Management of smog haze affecting health

1. Background

Smog haze has had wide-ranging health, economic and social impacts over a decade or so. They are caused by a number of factors, including burning of forest and agricultural land and dust emissions from urban and industrial areas. Prevention and solution are, therefore, complex challenges that require collective social efforts. The networks from the people, public and academic sectors as well as other concerned bodies have joined hands and come up with a proposal to the Organizing Committee of the National Health Assembly on the need to develop a public policy. In this connection the 5th National Health Assembly in 2012 adopted the resolution on 20 December 2012 and submitted it to the National Health Commission (NHC) for approval on 25 January 2013. The commission then submitted it to the cabinet which endorsed it on 19 February 2013.

Efforts to drive forward actions to turn the health-affecting smog haze issue into a public policy have entailed certain change of decision-making power about the control, promotion and support of new processes that can solve the problem with greater efficiency than the existing legal provisions and policy. This is an important success story about the development of the public policy by the Thai society. Yet, in the policy implementation during the last three years or so it is found that while some issues have seen much progress, others still lag behind. Thus, another effort has been made to review the resolution, taking into account the new conditions, context and situation that have arisen.

2. Situation, severity, and impact

For nearly 10 years, since 2007, during the dry season from February to April, the upper northern region of Thailand has constantly seen smog haze. According to the information of the Department of Pollution Control, the amount of particulates or PM10 exceeded the standard level of 120 micrograms per cubic meter in every area every year. The province with the most severe problem is Mae Hong Son with a PM10 of 519, followed by Chiang Rai and Chiang Mai respectively. The incident usually occurs in March every year.

Province	No. of stations	No. of days with PM10 exceeding the standard (day)									Highest PM10 in 8 years
		2007	2008	2009	2010	2011	2012	2013	2014	2015	
Chiang Mai	3	35	8	21	22	0	17	24	20	17	383
Chiang Rai	1	16	4	27	43	2	30	30	20	21	471
Lamphun	1	-	-	18	40	0	22	12	7	8	350
Mae Hong Son	1	28	4	33	37	2	22	38	23	22	519

Lampang	4	37	25	36	30	3	26	28	35	32	315
Phayao	1	-	-	18	33	5	22	17	23	17	283
Nan	1	-	-	16	24	0	16	23	22	11	270
Phrae	1	-	-	5	0	1	20	27	23	11	256

The measurement of the air quality and particulates in 8 upper northern provinces and Chiang Mai clearly reveals the on-going crisis of smog haze and the possibility of increasing severity with health, social, economic and environmental impacts.

Health impacts: In the 8 upper northern provinces from 5 January to 3 May 2014, out of a population of about six million nearly one million suffered from eye infection, cardiovascular, and respiratory diseases as well as dermatitis.

Table showing the number of patients suffering from diseases most probably caused by smog hazes from 5 January to May 2014

Province	eye infection disease	cardiovascular disease	respiratory disease	dermatitis	Total
Chiang Mai	5,969	126,464	81,575	10,941	224,949
Lamphun	2,810	60,073	45,582	3,930	112,395
Lampang	4,993	87,781	62,225	5,325	160,324
Mae Hong Son	1,248	16,896	16,521	1,861	36,526
Chiang Rai	6,095	91,038	80,154	7,033	184,320
Phayao	4,397	36,778	43,881	3,605	88,661
Phrae	1,670	43,223	21,416	2,305	68,614
Nan	3,015	45,301	27,006	2,308	77,630

In addition, forest fires and smog haze have other extensive impacts. There are *impacts on economy and tourism* causing much revenue loss. There are *impacts on the eco-system*. In Thailand, a country with a great diversity of forests, some ecosystems do not want fire, while others do. When the management shows a lack of understanding of the complexity of the issue and resorts to using the same policy and measure everywhere, the ability to deal with forest fires diminishes. It is a risk factor in the accumulation of fuel leading to big forest fires and causing a distortion of the forest structure in the future. There are *impacts on marginal people leading to social conflicts*. With a more complex livelihood and difference in the understanding of various social groups, when a problematic incident occurs, people tend to blame it on others, leading to social conflicts. These conflicts may not always be violent, but they account for the inability to foster cooperation and joint responsibility to tackle the issue.

