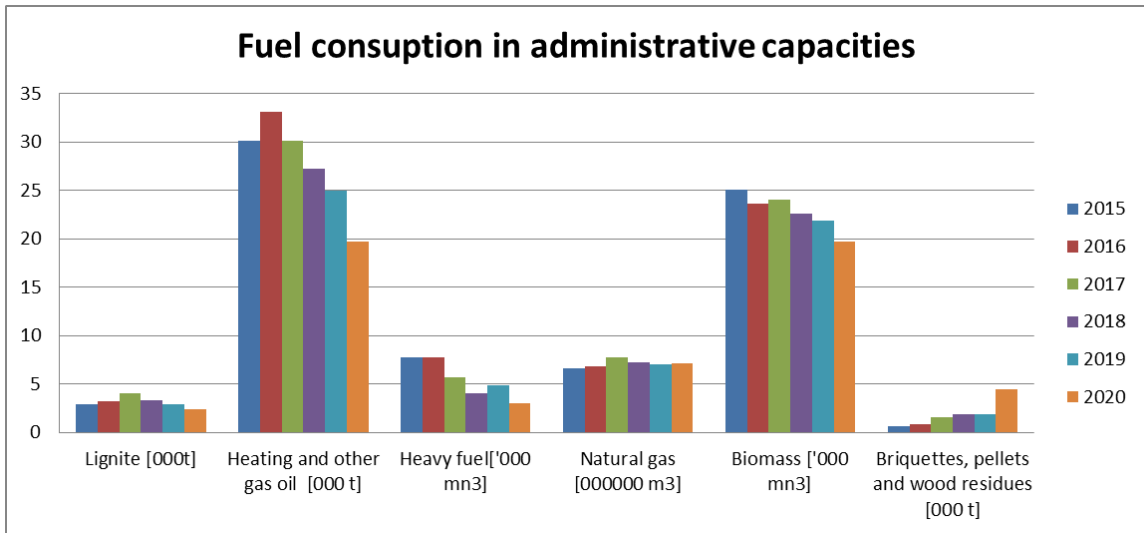
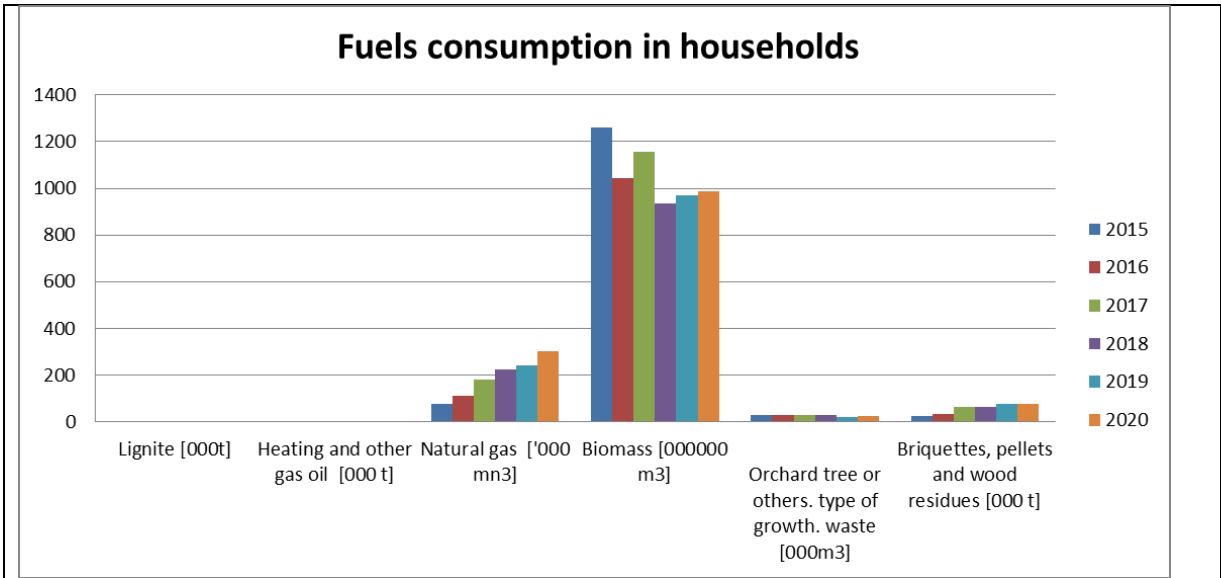
*In 2019, budget provided funds in the total amount of 50,000,000 for implementation of measures apply to subsidies for pellet stoves, built-in collector systems and PVC windows. From these funds, MKD 20,000,000 were realized for subsidies for the supply of pellet stoves, MKD 5,000,000.00 for built-in collector systems and MDK 20,000,000 for PVC window.*

