

## Lithuanian approach to reduce air pollution from residential heating

<b>Country:</b> <i>Lithuania</i>	<b>Pollutant(s):</b> <i>PM2.5 (mainly), unintentional persistent organic pollutants (uPOP), polycyclic aromatic hydrocarbons (PAH), cadmium and other</i>
<b>Protocol(s):</b> <i>Gothenburg Protocol  Heavy Metals and POPs Protocols (partially)</i>	<b>Sector:</b> <i>Residential heating</i>
<b>Type of strategy, policy or measure and the level of implementation:</b> <i>Strategy consisting legislative, economic and educational measures</i>	<b>Method used for the current analysis:</b> <i>National emission inventory  State monitoring of air quality</i>
<b>What is the main objective of the strategy, policy or measure? When has it been implemented/or will be implemented?</b> <i>Several measures were developed to reduce the air pollution from residential heating sector due to solid fuel combustion:</i> <ul style="list-style-type: none"> <li>• <i>solid fuel quality requirements (legislation)</i></li> <li>• <i>residential solid fuel heating appliances replacement (economic incentives)</i></li> <li>• <i>public awareness campaigns on consequences of solid fuel combustion (education)</i></li> </ul> <i>Combination of different measures is the strategy to ensure achievement of national PM2.5 emission goals for 2020 and 2030, established by Gothenburg Protocol. Successful implementation will also likely improve urban ambient air quality and significantly reduce national emissions of chlorinated dioxins/furans, polycyclic aromatic hydrocarbons and heavy metals, related to the Lithuanian obligations under Protocol on persistent organic pollutants and Protocol on heavy metals.</i> <i>Implementation of measures began since 2018 and will finally be completed till end of 2023.</i>	
<b>Background and driving forces:</b> <i>According to Lithuanian national pollutant inventory, residential heating sector is major PM2.5 contributor, responsible for 75 % of all national PM2.5 emissions. Moreover, residential heating also emits 65 % dioxins and furans and 34 % cadmium of total national emissions (2015 data). Lithuania set a goal to reduce total PM2.5 emissions by 20 % or more during a period from 2005 till 2020, and by 36 % till 2030. Yet only reduction of 11.5 % was achieved, therefore additional measures are required to be adopted for meeting established goals.</i> <i>There were several PM 2.5 pollution problems identified:</i> <ul style="list-style-type: none"> <li>• <i>Majority of the existing solid fuel boilers in Lithuania have low energy efficiency and emit higher quantities of various pollutants in comparison with modern installations. In Lithuania only less than 5 % of all installed solid fuel residential heating systems comply with principles of eco-design (Commission Regulation (EU) 2015/1189).</i></li> <li>• <i>Solid fuel quality is another concern and absence of legal requirements results in circumstances when fuel with environmentally undesirable additives enters the market. This problem is apparent as in Lithuania furniture production industry generate high quantities of chemically treated wood residues, which occasionally are used in solid fuel production.</i></li> <li>• <i>Insufficient public awareness on negative impact from burning low quality solid fuel or household waste is still an evident problem, which causes occasions when people disposing their household waste by burning them in solid fuel boilers.</i></li> </ul>	
<b>Description of the strategy, policy or measure:</b> <i>In 2018 solid biofuel quality requirements were established to prevent environmentally undesirable solid biofuel quality entering the market. Requirements sets limit values for fuel composition and other criteria, which are variable depending on combustion installation of end use (industrial or</i>	

residential). However, requirements are set only for solid biofuel, while quality of other solid fuels, including engineered wood residues, aren't regulated. Conditions and limitations for using engineered wood residues directly for energy production yet to be established based on scientific study, which is foreseen to be completed by the end of 2018. Study will include emission analysis of combustion products of different engineered wood types.

To reduce negative impact on air quality from obsolete residential solid fuel boilers, an economic incentive is foreseen, which is expected to start in 2018. Financial compensation will be available for those who will be replacing old solid fuel boiler to renewable energy heating systems or modern solid fuel boiler, compliant with the most stringent emission limit values (stage V boilers). Priority will be given for households, located in most polluted urban areas, identified according PM10 dispersion maps. In parallel a residential heating installation national inventory is foreseen during national citizen counting in 2021, which will provide better possibilities to evaluate the state of heating systems in Lithuanian households.

During EU funding period of 2014-2020, municipalities are provided with funds to launch public awareness campaigns on impact on human health and environment from the solid fuel burning, including the availability of before mentioned economic incentives. By 2023 it is expected that at least 4 campaigns will be conducted.

**Costs, Funding and Revenue allocation:**

Scientific study on engineered wood residues estimated to cost up to 60 thousand Euros, fully covered by national waste management program fund. Based on the study conclusions the legal requirements will be enforced by national institutions, according their duties of state control.

Public awareness campaigns will be mostly covered by EU funds and at least 15 % of investments by municipality budget.

Preliminary 15 million Euros are allocated for solid fuel boiler replacement program. Depending on success of this incentive, additional funds could be provided in future to prolong the program.

Procedures of EU fund allocation are coordinated by competent authority (Environmental project management agency).

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

As measures are starting to be implemented in 2018, it is too early to assess impact on air quality. However, it's expected that successful implementation will considerably reduce PM2.5, uPOP and other pollutant national emissions, furthermore significantly increase air quality in urban areas during cold season.

**References/Further information:**

PM10 dispersion maps: <https://dts.aplinka.lt/map/viewer/external/#mapId=3151>

Solid biofuel quality requirements (only in Lithuanian language): <https://www.e-tar.lt/portal/lt/legalAct/d950a4a0db3511e7910a89ac20768b0f>

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**Additional comments:** -