# Chapter 14
# Collaboration Mapping in Sustainable Development: A Case Study from Haze in Chiang Mai


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**Abstract** A sustainable city does not come from only high technological development in many cases; an area based sustainable development was found in the city with good collaboration between stakeholder within the city. Taken from a case study of haze pollution in Chiang Mai, the government has been dealing with haze in a temporary and short-term manner for over a decade, rather than implementing sustainable solutions. The reoccurrence of haze has caused conflict between the local government and its citizen. The new socially organized group "Breath Council" has sparked a new light and shifted the power to solve haze in Chiang Mai. This is a new space for collaboration and participation between previously conflicted actors. This paper depicts implementing a social collaboration strategy in the institution/relationship arrangement toward sustainable development.

**Keywords** Haze pollution · Sustainable city · Stakeholder analysis · Chiang Mai

## 14.1 Introduction

A sustainable city does not come from only high technological development in many cases; an area-based sustainable development was found in the city with good collaboration between stakeholders within the city (Leeb et al. 2014). Chiang Mai has been the second most important city in Thailand, not in terms of population but in politics, social, economic, and geographical location as the center for trade in the north of Thailand. The changes occurred in the city as its population increases through growth and migration. New buildings and housings are required to provide living spaces for the people. Influence from international tourists and globalization also changes the businesses, and interaction between people has changed over time. The urban area in Chiang Mai has grown from 10 square kilometers in 1952 to 137 square kilometers in 2009 (Sangawongse 2009). Foreigners have been flooding to Chiang Mai city for visiting, long term stay, expatriate workers, missionary and NGO workers. In 2014

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there were more than 30,000 foreign retirees who live in Chiang Mai (Nation TV 2018).

Chiangmai city has been confronting a major challenge toward city sustainability, the haze pollution issue during the dry season from February-April before the monsoon season starts, and the rain washed down the dust and smoke particles. Haze has been recognized as a seasonal phenomenon for more than 200 years since its first record was 1891 (McCarthy 1900). The fire was commonly used in agricultural practice in the highland due to its efficiency and lack of machinery. A rotational farming practice that requires burning is common in highland agriculture since the first settlement in the highland (Kunstadter et al. 1978). Air pollution itself is progressing based on human activity or development, i.e., globalization (modern trade), urbanization, and climate change, and the perception of city citizens themself due to the better information technology (Pardthaisong et al. 2018).

The combination of air pollution sources, geographical terrain, and weather conditions in Northern Thailand resulted in the haze. During the dry season, dust and smoke particles accumulate over the ground when the cooler air suppresses dust and smoke particles' dispersion over the ground, reducing visibility and causing health impact. Such a phenomenon is commonly known as "Haze."

Haze had been recognized as air pollution at the national level in 1997 from Indonesia's trans-boundary haze impact. Chiang Mai has been recognized as a disaster zone from the high concentration level of PM10 above the legal limit at 120 μg per cubic meter from 21 March to 11 April 2006 (Simachaya 2007). In 2008 the cabinet authorized Provincial Haze Command Center to mitigate haze's impact at the provincial level (The Secretariat of the Cabinet 2008). The reoccurrence of haze has initiated a negative dilemma in the city of Chiang Mai, what if the situation does not improve, urban decay will happen, e.g., no tourists, investors move out, ex-pats move out, property value reduces, degradation of the environment and health of the people, etc.

The haze issue has been classified as a complex problem involving multi stakeholders at multilevel (Blake et al. 2019). The main source of haze in Northern Thailand is human activities, whether it is a forest fire, rotational farming, or cash crops. To strategically resolve this problem, one key strategic goal is to "improve social collaboration." This paper depicts implementing a social collaboration strategy-institution/relationship arrangement, toward sustainable development.

## 14.2 Material and Methodology

The study reviewed secondary data on policy, plans, and decisions made by government authorities. This study used primary data and secondary data collected from books, news articles, government decisions, official announcements, papers, journals, and websites. Primary data were collected from an interview with representatives from government officials, rural populations, urban populations, private sectors, and non-government organizations.

The methodology adopted for this study Stakeholder Analysis and mapping to understand (1) social collaboration, (2) balance of power, (3) deliberative dialogues, and (4) complex arrangement in complex society and issue.

