

## Sweden Air Quality Policies

This document is based on research that UNEP conducted in 2015, in response to Resolution 7 of the UNEA 1. It describes country-level policies that impact air quality. Triple question marks (???) indicate that information for the section couldn't be found.

Please review the information, and provide feedback. A Word version of the template can be provided upon request. Corrections and comments can be emailed to [Vered.Ehsani@unep.org](mailto:Vered.Ehsani@unep.org) and [George.Mwaniki@unep.org](mailto:George.Mwaniki@unep.org).

<b>Sweden Air Quality Policy Matrix</b>		
<b>Goals</b>	<b>Status</b>	<b>Current Policies &amp; Programmes</b>
GENERAL OVERVIEW	<p><b>Overall situation with respect to air quality in the country, including key air quality challenges:</b></p> <ul style="list-style-type: none"> <li>• On average, air quality in Sweden is good, however periods of higher pollution levels do occur. During winter and spring, NOx and PM levels rise due to combustion, wear from transportation and meteorological conditions. High levels of ozone do occur during the summer months.</li> <li>• Transboundary transport of air pollutants, especially from forest and agricultural fires, play a significant role in Sweden's air quality.</li> <li>• Most of the Swedish air quality problems are related to local traffic, however, transboundary transport of air pollutants are also important.</li> <li>• Air pollution in Sweden is mainly driven by energy production, industry and traffic, especially in urban areas.</li> <li>• WHO estimates that outdoor air pollution is estimated to cause 5500 premature deaths annually</li> </ul>	<p><b>National Ambient air quality standards:</b> yes</p> <ul style="list-style-type: none"> <li>• The current standards are contained in the Clean Air for Europe (CAFE) Directive (EP &amp; CEU, 2008) and the Fourth Daughter Directive (EP &amp; CEU, 2004). These Directives also include rules on how Member States should monitor, assess and manage ambient air quality.</li> </ul> <p><b>National Air Quality Policy</b></p> <ul style="list-style-type: none"> <li>• The EU air quality policy has a long term goal of achieving levels of air quality that do not result in unacceptable impacts on, and risks to, human health and the environment."</li> <li>• European Union air quality policy aims to; <ul style="list-style-type: none"> <li>- Develop and implement appropriate instruments to improve air quality.</li> <li>- Control of emissions from mobile sources, through fuel quality improvement,</li> <li>- Promoting and integrating environmental protection requirements into the transport and energy sector are part of these aims.</li> </ul> </li> </ul> <p><b>Air Quality legislation / programmes:</b></p> <ul style="list-style-type: none"> <li>• Swedish regulations on air quality are all based on provisions adopted by the EU. As new provisions are made, Swedish legislation will be adapted accordingly.</li> </ul> <p><b>Other:</b></p> <ul style="list-style-type: none"> <li>• A review of the EU air quality policy was conducted in 2011-2013</li> <li>• This review lead to the adoption of a Clean Air Policy Package in December 2013, this package consists of : <ul style="list-style-type: none"> <li>• A new Clean Air Programme for Europe with new air quality objectives for the period up to 2030,</li> <li>• A revised National Emission Ceilings Directive with stricter national emission ceilings for the</li> </ul> </li> </ul>