3. Constraints in tackling the problem

3.1 Policy and mechanisms on management of smog haze and forest fires: Today efforts have been made to improve the problem-solving structure. The National Forest Fire and Haze Management Committee, which was the structure to solve the problem, was terminated on 30 September 2014. In its place, a 2016 action plan is

used as the structure to prevent and solve haze problems in the northern region, the objectives being to prevent and respond to any problematic situation in a speedy manner by integrating the work of agencies from the public and people sectors under a single command management. At the national level, a national command center to solve haze problems in the northern region will be set up, with the Minister of Natural Resources and Environment acting as the commander. There will also be a regional-level command center under the Commander of the 3rd Army Area, while for each of the nine northern provinces the provincial governor will act as commander.

However, at the local level there are other agencies carrying out work under different their own jurisdiction. For instance, the Department of National Parks takes care of forest management. The Department of Highways is responsible for roadside safety. The Ministry of Agriculture and Cooperatives oversees such activities as the burning in farmland, while the task of the provincial authorities is to integrate the work and develop local action plans including prevention and contingency plans to respond to the problem as fast and as efficient as possible. However, there exist a number of constraints. These plans are designed to respond to the problem only during the haze crisis. There is no mechanism for long-term solutions that will allow representatives of community organizations and people network to participate. As a result, the problem-solving process is not linked to the practice on the ground. Most activities tend to lack systematic support from the community, especially those that are close to the forests, although this aspect seems to be one of the most important conditions for effective management of smog haze and forest fires.

Constraints on the policies and laws related to smog haze and forest fires include the policy on rights promotion and the people sector participation in the management of natural resources and environment, policy on supporting and creating incentives for the farmers to change from monoculture involving the burning of agricultural left-overs to the kind of agriculture involving less burning and conducive to sustainable livelihood and environmental management. There are also constraints on budgetary regulations which do not cover the issue under discussion. The policies and laws concerned have not yet been developed or revised to have new conditions which appropriate to solve specific problems such as management of smog hazes and forest fires.

There are constraints on the role and duty of local government organizations. So far, the Royal Forest Department has transferred forest fire management activities to 870 local government organizations. These local government organizations, regardless of whether or not they have had the responsibilities transferred from other agencies, cannot do their work effectively. The structure of their organization has nothing directly to do with natural resources or forest fire control. On top of that, they are facing shortage of personnel and budget. Their jurisdiction, rights and duties in this matter are not clearly defined. Yet, many areas have come up with local by-laws that enable them to manage natural resources and forest fires. It is found that local by-laws is an important condition able to strengthen the work of local communities in forest fire management in a concrete manner. For example, Tanua Sub-district Administrative Organization issued a regulation on the management of natural resources and environment in 2011, while Sub-district Administrative Organization of Nakian, Nakoi District, came up with a regulation on the management of forest fires and hazes in 2013, and another of Mae Daed Sub-district issued a regulation on the support of participatory management of natural resources and environment in 2014. However, all these by-laws and regulations cannot be further disseminated for lack of supporting process and measures.

In the integration of activities carried out by the upper northern provinces, a proposal was put forward to put in place a mechanism at district level serving as a local integrating body. Nevertheless, in the Thai bureaucratic system some agencies report to the central authorities, while several other local agencies are outside the authority of district officers. Thus, it is not always feasible to coordinate or issue orders based on the local mechanism. With regard to the constraint on the bureaucratic structure, it is also found that many existing public organizations, NGOs, and academic networks, despite being well-versed in problem-solving, do not have a clear mechanism that enables them to work together or link the community work to the government agencies in a systematic manner.