## 14.3 Stakeholders Analysis

### *14.3.1 Stakeholder Identification*

In the stakeholder mapping process, haze in Chiang Mai Province is viewed as a system, and the stakeholders are people who matter to a system (Mayers 2005). The process focused on the haze pollution supply chain and not on the related supply chain; hence, it does not capture other supply-chains related to haze, such as forest fire and forest land clearing for food scavenging. The purpose of this exercise is to illustrate and describe the interest, characteristics, and circumstances of each stakeholder, their power, and roles involved in policy formulation and decision-making related to haze pollution in Chiang Mai Province. A simplified illustration of haze sources, impact, and government measures is shown in Fig. 14.1. The government has been focusing on reducing forest fire burning rather than the long-term program to improve the economy in rural and highland communities (The Secretariat of the Cabinet 2008; Kamton et al. 2019).

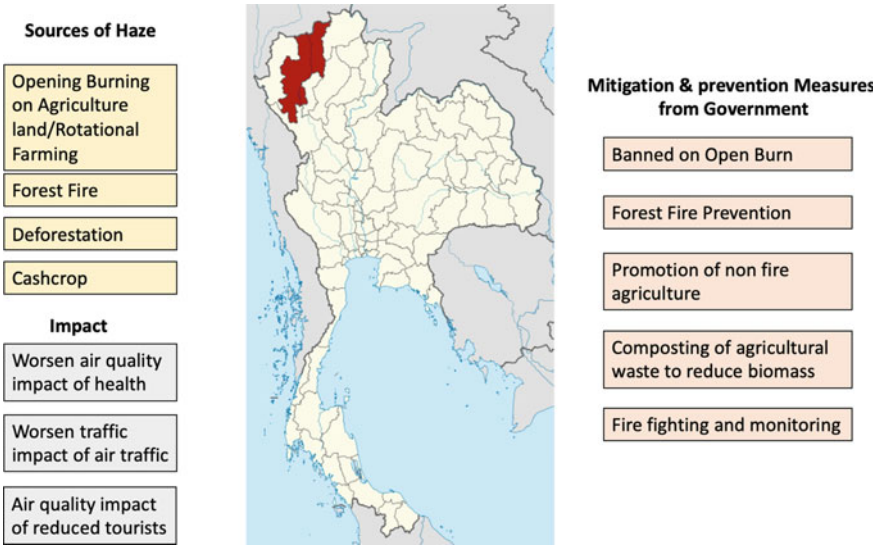


**Fig. 14.1** Sources, impact and mitigation & prevention measure from government related to haze. Source: Map of Chiang Mai from NordNordWest

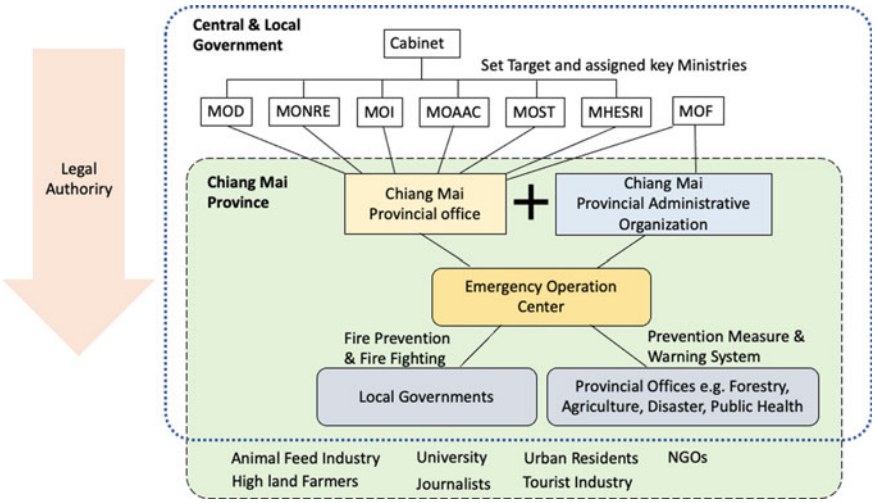


**Fig. 14.2** Stakeholder relations between government authorities and Chiang Mai Province in the event of haze

The relationship between stakeholders is shown in Fig. 14.2. The provincial office has a temporary authority during haze (January–May) to manage all parties involved in haze pollution from fire management to health impact mitigation of the National Disaster Prevention and Mitigation Act (MOI 2007).