	<p>(<a href="http://ivl.se/download/18.41ba7c1514a956c967d64d/1429095505500/IVL+B2197_Exponering_2010.pdf">http://ivl.se/download/18.41ba7c1514a956c967d64d/1429095505500/IVL+B2197_Exponering_2010.pdf</a>).</p> <p><b>Air quality monitoring system:</b></p> <ul style="list-style-type: none"> <li>• The Swedish air quality monitoring networks are managed by the local authorities for urban measurements and regional and national authorities for monitoring air quality in rural areas</li> </ul>	<p>six main pollutants, and</p> <ul style="list-style-type: none"> <li>• A proposal for a new Directive to reduce pollution from medium-sized combustion installations</li> </ul>
<p>REDUCE EMISSIONS FROM INDUSTRIES</p>	<p><b>Industries that have the potential to impact air quality:</b></p> <ul style="list-style-type: none"> <li>• Major industries in the country includes; iron and steel, precision equipment (bearings, radio and telephone parts, armaments), wood pulp and paper products, processed foods, motor vehicles among others</li> </ul> <p><b>GDP of country:</b> USD 552 Billion in 2013</p> <p><b>Industries' share of GDP:</b> 31.3%</p> <p><b>Electricity sources:</b></p> <ul style="list-style-type: none"> <li>• 13% of the installed electricity generating capacity (36.51 million KW in 2010) is generated from fossil fuel, 45.6% from hydropower, 24.6% from nuclear and the rest 16.6% from renewable sources</li> </ul>	<p><b>Emission regulations for industries:</b></p> <ul style="list-style-type: none"> <li>• Industrial emissions within the European Union are regulated under the Industrial Emissions Directive (IED), which was issued on 21 December 2007</li> <li>• The directive's aim was to achieve significant benefits to the environment and human health by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques.</li> <li>• The IED entered into force on 6 January 2011 and has to be transposed into national legislation by Member States by 7 January 2013.</li> <li>• European legislation establishes air quality objectives (limit and target values) for the different pollutants. Limit values are concentrations that must not be exceeded in a given period of time.</li> </ul> <p><b>Small installation's emissions regulated:</b> (Yes/No) <b>yes</b></p> <p><b>Renewable energy investment promoted:</b></p> <ul style="list-style-type: none"> <li>• Electricity produced from renewable energy sources, such as wind, solar and biomass, receive electricity certificates that give producers an additional revenue.</li> </ul> <p><b>Energy efficiency incentives:</b></p> <ul style="list-style-type: none"> <li>• The Energy Efficiency Directive (2012/27/EU) says that large companies must make a survey of their energy use including suggested energy-efficiency improvements. Small and medium-sized companies can, on the other hand, apply for a grant that finances an energy audit.</li> <li>• Due to the Ecodesign Directive (2009/125/EC), energy efficient requirements are defined for an</li> </ul>

increasing number of product types, such as pumps, fans and engines.

- The Energy Labelling Directive (2010/30/EU) requires that an increasing number of product types, for example oil and gas-fired boilers, have a label showing their energy efficiency.
- Energy efficiency is a factor taken into account when issuing permits according to the Environmental Code (1998:808). Operators should have knowledge of and use the best available technology for energy efficiency. Energy efficiency can be determined by specific permit conditions, including limiting values for electricity and heat.

**Incentives for clean production and installation of pollution prevention technologies:**

- Since 1991 there is a Swedish sulphur tax for electricity and heat production and that encompasses solid fossil fuels, liquid fuels and peat. The tax is based on the sulphur content of fuels during combustion and is paid per kilogram of sulphur emitted as sulphur dioxide (SO<sub>2</sub>). The tax can be reduced if the sulphur emissions are limited through exhaust emission control or binding of the sulphur.
- Since 1992 there is a Swedish charge on nitrogen oxides with the aim of reducing emissions of nitrogen oxides from combustion plants that produce energy. The fee is currently SEK 50 per kg of nitrogen oxide emissions.
- Since 2011 a Swedish energy tax on fossil heating fuels has been levied according to their energy content, significantly increasing the tax on LPG, natural gas, coal and coke. On fuels used in industrial manufacturing processes, 30 % of the standard energy tax is paid.

**Actions to ensure compliance with regulations:**

- All operators should be able to demonstrate that they are working to reduce the environmental impact of their activities and that they have sufficient knowledge to meet the Environmental Code's (1998:808) requirements.
- The requirement of self-monitoring means that operators regularly monitor the activity and its impact on the environment.
- The authorities perform operational supervision to ensure compliance with the regulations. This includes taking measures such as injunctions, prohibitions, penalty fees, environmental sanction charges and prosecution. The authorities shall also provide guidance, information etc.