*In 2020, budget provided funds in the total amount of 54,000,000 MKD for implementation of measures apply to subsidies for pellet stoves, built-in collector systems and PVC windows. From these funds, MKD 26,400,000 were realized for subsidies for the supply of pellet stoves for 880 households. Given the situation with COVID-19, the other measures provided by the Program were implemented, because the funds were reallocated to the needs of dealing with the consequences of the crisis.*

*For 2021 the funds provided for this Program have been fully used, the greatest interest was for the measures for reimbursement of the costs for purchased and installed PVC or aluminium windows in the households and for reimbursement of part of the costs for purchase and installation of pellet stoves in the households, mostly from Pelagonija and the Skopje region. In total, about 3621 households used the subsidy on one of the basics listed above and the Budget provided funds in the total amount of 66,240,000.00 MKD.*

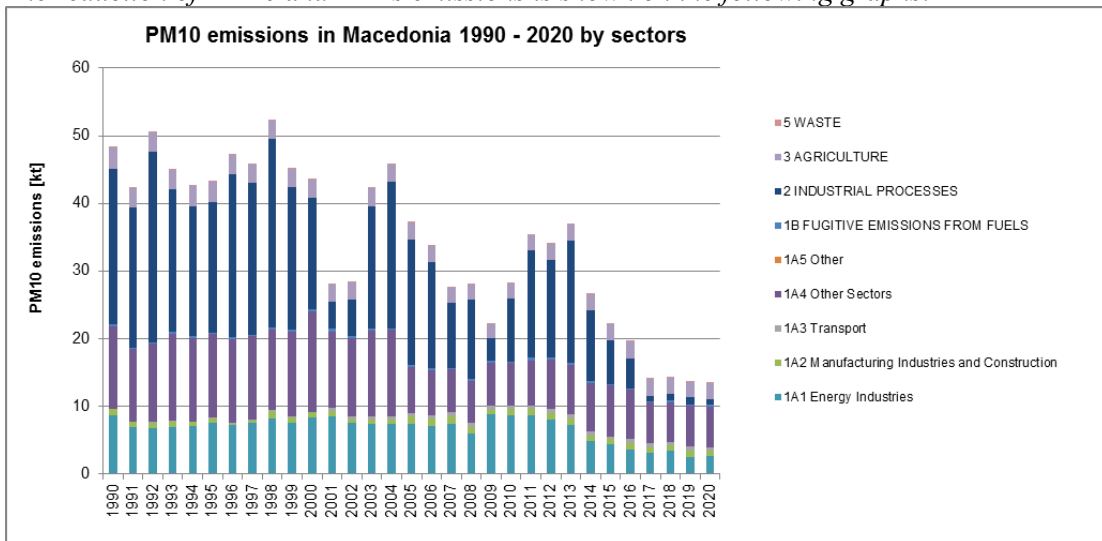
**Effect and impacts on air pollution abatement:**

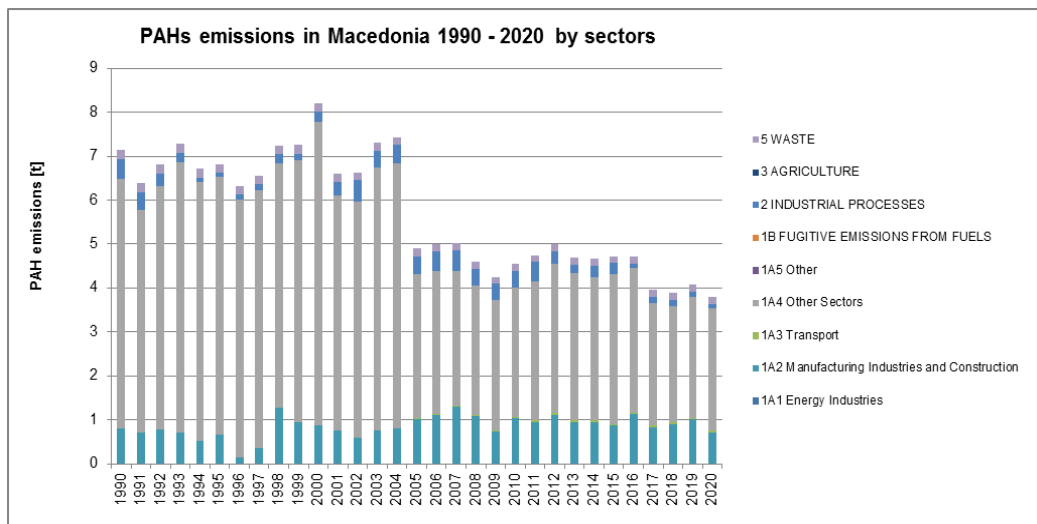
*The measures on national and local level are voluntary however they have impact on the reduction of emissions of the pollutants, PM, BC and PAHs. Moreover, amount of clean fuels like natural gas and pellets have increased in the period 2015-2020 and amount of heavy fuel, gas oil, lignite and biomass have decreased due to the subsidies given on local and central level. This is presented on the following graphs:*