Despite a clear government policy and plan to reduce haze's impact in northern Thailand since 2008, the problem persists through to 2020, when it has reached its highest PM2.5 concentration level recorded (Prachachart 2020). Many sectors are involved with the haze government sector, private sector, academic sector, general public, non-governmental organization, and media sector. The challenge remains in an opportunity for the community/village level to participate with a higher level in the decision-making process related to haze (Pardthaisong et al. 2018). The worsening situation of haze has the highest impact on tourism and related industries in Chiang Mai, with a sharp drop of tourists visiting Chiang Mai in the dry season. The people of Chiang Mai had been come together through "Chiang Mai Breath Council" or "Sapa Lom Hai Jai" to engage with the Provincial Government and assist them (Breath Council 2021). This paper aims to study stakeholder interaction through stakeholder mapping and stakeholder analysis between different haze pollution groups. The outcome of people engagement in the process to tackle haze, reducing conflict between the Provincial Government and the citizen of Chiang Mai.

The supply chain of haze in Chiang Mai Province is related to 11 key stakeholder groups. The stakeholder is divided into 3 groups, primary direct interest (Central Government, Local Government, Animal Feed Industry, Forest Fire Management agencies, and High Land Farmers), primary indirect interest (Parliament, University, NGOs, Urban Residents, Journalists, and Tourist Industry), and secondary interest (Global Community). The groups with primary interest are those with decision

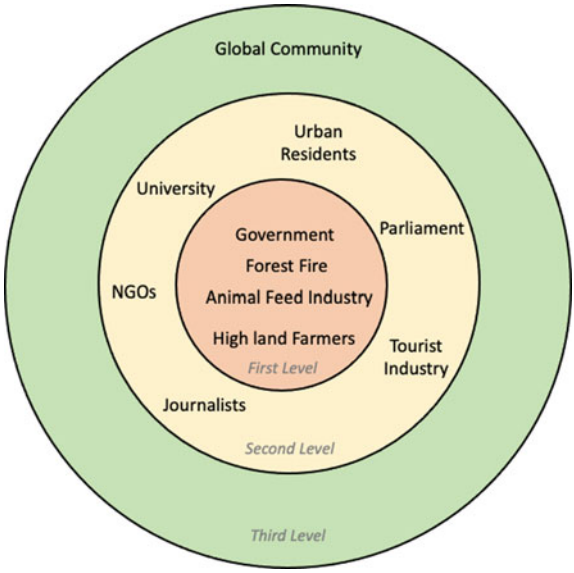


**Fig. 14.3** Stakeholder map illustrating different level of involvement in haze pollution

making authorities in contributing to the source of haze or prevention and mitigation of haze. They would have high interest, high importance, and a high level of influence in the haze decision-making process. This group would also be identified as the core group in Fig. 14.3. The group with primary indirect interest is the group with high interest, medium importance, and high-medium influence. They are not identified as the key actor, but they are the people who experience the impact of haze.

The second group is the group with primary indirect, where they neither contribute to the sources or directly involved with prevention or mitigation of haze, but they are suffering from the impact of haze. Their interest is high, with high-medium importance but a low level of influence. They are identified as having second level of influence on haze in Fig. 14.3.

The third group is the second group with a low level of interest, low level of importance, and low influence level. They neither contribute directly not experience haze first handed. They are identified in the third level of influence. They may pressure the government in the decision-making process, but their influence is still on a low level.

The main decision-maker for haze policy in Thailand is the Cabinet, where it approved policy guidelines and a national plan to mitigate haze pollution. In comparison, the parliament allocates budget involved in preventing and mitigating haze pollution. An average of ten million tourists visits Chiang Mai from 2016 to 2019, except 2020, with an outbreak of COVID-19 (MOTS 2021). The tourism-related sector largely drives the city economy; the onset of haze pollution during the summer months greatly affects the tourist industry; a loss of 4000 million Thai Baht was estimated (BOT 2020). The tourism sector was identified separately from other private sectors that may not suffer directly.

### 14.3.2 Stakeholder Power Analysis

To further analyse the influence of each stakeholde and salience based on the stakeholder posessing one of these three attributes: power, legitimacy and urgency (Mitchell et al. 1997). In the case of haze pollution the attributes are define differently from business manamgent perspective. Power is the an attribute related to being able to make decision and changes on their own and highly influence the ourcome of their decision. Legitimacy is an attribute that allow its owner the right to make decision on legal basis. And urgency is an attribute that related to those needed the change urgently. The recurrence of haze pollution in Chiang Mai in the past 14 years has shown that the key decision maker has both power and legitimacy but lacking urgency to prevent and mitigate haze in a sustainable manners. The policy has been based on short term management during the dry season.