3.2 Scaling up the level of knowledge in aspect of management: Today it is found that the people sector, academic agencies, and the public sector have better knowledge of management of resources in urban and agricultural areas. For example, they have better knowledge of how to turn agricultural left-overs into composts, whether aerobic or anaerobic, charcoals, and animal feeds. They also have knowledge about forest fire fighting, various methods of forest fire prevention, fuel reduction at the beginning of the dry season, management of the burning period, integrated organization of the area concerned, development of rules, and regulations and sub-dsirict bylaws based on the participation of the community and government agencies concerned to ensure that such rules and regulations are observed and not just pieces of paper. All these different bodies of knowledge have not yet been made publicly known or communicated to the target groups. Nor are they proactively used to create a new and better understanding of the situation or turned into tools leading to concrete implementation as widely as should be, appropriate policy formulation and legal provisions.

In this regard, the experiences of various communities reflect the success of knowledge-based forest fire management and cooperation of the area concerned. This is seen in the management of landscape ecology at Doi Inthanon, Chomthong district, Chiang Mai province, that has turned potential conflict into a systemic cooperation. Another example is Tha-Nuea Sub-district, Mae-On district, Chiang Mai province, in which the development of local bylaws on the management of natural resources and environment has led to increased efficiency in the management of forest fires, better use of funds, and a higher quality of life of the community. The community of Ban Sop-Tia, in Chomthong district, Chiang Mai province, is another case in point in which the community is able to apply the knowledge of fuel management to the dry dipterocarp forest scenario. Another example is people in Mae Khan Basin in the hill evergreen forest area forming a network to manage forest fires through prevention, monitoring and putting out fires when they occur.

In addition, it is found that the current surveillance and monitoring system of burning relies exclusively on the hotspot depiction from the satellite. No other information is available, e. g. the real burning areas. This is so despite the fact that there are agencies responsible for information analysis. For example, according to the analysis of the burning areas in ten northern provinces conducted by the *ad hoc* forest fire and haze operation center in collaboration with Geo-informatics and Space Technology Development Agency (GISTDA), real burning areas were 17,058,422 *rai* in 2014 and 18,029,172 *rai* in 2015. However, there is little use of such information in the management. In the meantime, hotspot information is used as the only indicator, something inadequate if one wants to prevent the problem in a comprehensive manner.

3.3 Scaling up the participation level of community organizations and people sector organizations in the management of forest fires and hazes: It is found that today people have become more alert and formed groups. The groups set up mechanisms to deal with forest fires, smoke hazes and manage natural resources and environment at various levels - community, sub-district, basin, district, provincial, and regional. Efforts have also been made to link it to landscape-ecological management, as seen in the Op-Luang National Park, Doi Inthanon and Suthep-Pui Park. There are also a large number of groupings promoted by the public sector and other agencies concerned; they too participate in the work and management of natural resources and forest fires. Some of these groups are networks of volunteers to protect natural resources and environment, citizen volunteer groups to protect forests, community networks for fire management, councils of community organizations at the sub-district level, and so on. These groups, however, do not have mechanisms to strengthen their capability of organizing and managing activities on a regular basis. The people sector does not have mechanisms at a provincial level to coordinate with other community organizations to collectively work, make policy recommendations to the public sector, bring about technical promotion, strengthen the access to rights, or have the power or legal backup in the management of forest fires and resources.

3.4 Participation of people in the urban area and business and tourist industry sectors: It is true that people in the urban area and business operators have begun to better understand and appreciate the importance of supporting the community in the agricultural and forest areas to have the capacity to monitor and reduce forest fires, and some business organizations and the general public have provided budgetary support to various communities. Yet, there is no system in place that does something seriously to raise the level of such support. The current government has a policy to promote and support the business sector to do more corporate social responsibility (CSR). It has come up with the 1st strategic plan to promote corporate social responsibility (2015-2017) which the cabinet approved on 28 April 2015. The idea is to promote corporate social responsibility, urging every sector to develop society and environment and strengthen human security, necessary to drive forward the system that will enable the community to manage the problem in a clear manner. This involves short, medium and long-term measures, e.g. mobilizing funds for the management of immediate fuel reduction and contingency fire-fighting, adjusting the agricultural system to reduce haze incidents, promoting ecotourism to generate greater revenue for the purpose, managing revenue derived from the trading market in the form of community enterprise, and using part of the revenue for development purposes. There will be an evaluation of the effectiveness of forest conservation in various ways, e.g. prevention of forest fire occurrence before the arrival of the dry season, firefighting in the dry season, and post-fire rehabilitation. All this will enable the community to transcend current constraints and become an important mechanism for forest conservation. If the community can overcome the monetary constraint of forest conservation in the earlier phase, in the long run it will be able to properly set the direction and institute efficient management. It will receive cost-effective returns from the richer moisture-providing ecosystem of dry dipterocarp forests, leading to reduced costs and less damages from natural disasters.