<p>REDUCE EMISSIONS FROM TRANSPORT</p>	<p><b>Key transport-related air quality challenges:</b> (<i>ex: vehicle growth, old fleet, dirty fuel, poor public transport etc</i>)</p> <ul style="list-style-type: none"> <li>● Transport in Sweden is well developed and several options spanning from Railways, tramps, metros and bus are available for commuters.</li> <li>● Use of private cars is discouraged as demonstrated by the high fuel cost which stood at USD 1.53 per litre in 2015<sup>1</sup>.</li> <li>● Transport is among the most important source of air pollution in the Sweden</li> <li>● Private car ownership is high with 520 cars per 1000 individuals in 2010<sup>2</sup></li> </ul>	<p><b>Vehicle emission limit:</b> (<i>Euro rating</i>)</p> <ul style="list-style-type: none"> <li>● The Emission Control Act (2011:318) is designed to prevent emission of exhaust gases and other pollutants from fuels in motor vehicles from harming or causing damage to human health or the environment. The law includes, among other things, emission classes.</li> <li>● Emissions standards for vehicles correspond to Euro 6 for LDV vi HDV standards.</li> <li>● European Union emission regulations for new light duty vehicles (passenger cars and light commercial vehicles) are specified in Regulation 715/2007 (Euro 5/6) [2899].</li> <li>● Emission standards for light-duty vehicles are applicable to all vehicles not exceeding 2610 kg (Euro 5/6).</li> <li>● EU regulations introduce different emission limits for <i>compression ignition</i> (diesel) and <i>positive ignition</i> (gasoline, NG, LPG, ethanol,...) vehicles. Diesels have more stringent CO standards but are allowed higher NOx. Positive ignition vehicles were exempted from PM standards through the Euro 4 stage. Euro 5/6 regulations introduce PM mass emission standards, equal to those for diesels, for positive ignition vehicles with direct injection engines.</li> </ul> <p><b>Fuel Sulphur content:</b> (<i>in ppm</i>)</p> <ul style="list-style-type: none"> <li>● The 2000/2005 emission standards were accompanied by an introduction of more stringent fuel regulations that require “Sulphur-free” diesel and gasoline fuels (<math>\leq 10</math> ppm S) must be mandatory from 2009.</li> <li>● Maximum allowable sulphur level in petrol and diesel fuels is 10ppm</li> </ul> <p><b>Fuel Lead content:</b> All vehicles use lead free gasoline</p> <p><b>Restriction on used car importation:</b></p> <ul style="list-style-type: none"> <li>● In order to be used in traffic, a vehicle must be approved in Sweden regarding its exhaust emissions, among other things. A vehicle that has been registered and used in another country within the EEA meets the emission requirements, provided that it has not been converted or trimmed. The vehicle can in specified cases be exempted from the requirements.</li> </ul> <p><b>Actions to expand, improve and promote public transport and mass transit:</b></p> <ul style="list-style-type: none"> <li>● In 2005, the Congestion Tax Act (2004:629) introduced congestion tax in order to reduce</li> </ul>
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<sup>1</sup> ‘Gasoline Prices around the World, 28-Sep-2015 | GlobalPetrolPrices.com’ <[http://www.globalpetrolprices.com/gasoline\\_prices/](http://www.globalpetrolprices.com/gasoline_prices/)> [accessed 5 October 2015].

<sup>2</sup> World Bank, *Worldwide Total Motor Vehicles (per 1,000 People)*, 2011 <<http://chartsbin.com/view/1114>> [accessed 30 June 2015].

		<p>traffic during peak hours. The law is designed so that it can be applied in urban areas throughout Sweden.</p> <ul style="list-style-type: none"> <li>• Actions to expand, improve and promote public transport and mass transit are usually taken by the municipalities.</li> <li>• Through so-called urban environment agreements, which co-finances local and regional public transport projects, the government is supporting public transport investments that can open up for new, attractive locations for housing. Through these agreements, the government co-finances public transport investments with 2 billion SEK during 2015-2018 - provided that the local or regional governmental level in question makes an equally large investment and also puts instruments in place which further promote sustainable travel modes (bike, pedestrian and public transport). Such supporting instruments can be parking pricing, car-free areas or such. The first projects will become approved for financing at the end of 2015.</li> <li>• Bus Rapid Transit solutions have been or are being implemented in the County of Skåne as well as in the municipalities of Malmö and Karlstad.</li> </ul> <p><b>Actions to promote non-motorized transport:</b> <i>(ex: include sidewalks and bike lanes in new road projects, car-free areas etc)</i></p> <ul style="list-style-type: none"> <li>• A number of municipalities work with strategic approaches to promote non-motorized transport, including separated bike lanes. These efforts are often focused to city centres, while road network capacity is expanded in the periurban areas surrounding the city centres.</li> <li>• The total effect of these investments lead to continuously increased road traffic, according to traffic forecasts on urban regional level, and despite signs of peak car in the very central parts of the larger cities where the sustainable urban transport modes are promoted.</li> <li>• Actual mode shift from car to sustainable modes like bike, pedestrian and public transport) seems to occur very efficiently in cases where existing street capacity is reduced for car traffic and redesigned to instead accommodate bikes, pedestrians and buses or trams.</li> <li>• The cities of Stockholm and Gothenburg have introduced a congestion tax during the past decade. The original aim was to reduce environmental impact from traffic, but this aim has changed and main focus is now to generate tax revenues to finance new roads and railways.</li> </ul>
REDUCE EMISSIONS	<b>Outdoor, open burning:</b> <i>(ex: is it commonly done? burning what kinds of wastes? etc)</i>	<p><b>Legal framework:</b> <i>(ex: is burning banned?)</i></p> <ul style="list-style-type: none"> <li>• There is no general ban on burning of garden waste (that is twigs, branches, leaves etc.).</li> </ul>