Another key agency is the animal feed industry that has been promoting and financing animal feed corn in the highland that caused deforetation, and fire was use to clear the land as well as burn the agricultural waste (Blake et al. 2019). The majoritry of animal feed corn produced in Thailand in 2015 was from Northern Thailand or 3.29 million tons of the total 4.7 million tons produced. In case of Mae Cham 65% of all household are inolved in animal feed corn supply chin one way or antoher (Watcharasakonpong et al. 2016). Therefore, animal feed corn supply chain is one of the key actor that contributed to haze in northern Thailand from it fired based naturn of cultivating animal feed corn in the highland. The industry is strong supply chain with repesenative from community/village level to policy makers. The changes in animal feed industry will have strong influence on cash crop plantation in the highland land, where it is mostly fired based. Univerity or academic sector has knowledge legitimary and urgency to prevent and mitigate haze, but it holds no power.

Tourist industry has a limited power to request changes from the govenrment as it has a high contribution to the economy of the province, but it holds no legitimacy to make decision. Other stakeholders; including urban resident, highland farmers, journalists, and NGOs; suffer from haze are classified as having urgency by no power nor legitimacy to make decision that influence haze as shown in Fig. 14.4.

### 14.3.3 Stakeholder Deliberative Dialogue

In the stakeholder map (Fig. 14.5), those in the dominant section (high interest and high power) will be able to make decisions that are critical to haze in Chiang Mai. Nevertheless, in the case of haze in Chiang Mai, there is no dominant agency. The government has taken haze as a seasonal issue rather than a top priority with high interest. The policy issued only applies to short-term solutions such as a ban on open burning and limited prosecuted cases. Therefore, the government, both central and local, animal feed industry and parliament are placed in the section with high power

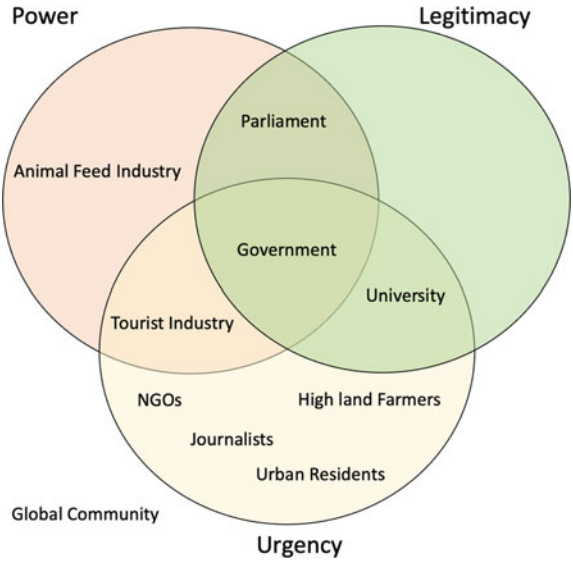


**Fig. 14.4** A salience diagram of stakeholder involved in haze pollution in Chiang Mai

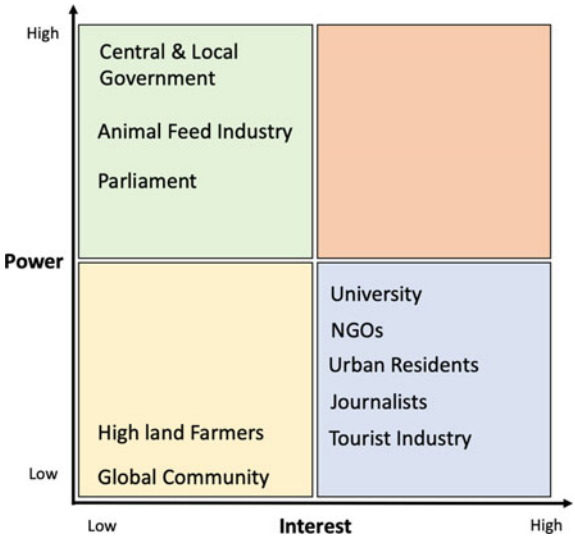


**Fig. 14.5** Stakeholder map for haze in Chiang Mai prior to 2020

but low interest to sustainably reduce the occurrence and severity of haze in Chiang Mai. Other groups; university, NGOs, urban residents, journalists, tourist industry and are those with high interest to reduce haze pollution. However, the highland farmers are with low interest in haze and low power to reduce haze due to their limited production resources. The global community is also classified in the same quadrat as neither power nor interest to reduce haze.