At any rate, today there are still constraints on the development of mechanisms of cooperation and coordination to make the system become a reality. There is no information system, reporting, and monitoring to assess how effective the budget spent

on the program is, what changes are seen in the forest ecosystem, and how the action has reduced the impact of smog hazes. The availability of such information will help boost the public sector's confidence and can be used as conditions in the progress report.

4. Reasons for reviewing the NHA resolution on "Management of smog hazes affecting health"

The drive to implement the NHA resolution on " Management of smog hazes affecting health" over time has led to an important lesson that improvement needs to be made to the resolution in order to have in place proper measures and guidelines to solve smog haze and forest fire problems as follows:

1) The lesson from implementing the NHA resolution reveals that there are constraints in the work of each agency which is governed by its jurisdiction and has to respond primarily to the policy of its minister, indicators, legal provisions, and conditions for budget spending.

2) With the fragmented working approach, each agency's framework is concerned with the issue only in parts. Problems will receive attention only when the smog haze crisis is severe, and there lack long-term mechanisms to integrate the work plan.

3) At the moment, attention is paid to problem-solving only when the situation becomes critical. Each agency adopts its own fragmented approach. There is no channel for public participation. The budget allocated to public agencies varies according to their responsibilities, some receiving more than others. The smog haze crisis is a specific issue that needs specific attention. However, when the task is assigned to public agencies, they are dictated by their own policy, law, rules and regulations, and other constraints and act in their own separate ways. Therefore, it is necessary to have in place a mechanism that can integrate the work and can be used as a point of reference for officials and workers at policy and operational levels to work. It is also necessary to have a framework and directive from the highest administration that can be used by various agencies and workers at operational level as conditions to do the work.

Another important constraint of the bureaucratic system in the case of smog haze and forest fires is that the budget administration is not in line with the situation of public disasters, payment, and auditing. A more suitable method needs to be thought out. When the issue relates with the national budgeting and with the authorities responsible for budget auditing, there is a need for a cabinet resolution to pave the way for further changes.

5 Proposal to review the NHA resolutions

1. It is proposed that a committee and a working group be set up. In the original resolution, no clear mention is made for an agency to set up a working group. As a result, no working group has been established. Besides, there is a greater need to integrate activities between agencies concerned to support the participation of the people sector in the issue.

2. It is proposed that the cabinet pass a resolution giving a green light to the Department of Local Administration to establish and support the working group on cooperation to support the department's work.   In the original resolution the Department was not made part of the working group.   The lesson from the

implementation shows that the passage of bylaws on the management of natural resources and environment in relation to forest fires and hazes is a condition that supports efficient management of forest fires by the community. The work cannot always be expanded because of some legal constraints. The proposal is, therefore, made that the Department establish and support the working group on cooperation to support its work as well as those of community organizations and other networks to develop rules, regulations and agreements by the community and bylaws by local organizations concerning the management and prevention of smog hazes.

     3. There is a reason concerning the budget for the management of forest fires and smog hazes. The budget support for the task should be distributed more systematically to community organizations taking care of forest fires. However, as it is, there are problems concerning the budgetary regulations that cause difficulties to the work. It is necessary, therefore, for the agencies concerned to work together to find ways and means to develop and improve budgeting and make it possible to solve the problems of smog hazes and forest fires as set out in the work plan in a timely and cost-effective manner.

6. Issue for consideration by the National Health Assembly

     The specific technical working group has requested the National Health Commission to consider reviewing the resolution of the 5th National Health Assembly on "Management of smog hazes affecting health" to make it in line with the government's main strategic plan and facilitate the cooperation with the agencies concerned in a more concrete manner.

7. References

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