

Air Quality Report

Update on Status of Air Quality in 3rd quarter 2018

GreenID is a member of the Vietnam Sustainable Energy Alliance



Air quality of the 3rd quarter of 2018 in Hanoi and Ho Chi Minh city were mostly moderate and an improvement on quarters I & II. This adheres to the trend in which air quality fluctuates during the year, with relatively good air in the second and third quarters. Better air quality in quarter III in both cities can be explained by the fact that this quarter includes the rainy season in the two areas. Despite overall good air quality in this quarter, data from both cities shows a slightly upward trend throughout the three months of the quarter, which may predict a return of poor air in the final quarter of the year. This is also what happened in the last two years.

Furthermore, with the increase in traffic density, the continuous construction of new buildings and industrial activities, especially the increase of coal-fired power plants around these two major cities, it is still too early to conclude whether the air quality in Hanoi and Ho Chi Minh city is truly improving.

In the past few years, air pollution has increased rapidly in major cities and is now a major concern in a number of areas. In response to this situation, government, organizations, and individuals have made numerous efforts to improve air quality. To play its part in improving air quality in Vietnam, GreenID has published air quality quarterly reports to update the

public on status of air quality with the hope of promoting discussions on actions and solutions.

Following up on these periodical updates, this report analyzes the monitoring data to update the status of air quality in the two largest cities of Vietnam, Hanoi and Ho Chi Minh City, for the 3rd quarter of the year 2018. This analysis is based on data on PM_{2.5} concentration and the Air Quality Index (AQI) which is collected from the U.S. Embassy in Hanoi and the U.S. Consulate in Ho Chi Minh city. These two stations provide data on an hourly base with public access to historical data. In an effort to increase the number of data points, GreenID have set up low-cost devices in other parts of Hanoi. Data from these devices is also analyzed in this report. In general, the data from these points reflects similar results to the U.S. Embassy's data point with AQI at moderate levels for the most part.

As this report analyses a limited number of locations per city, we cannot confirm that the data obtained is fully representative of the city-wide air quality. However, this report can give an indication about the air quality in the two most important cities of our country, because air pollution spreads throughout the areas it affects. We still expect more air monitoring station to be established and hourly historical data needs to be provided.

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PM_{2.5} AND AIR QUALITY INDEX (AQI) IN HANOI

The data from the U.S. Embassy monitoring station shows that Hanoi experienced better air in the 3rd quarter of year with **average daily PM_{2.5} concentration of 30.2 µg/m³**. This is much lower than the National Regulation on Ambient Air - QVCN 05/2013/BTNMT (50 µg/m³). There was only one day in which average PM_{2.5} concentrations in 24 hours exceeded the daily limit established on National Regulation on Ambient Air Quality. Whereas, compared to WHO guidelines, there were **41 days with 24-hour-average PM_{2.5} concentration exceeding the limit**.

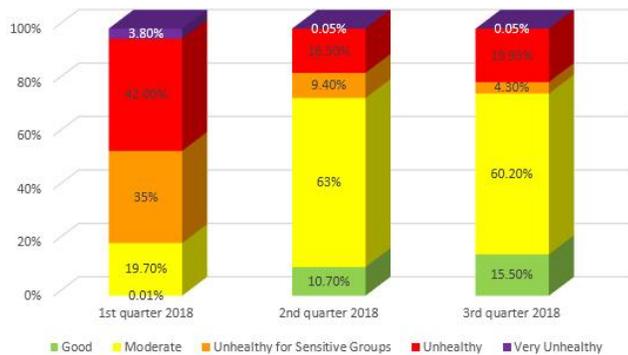
Daily average PM_{2.5} concentrations during 3rd quarter 2018 comparing to national regulations in Hanoi



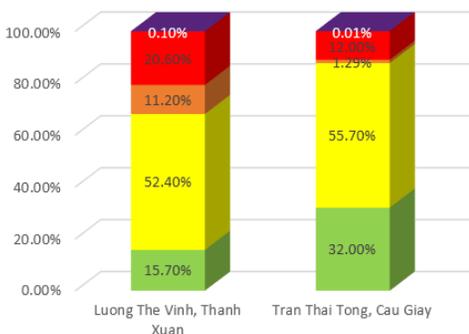
Air Quality Index (AQI) 3rd quarter of 2016, 2017 and 2018 in Hanoi



Air Quality Index (AQI) 1st, 2nd and 3rd quarter of 2018 in Hanoi



Air Quality Index (AQI) in 3rd quarter 2018 using AirVisual Node



The level of impact on health of PM_{2.5} concentration is indicated by Air Quality Index (AQI) which is divided into six levels. In general, most of the time during this quarter AQI indicates moderate, which means air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution. This is similar to same quarter of 2016 and 2017. A closer look at the AQI of three years shows that air quality in the 3rd quarter this year (average AQI of 79.4) is better than that of 2016 (average AQI of 98.3), but slightly worse than 2017 (average AQI of 73).