<p>FROM OPEN BURNING: OUTDOOR</p>		<p>However, the Environmental Code's (1998:808) general rules of consideration always apply so that neighbors are not disturbed.</p> <ul style="list-style-type: none"> <li>• For environmental and health reasons, it is normally forbidden to burn within urban areas. When there is a risk for wild fires, the County Administrative Board or the municipal rescue service can issue bans on burning. It is an offense to cause a fire due to negligence.</li> <li>• Burning of waste is regulated in the Environmental Code (1998:808), the Waste Ordinance (2011:927) and sometimes in a municipal waste scheme.</li> <li>• It is forbidden to burn waste without a permit and it applies to both households and business operators.</li> </ul> <p><b>Actions to prevent open burning of municipal waste and / or agricultural waste: ???</b></p> <ul style="list-style-type: none"> <li>• Municipalities have a waste responsibility which means that each municipality is responsible for collecting, transporting, recycling or disposing of the household waste (household waste, household bulky waste, household hazardous waste is included) generated in the municipality.</li> <li>• In Sweden we have a legislated producer responsibility meaning that producers are responsible for collecting and taking care of old products. Producer responsibility applies to batteries, cars, tires, electrical and electronic equipment (including light bulbs and some lighting equipment), packaging, paper, pharmaceuticals and radioactive products. In addition, there are similar voluntary commitments for office paper and agricultural plastic.</li> </ul>
<p>REDUCE EMISSIONS FROM OPEN BURNING: INDOOR</p>	<p><b>Dominant fuels used for cooking and space heating:</b></p> <ul style="list-style-type: none"> <li>• Household heating is a major, and difficult to regulate, source of emissions of PM10.</li> <li>• Main issues are obsolescence and low efficiency of combustion in heating units and to some extent behavioural traits of households.</li> <li>• Electricity is used for almost all cooking. Space heating is mostly provided by electricity or district heating but biomass</li> </ul>	<p><b>Indoor air pollution regulated: Yes</b></p> <ul style="list-style-type: none"> <li>• With the support of the Environmental Code (1998:808) there are requirements on indoor air.</li> <li>• With the support of the Planning and Building Act (2010:900) it is regulated how fireplaces, chimneys, etc. should be designed and installed.</li> <li>• Building Regulations (BBR) regulates biomass burning. The rules contain regulations and general advice for new and redevelopment within urban areas.</li> <li>• In several regulations under the Ecodesign Directive (2009/125/EC) there are emission requirements for solid fuel boilers, space heaters, etc. Emission requirements will take effect at various times from 2018 onwards.</li> </ul>

	<p>and oil are also used.</p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><b>Impact:</b></p>	<p>Promotion of non-grid / grid electrification:</p> <ul style="list-style-type: none"> <li>• There are just a few Swedish dwellings at very remote locations that are not connected to the electric grid.</li> <li>• Any house-owner can apply for a grant for installation of solar cells irrespective of if there is a grid connection or not.</li> </ul> <p><b>Promotion of cleaner cooking fuels and clean cook stoves:</b></p> <ul style="list-style-type: none"> <li>• Not applicable, in Sweden we mainly use electricity for cooking</li> </ul> <p><b>Other actions to reduce indoor biomass burning, or to reduce its emissions:</b></p> <ul style="list-style-type: none"> <li>• Municipalities are able to, on the basis of the ordinance (1998:899) on environmentally hazardous activities and health, issue regulations for biomass burning.</li> <li>• Municipalities are able to, on the basis of the Environmental Code (1998:808), require that private property owners take action to limit disturbance from their biomass burning.</li> <li>• The ecolabels “the Swan” (the official Nordic Ecolabel) and P-Mark have different requirements for boilers, including emissions of dust.</li> </ul> <p>There have been national and local campaigns with information on how to best to burn biomass in stoves and boilers.</p>
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