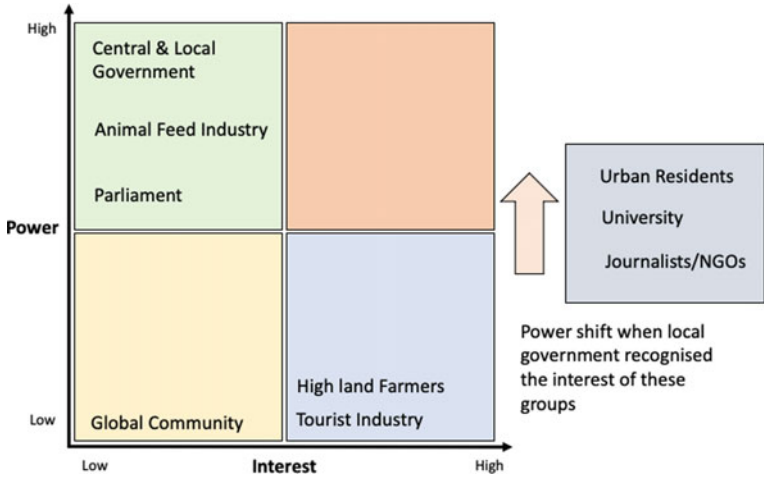


**Fig. 14.6** Stakeholder map for haze in Chiang Mai after 2020

In 2019, a group of non-governmental organizations (NGOs), urban citizens, private sectors, and the academic sector came together to form "Breath Council" or "Sapa Lom Hai Jai" in Chiang Mai to tackle haze from the citizen perspective. The Breath Council's objective is to sustainably reduce air pollution in Chiang Mai for better air quality (Breath Council 2021). The Breath Council was appointed to become a Committee member to prevent and solve haze problem integrated and participatory (Chiang Mai News 2020). The Committee allows participation from civil society, also appoint several working groups to work towards a long-term goal, such as the rural working group, the urban working group, and the academic support group (Chiang Mai Province 2020).

The dialogues between civil society groups represented through the Breath Council adjusted the stakeholder's power level from Fig. 14.5 to Fig. 14.6 for urban residents, universities, and Journalists/NGOs. The participation of civil society groups in the "Committee to prevent and solve haze problem integrated and participatory" has reduced the conflict between local government and urban citizens that has been an on-going issue for several years (BOT 2020).

## 14.4 Discussion

### *14.4.1 Sustainable City is the Space for Interaction and Collaboration*

In Chiang Mai's case, the main actors and institutions that influence changes are the central government, local government, private sectors, and local people. The central

government played a key role in large-scale projects in the city that enables economic growth, while the private hold a key role in capital accumulation in Chiang Mai. In terms of haze pollution, another key sector is the academic sector (Pardthaisong et al. 2018). Academic research and experts had been assisting the government in shaping policy and the city expands to accommodate the population increase as well as others who move to Chiang Mai for employment and business opportunities. The local residents of Chiang Mai also play a role in shaping the city's space through their social movements. The urbanization process of the city has resulted in not only changes in land use, economic growth, but also social urbanization. There were some projects that were opposed by the local residents due to environmental degradation, and some projects were against local traditions or "Kud" (Charoenmuang 2007). Especially projects that have been designing with insufficient public participation and caused environmental degradation. Therefore, the local residents have organized themselves into groups to contest with the central government in shaping the growth of Chiang Mai, especially during 1997–2008 (Prakasvuthisarn 2019). Similar to the case haze, when civil society organized themselves and represented through "Breath Council" as a means to the conflict resolution between civil society and government. Social collaboration created a new space for the city to work together for a livable and sustainable city.

The Breath Council was a newly constructed civil society group in 2019. The strategy of the Breath Council is different from convention NGOs. It uses knowledge and facts to negotiate with the government instead of complaining about the situation that eventually leads to conflicts. It offers to work with the government constructively rather than criticizing the government. The Breath Council also provides much-needed assistance to the government through funding from civil society donations (Breath Council 2021). The Breath Council has been the spokesman for the people. The Breath Council is financially independent, which allows the council to represent the people's opinion and persuade the government to tackle haze differently. Hence, the factors critical to social collaboration towards sustainable development in Chiang Mai are (1) positive engagement with the government (2) using knowledge and facts to assist the government, and (3) Financially independent and do not rely on the government budget.

## 14.5 Conclusion

The Thai government has recognized that public opinion and participation are importing the planning and policy decision-making. Limited public involvement in policy decision-making, while haze has been reoccurring annual for the past 15 years, which leads to conflict been residents and the government. The social organization of a new public group that uses Knowledge to negotiate and assist the government in dealing with haze has been a successful strategy for participation. Engagement based on Knowledge is much more powerful than the public's complaints and requests, leading to conflict. The power of negotiation and contestation requires Knowledge

for successful engagement. Hence, Sustainable cities need active participation with good Knowledge to engage in the city's activity.

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