

Regulating air quality in Thailand – a review of policies



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Key messages :

- In the past, Thailand has successfully taken steps to tackle air pollution. Stakeholder collaboration to address the issue, coordinated by an overarching agency, could lead to further successes.
- Thailand's air quality has seen some improvements over the last decade, with reductions of certain major pollutants. Others, however, still exceed the World Health Organization's (WHO) guideline standards.
- Thailand's national air quality standards remain weaker than the WHO's guideline levels, which has implications for the health of the population. Inadequate monitoring means that the pollution problem is likely even more widespread than indicated.
- Thailand's international climate change commitments could be better integrated with national objectives for reducing air pollution, in order to capitalize on co-benefits.
- The major barriers to policy implementation include a highly sectoral view of sources of air pollution; lack of data; conflict between the drive for economic growth and environmental protection goals; and a reactive approach in addressing air quality issues.
- Public awareness regarding certain air pollutants and their health impacts is increasing, but this awareness is seasonal, in line with months of poor air, and needs to be increased.

This brief is based on an SEI working paper in which a full reference list can be found:

Nikam, J., Archer, D. and Nopsert, C. (2021). *Air Quality in Thailand: Understanding the regulatory context*. SEI Working Paper. Stockholm Environment Institute. <https://www.sei.org/publications/air-quality-thailand-regulatory-context/>

Introduction

Poor air quality is a major problem across Thailand. While a number of Plans and Acts relating to the control of air quality and emissions exist, the measures taken are often reactive and major gaps in enforcement remain.

In this brief, we outline the key findings of a recent working paper in which we presented a comprehensive desk review of Thailand's existing institutional mechanisms related to air quality, mapping out their interlinkages and the remaining gaps. This paper was intended to inform further practical research relating to air quality in Bangkok, and assist in identifying entry points for policy recommendations.

The concentration and type of air pollutants, and therefore the overall air quality, depend on multiple factors, such as the pollution source, weather and human activities in a specific region. For example, northern Thailand faces high levels of particulate matter and volatile organic compounds (VOCs) during the dry season, when wildfires are common and agricultural burning takes place, while Rayong's industrial zones experience high levels of VOCs year-round, due to the chemical and industrial activities which occur there.

IMAGE (ABOVE): Traffic at night, Bangkok
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Figure 1. Policy interconnections

