National ambient air quality standardization in Indonesia: A mini-review and critical mind map

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Abstract. PP RI No. 41 1999 has been the only legitimate policy of national ambient air quality standard in Indonesia since more than 20 years ago. Most of standard for air quality parameters were set based on precautionary principle. It ratified other ambient air quality standards globally which is less representative from real conditions in Indonesia. Due to possibility of massive changes in national air quality conditions and various technological and non-technological factors driving them. The needs of national ambient air quality revision in Indonesia is raising. In addition, air quality as public value needs to be managed strategically by Indonesia’s government in order to provide basic need of society. More representative standard is a key for better monitoring and controlling ambient air quality in Indonesia. Hence, we proposed a critical mind map of integrated approach, air quality standardization principle, and brief process on how to reset national ambient air quality standard. It included the path role of public administrator, private administrator, and theorist in defining integrated framework of status quo and snap prediction. This mind map can be used as base of re-standardization ambient air quality in Indonesia. Furthermore, upcoming greater legitimate policy on this issue is gladly looked forward.

1. Introduction
PP RI No. 41 1999 has been the only legitimate policy of national ambient air quality standard in Indonesia since more than 20 years ago. Most of standard for air quality parameters were set based on precautionary principle. It ratified other ambient air quality standards globally which is less representative from real conditions in Indonesia. Due to possibility of massive changes in national air quality conditions and various technological and non-technological factors driving them. The needs of national ambient air quality revision in Indonesia is raising. In addition, air quality as public value needs to be managed strategically by Indonesia’s government in order to provide basic need of society. More representative standard is a key for better monitoring and controlling ambient air quality in Indonesia. Hence, a critical mind map of integrated approach, air quality standardization principle, and brief process on how to reset national ambient air quality standard is necessary to be done.

2. Methods
Studies published in Indonesia were identified and reviewed using PubMed, Google/Google Scholar, Science Direct and Web of Science. The eligible studies included those describing national ambient air quality standard and the lack of that standard, compared to the principle of readjust the standardization using loop of process.
First, the paper and article of national ambient air quality standard in Indonesia were screened, and the paper were selected that showed how lacking of Indonesia’s national ambient air quality standard set up, compared to international/global standard. Second, the papers were selected that showed how the variations in of different principles air quality management generally. Third, it has been evaluated how the principles of air quality management and principles of creating public value could be related to the potency of re-standardization of national air quality of Indonesia.

3. Results and discussion

3.1. Principles of air quality management in Indonesia

There are seven principles globally embraced for the management of air quality in order to stay safe and healthy. Some of these principles are sustainability, effect-based approach, risk assessment, sound science, proportionality (proportionality), polluter-pays principle, and the principle of impact prevention (precautionary principle). Of the seven principles, can be elucidated as follows:

- Effect-based approach. A consequence-based approach is a principle quite firmly driven by the government. For example, there has been a lot of regulations that shelter workers and communities affected by exposure to air pollution to be given health facilities and air quality improvement efforts in the environment. This quality is set based on human health, animal, vegetation and aesthetic value (PP RI No. 41 year 1999 Article 12 paragraph 2).

- Principles of polluter-pays. This principle has been contained in various laws and regulations. For example, in PP No. 41 year 1999 [1] About air pollution control in chapters five and six which are concerned about financing and indemnity for people and responsible businesses whose activities result in air pollution.

- Proportionality. Policy principle with this proportional approach needs to be done so that the air pollution handling solution offered not only focused on the technology that has more quality and less expensive, but also consider other aspects such as the ability of the community in using the alternative solution so that the focus of handling to be right on target. This principle is closely related to the APC (Air Pollution Control) which is commonly installed in the industry in Indonesia [2].

- Precautionary Principle. Currently, Indonesia has had several regulations relating to the management of air quality of both the standards and the concept of environmental management and technology implementation. This regulation is used largely in developing countries. The main example is the emission inventory in Indonesia is largely still using the default emission factor yet a specific emission factor [3-5].

- Risk assessment. On the risk assessment principle that associates the relationship between exposure and effect. There have been many studies of the ERA and HRA conducted in Indonesia, in terms of mitigation and adaptation of air pollution impacts. Mitigation and adaptation of the impact plays an important role in the management of air quality in Indonesia for example research from [6,7].

- Sound Science. Indonesia is still not able to apply it thoroughly. This is because the government tends not to care about the development of science research, many researchers complained about the prosperity that still have not been fulfilled. So the development of research is still running on the spot. Although the principles that have been outlined above, the massage relies on the principle of sound science.

- Sustainability. The principle is quite difficult to apply because there are not many interdisciplinary action and studies relating to social, economic, and environmental in Indonesia. The principle of sustainability has also been done a lot of studies in it, for example studies from [8].
3.2. A critical mind map for re-standardisation

The general figure of a critical mind-map of national ambient air quality standardization in Indonesia could be seen at the Figure 1 above. The problem in here is the needs of readjust the national ambient air quality standard in Indonesia. Which can be drive or investigated by two different motor. First are
public sector, private sector and NGO, and second is recommender. The first motor is our government, private company and local/national NGO which has already set or used the standard of national ambient air quality of Indonesia. The second motor is the theorist who generally considered as researcher, lecturer, or academician. The first motor, of course who keeps using the existing national ambient air quality may not realize the urgency of re-standardization. And on the other hand, the second motor is the main side of fixing the existing standard. First, the recommender has to decide which approach that will be chosen based on the recommender preference and decision. It could choose the efficiency, safety, or sustainability aspect. Then, using the 7 principle of air quality management above to clarify the needs of society. The status quo elucidates the strategic triangle of public value that is created when a given strategy or action has democratic legitimacy (e.g., the community supports it) and the support of the authorizing environment (e.g., a governing board), and when the government has the operational capacity to implement the strategy or action [9]. This status quo need to be integrated with the recommender principles (prediction includes), so there will be a multi-linear study between practitioners and theorist.

The loop of process [10] emphasizing the set of goal, standard of process, public value using USG analysis (urgency, seriousness and growth analysis). The next step will be building a program of settled goal of vision. Then, next is implement the program that has been built. The execution of this implementation can be done using the combination of scout stick concept (hit the middle layer of society first, then spreading the implementation to the lower layer & upper layer of society at the same time—it is more efficient) and the AHA concept (awareness, heart, and action). AHA means that the first step of implementation should be focused on raising the awareness of specific layer of society, so can make them fall for the program (giving their heart), and if the already hold on tight to the program then they hopefully can take an active action to execute the program willingly. Next step is evaluation which is using the ATM concept (Amati, Tiru, Modifikasi or Observe, Imitate, and Modify). Then go back to the first step of loop if it is necessary. After that, the final result can be given.

4. Conclusion
The status quo elucidates the strategic triangle of public value that is created when a given strategy or action has democratic legitimacy (e.g., the community supports it) and the support of the authorizing environment (e.g., a governing board), and when the government has the operational capacity to implement the strategy or action. This status quo need to be integrated with the recommender principles (prediction includes), so there will be a multi-linear study between practitioners and theorist. The loop of process emphasizing the set of goal, standard of process, public value using USG analysis (urgency, seriousness and growth analysis). Next is building program, implementation, and evaluation, and loop keep flowing based on the necessity. Then This mind map can be used as base of re-standardization ambient air quality in Indonesia. Furthermore, upcoming greater legitimate policy on this issue is gladly looked forward.

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