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**APPROACH OF HEALTH BENEFIT ASSESSMENT DUE TO AIR
POLLUTION IN THAILAND**

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Recent studies have clearly demonstrated adverse health impacts related to pollutants such as ozone (O₃), particulate matter (PM), carbon monoxide (CO), nitrogen oxides (NO_x) and sulfur dioxide (SO₂). Relative high concentration of such pollutants have certain link to degraded human health, for example cardiovascular and respiratory (Guo et al. 2014; Wong et al. 2008).

The consequent rising mortality and hospitalization rate will also bring about economic burdens to the society. According to annual report of Pollution Control Department year 2015 (Pollution Control Department (PCD) 2017), ozone (O₃) and PM that aerodynamic diameter not greater than 10 μm (PM₁₀) and PM that aerodynamic diameter not greater than 2.5 μm (PM_{2.5}) are still of concern.

Bangkok Metropolitan Region - Thailand (BMR), one of the major metropolitan areas in the world, is an upper-middle class megacity composed of Bangkok city proper and five surrounding provinces. With an actual population of approximately 15 million, it is the central hub for commerce and tourism in the Southeast Asian (SEA) region.

In the past decades, the BMR has experienced extraordinary economic development and urban expansion, which displaying notable concern regarding the ambient air pollution and its adverse effects on human health. In the BMR, relatively high emission are located inside Bangkok, due to on-road transport activity as well as relatively high emissions in industrial combustion and processes are located in vicinity provinces of Bangkok.

Objectives of this study include 1) To assess mortality health burden using with Bangkok ambient data of PM₁₀ and 2) To assess air benefit and health benefit due to emission reduction in transport sector from advanced environmental policy, case study for BMR, focusing on PM_{2.5} long-term mortality.

Results indicated that there is health benefit to comply ambient air with standard. This is possible message to our policy maker "Just to enforce ambient air to Thailand standard of PM₁₀, avoided mortality of respiratory and cardiovascular disease in Bangkok is up to 40%.

And if the country reaches that, we can move forward to set higher target, of course, the benefit can be higher (up to 85%) if we successfully enforce ambient air to World Health Organization (WHO) standard. In addition, implementation of more stringent environmental policy in transport sector in the BMR indicated good example of health benefit associated to the PM_{2.5} reduction associated with

current legislation. However, approaches to provide mitigation options for multiple sources sectors and regions should be considered to obtain better benefit”.