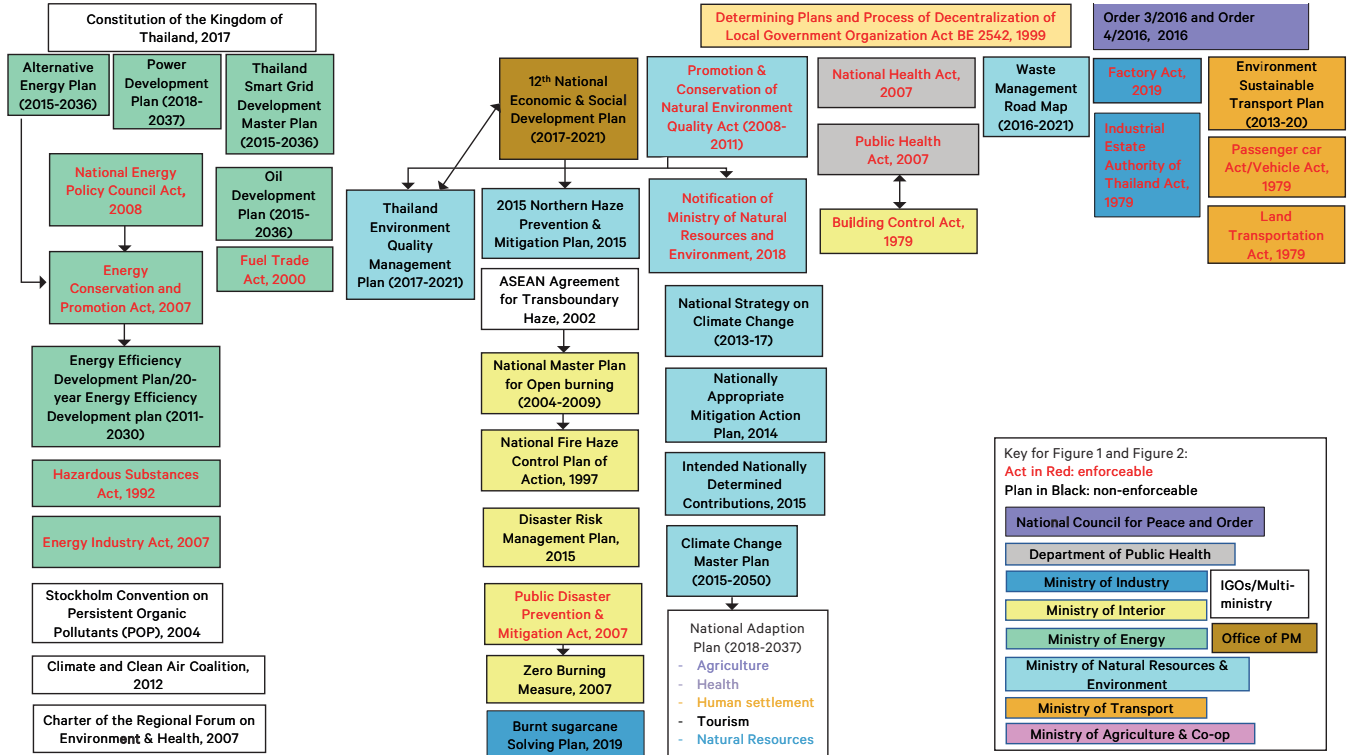


Figure 2. Policy mapping for different air pollution sources

Source of air pollutants	Plans	Legislation	Over-arching / multi-sectoral
Energy	Power Development Plan (2018-2037) Thailand Smart Grid Development Master Plan (2015-2036) Oil Development Plan (2015-2036) Alternative Energy Plan (2015-2036) Energy Efficiency Development Plan/20-year Energy Efficiency Development plan (2011-2030)	Fuel Trade Act, 2000 Energy Conservation and Promotion Act, 2007 National Energy Policy Council Act, 2008	Public Disaster Prevention & Mitigation Act, 2007 Disaster Risk Management Plan, 2015 Building Control Act, 1979 National Health Act, 2007 Public Health Act, 2007
Industry	Burnt Sugarcane Solving Plan, 2019	Energy Industry Act, 2007 Factory Act, 2019 Industrial Estate Authority of Thailand Act, 1979 Zero Burning Measure, 2007	12 th National Economic & Social Development Plan (2017-2021) ASEAN Agreement for Transboundary Haze, 2002 Hazardous Substances Act, 1992
Forestry and agriculture	National Master Plan for Open Burning (2004-2009) National Fire Haze Control Plan of Action, 1997 2015 Northern Haze Prevention & Mitigation Plan, 2015	Passenger car Act/Vehicle Act, 1979 Land Transportation Act, 1979	Determining Plans and Process of Decentralization of Local Government Organization Act BE 2542, 1999 Climate Change Master Plan (2015-2050) Climate and Clean Air Coalition, 2012
Transport	Environment Sustainable Transport Plan (2013)		National Adaption Plan (2018-2037) - Agriculture - Health - Human settlement - Tourism - Natural Resources
Waste management	Waste Management Road Map (2016-2021)		Intended Nationally Determined Contributions, 2015 Nationally Appropriate Mitigation Action Plan, 2014
Environment protection	Thailand Environment Quality Management Plan (2017-2021) National Strategy on Climate Change (2013-17) Constitution of the Kingdom of Thailand, 2017	Promotion & Conservation of Natural Environment Quality Act (2008-2011) Notification of Ministry of Natural Resource and Environment, 2018	Charter of the regional Forum on Environment & Health, 2007 Stockholm Convention on Persistent Organic Pollutants (POP), 2004