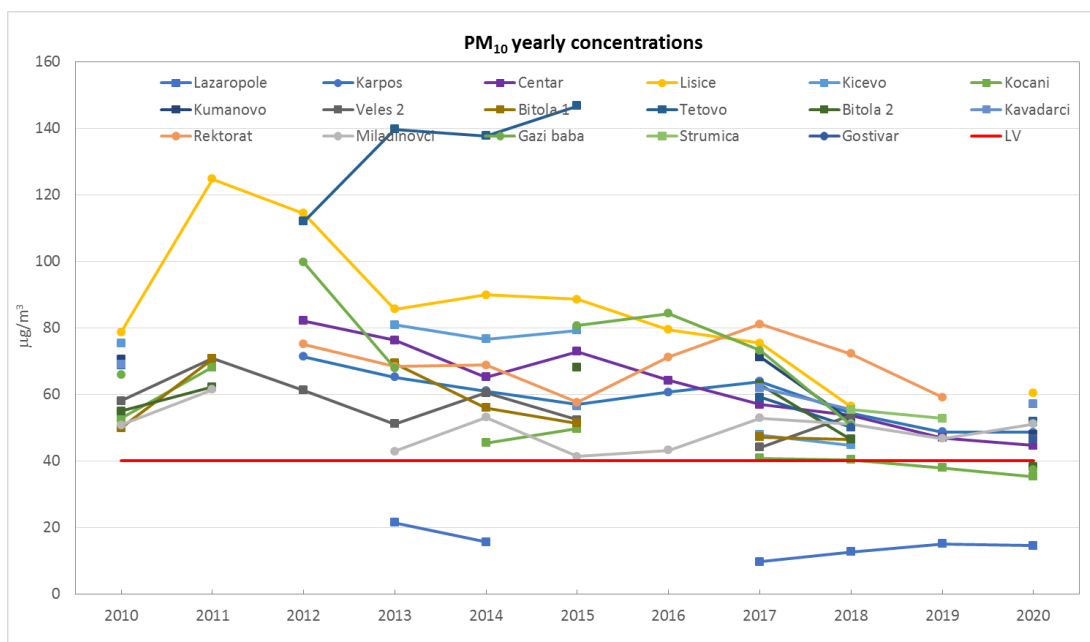
The results show decrease of emissions of these pollutants in the last few years due to increase of subsidies for replacement of fossil fuels with more clear fuels like pellets and heat pumps and increase of energy efficiency.

The reduction of PM10 and PAHs emissions is shown on the following graphs:





Additionally the measured concentrations of PM<sub>10</sub> in different measurement state monitoring stations show mostly decreasing trend in last several years.



The monitoring of pollutants and prepared national and local air emission inventories and use of PMF models unable us to give scientific assessment of the air quality situation. The Government according these analyses in 2019 have set air pollution reduction as one of priority strategic goal. The national and local strategies and measures implemented in the last years have shown their positive impact on air pollution in this case on PM, BC and PAHs.

**References/Further information:**

- <https://economy.gov.mk/doc/2919>
- <https://economy.gov.mk/docs/sektor-programi>
- [https://air.moepp.gov.mk/wp-content/uploads/2017/07/Skopje\\_AOIP.pdf](https://air.moepp.gov.mk/wp-content/uploads/2017/07/Skopje_AOIP.pdf)
- [https://air.moepp.gov.mk/wp-content/uploads/2017/05/Report-on-the-Heavy-Metal-and-PAH-campaign-in-Skopje\\_16.12.2016.mk\\_.pdf](https://air.moepp.gov.mk/wp-content/uploads/2017/05/Report-on-the-Heavy-Metal-and-PAH-campaign-in-Skopje_16.12.2016.mk_.pdf)
- <https://vlada.mk/PlanZaChistVozduh>

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**Additional comments:** /