In comparison with the two previous quarters in 2018, this quarter experienced the best air quality with more days of good air. Average AQI of quarter I and II are 137 and 86, respectively, which is higher than that of quarter III (at 79.4).

In addition to the monitoring station of the U.S. Embassy, GreenID set up 2 Air Visual Nodes, which are low-cost devices, to increase the number of data points. These nodes are located in two areas, namely Luong The Vinh street, Thanh Xuan District and Tran Thai Tong street, Cau Giay district. In general, the data from these points reflects similar results to the U.S. Embassy's data point with AQI at moderate level accounting major part.

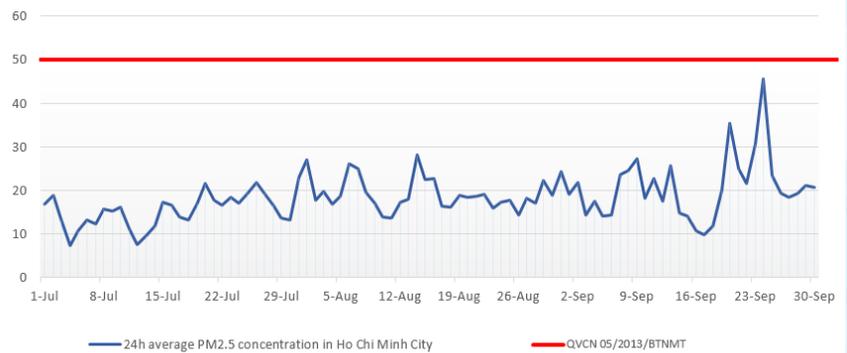
Overview on air quality in 3rd quarter 2018 in Hanoi

Category	Overall	July	August	September
Average AQI	79.4	66	85	87
Average AQI level		Moderate	Moderate	Moderate
Average PM 2.5 Level (µg/m ³)	30.2	21.1	28.3	29.4
Days violating national regulations (days)	1	0	0	1
Days violating WHO guideline (days)	41	6	18	17

PM_{2.5} AND AIR QUALITY INDEX (AQI) IN HO CHI MINH CITY

Throughout GreenID's reporting periods, Ho Chi Minh city's air quality is always better than Hanoi's. This goes the same for this quarter. **The average daily PM_{2.5} of Ho Chi Minh city in this quarter is 18.4 µg/m³, while Hanoi's is 30.2 µg/m³.** Compared to the National Regulation on Ambient Air Quality - QVCN 05/2013/BTNMT (50 µg/m³), Ho Chi Minh city had no day exceeding this limit. Also, there were only **9 days the concentration exceeding WHO guideline's limit (25 µg/m³)**.

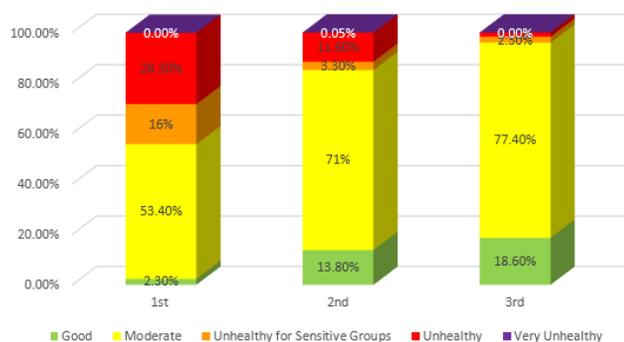
Daily average PM_{2.5} concentrations during 3rd quarter 2018 comparing to national regulations in Ho Chi Minh City



Air Quality Index (AQI) 3rd quarter of 2016, 2017 and 2018 in Ho Chi Minh City



Air Quality Index (AQI) 1st, 2nd and 3rd quarter of 2018 in Ho Chi Minh City



Like Hanoi, most of the time in this quarter Ho Chi Minh city has AQI at moderate levels. Compared to 2016 and 2017, although moderate level remains dominant, data shows that the 3rd quarter of 2018 seems to have better air quality than that of the two previous years with more days of good air and less days of unhealthy air. This is also reflected by average AQI (75 in 2016, 77 in 2017 and 63.4 in 2018).

In comparison with the two previous quarters in 2018, this quarter experienced the best air quality with more days of good air. Average AQI of quarters I and II are 102 and 74, respectively, which is higher than that of quarter III (at 63.4)

Overview on air quality in 3rd quarter 2018 in Ho Chi Minh City

Category	Overall	July	August	September
Average AQI	79.4	66	85	87
Average AQI level		Moderate	Moderate	Moderate
Average PM 2.5 Level (µg/m ³)	30.2	21.1	28.3	29.4
Days violating national regulations (days)	1	0	0	1
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