Thailand's standards for air pollutants remain at interim target levels, which are less stringent than the WHO guideline levels. For example, the Thai interim standard for daily levels of PM_{2.5} is 50 µg/m³, compared to the WHO guideline of 25 µg/m³; for PM₁₀, the interim standard is 120 µg/m³, while the WHO guideline is 50 µg/m³. The country's major sources of air pollution are vehicular exhaust, industrial emissions, crop burning, transboundary haze and electricity generation.

Policy mapping: key acts and policies

The majority of the Acts and Plans that relate directly to air quality fall under one of two ministries. Those which regulate emissions arising from power generation are the responsibility of the Ministry of Energy, while those with a broader scope, from climate change mitigation and waste management, to environmental quality standards, are under the purview of the Ministry of Natural Resources and the Environment (MONRE). MONRE also manages Thailand's international climate change commitments. Other

Table 1. Barriers to and opportunities for policy enforcement

Air pollution source	Barriers to enforcement	Opportunities for enforcement
Agriculture and open burning, and energy	Insufficient air quality monitoring.	Increase the number of air quality monitoring stations.
	Lack of public awareness regarding health impacts of haze and open burning.	Increase awareness and technical capacity of the locals.
	Insufficient measures of controlling open burning.	Implement and enforce open burning control measures; develop monitoring and early warning systems. Construct guidelines and rules for controlling open burning.
	Slow significant progress to increase energy efficiency.	Use greener sources of electricity generation (e.g. prioritization of renewables in 2018 Power Development Plan).
	The majority of Thailand's farmlands are leased, leading to a lack of both incentives for investment in alternative farming practices and protection of farmers' rights on financial returns. This leads to a lack of will and capacity to invest in alternative waste management practices.	Farming is dominated by the older generation; an increase in farmers' incomes would encourage the younger generation, who may have more innovative residue management practices, to be involved.
	Inadequate and inefficiently implemented policies.	Integrate air pollution policies with other national policies for larger impact.
Vehicular Emissions	Tax on older vehicles is lower than new ones, which promotes the usage of older, inefficient cars.	Enforce policy on vehicular age limit; use economic incentive measures to promote buying newer, more efficient cars.
	Urban areas are inadequately planned to promote mass transit and active transport.	Promote mixed use of land to reduce traveling time, cars that cause less pollution (e.g. electric cars), and alternative forms of transportation (e.g. public transport, biking and walking).
	The process of upgrading to EURO 5/6 standard is moving slowly. EURO 5 was originally scheduled for 2020 but has now been pushed back to 2024.	Support production of diesel opacity meters to reduce private car production cost; use concrete control measures (e.g. linking results from monitoring to determine the active lifespan of vehicles).
Industrial emissions	Lack of communication and public participation in the decision-making processes of mega construction development projects, resulting in limited and uneven awareness amongst local community.	Decentralize state's authority and powers; provide greater power for local communities in the decision-making process.
	Policy focus on higher economic growth, leading to expansions of petrochemical plants, mostly in Rayong province and other special economic zones.	Engage private sector groups in policymaking processes to ensure their concerns are sufficiently accounted for.
	Shortage of industrial emissions data collection or measurement due to lack adequate air quality planning.	Regularly update and publish information on air quality conditions on an open-sourced website, through a Pollutant Release and Transfer Register (PRTR) process; collect data from stakeholders, rather than local leaders, for more accurate and community-centric information.
	Inadequate standardized monitoring measures.	Add new air quality parameters, including mercury and black carbon.
	Lack of public participation in the inspection and monitoring of industrial air emissions due to lack of awareness and available data.	Enable public access to information about emissions through a PRTR process.
General	No clear enforcement of environmental policies and insufficient number of governmental organizations involved in air pollution mitigation. This is due to the minimal budget allocated to air quality policies, unlike that provided for policies which aid economic growth.	Establish a single organization (e.g. a Thai Environmental Protection Agency) authorized to take concrete measures on the national level and mandated directly by the Parliament. This would strengthen the current ineffective environmental protection infrastructure.
	No updated air quality standards (last updated in 2010).	Include air quality co-benefits in the design and evaluation of climate policy; this would enhance its social outcomes. The PCD is investigating changing the daily average PM _{2.5} interim standard from 50 to 37.5 µg/m ³ .
	Lack of public engagement in identifying solutions due to the lack of awareness-raising activities on the adverse impact of air pollution. Only a very small group of people are aware of the severe harm caused by air pollution.	Create a policy framework for knowledge-sharing and the implementation of environmental programs.
	Shortage of knowledge of the connection between environmental quality and human health impacts.	
	Air quality monitoring and reporting is not yet comprehensive, with limited monitoring sites and a lack of any framework that enables multi-sectoral collaboration.	Provide more real-time air quality monitoring systems. A new SERVIR Mekong Air Quality Tool co-developed with the PCD will enable forecasting of air quality using satellite data.
	Inadequate information linking environmental situations with health problems.	

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relevant ministries include the Ministry of Industry, with regard to industrial emissions, and the Ministry of Interior, which is relevant to disaster prevention and mitigation (including fire), town and country planning, and the enforcement of regulations, including at the level of provincial and local governments.

The policies mentioned in Figure 1 either address air quality directly or have a component that relates to the issue. As demonstrated in Figure 1, different policies are under the jurisdiction of different ministries, which leads to a siloed approach to policymaking, as interaction between ministries is minimal and each is responsible only for its priority area. This results in very specific policies that focus on a particular air pollutant or source, and also limits enforcement, as other ministries or agencies cannot act on pollutant sources outside their remit. These factors can lead to policies with a more limited overall impact.

The Pollution Control Department (PCD) conducts Thailand's official air quality monitoring, functioning primarily as an advisory body and setting national standards. It can alert the relevant ministry in the case of an air pollution episode, but has limited enforcement powers. It also works with provincial governments during times of peak pollution to help them find measures for controlling emissions.

Two policy mapping diagrams

Figure 1 maps some of the interconnections between the Plans and policies relevant to air pollution, distinguishing between those that are directly enforceable (red text) and those that are Plans (black text). The Constitution of the Kingdom of Thailand, the 1999 Local Government Organization Act and the 2016 Orders are overarching laws which determine, for instance, the structures of sub-national government; the remainder of the Acts and Plans fall under the remit of specific ministries. The diagram illustrates how many of the policies stand independently and are specific to certain sources of pollutants. The flow of the arrows depicts the flow of implementing authority or influence.

Barriers to and opportunities for enforcement

As seen in Figures 1 and 2, most air quality policies are essentially implemented in silos by their respective ministries, limiting enforcement and impact. Other major barriers include a lack of sufficient and accurate air quality data (the PCD has 70 air monitoring stations nationally and large sections of the country are not covered), and conflict between the government's drive for economic growth and the need to protect the environment and human health. Table 1 summarizes information about these barriers and suggests ways of overcoming them.

Conclusion: towards clean air in Thailand

There are a number of barriers that need to be addressed in order to facilitate effective, long-term improvements in Thailand's air quality. Since the issue of air quality involves various sources of pollutants from different sectors, a national regulatory body with the overarching power to address all types of air pollutants and coordinate the action of different ministries is needed. Positive steps have been taken towards creating a stronger overarching air quality policy, with groups such as the Thailand Clean Air Network and the Thai Chamber of Commerce submitting draft Clean Air Acts to Parliament for debate. While Thailand does not lack legislation concerning air pollution, ineffective implementation remains the key barrier to measures that put public health first.
