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Marine and River Water Quality in Hong Kong in 2020

INTRODUCTION

The Environmental Protection Department (EPD) conducts long-term monitoring of marine and river water quality and publishes annual reports in the following year. The 2020 marine and river water quality reports are now available at the EPD website (http://www.epd.gov.hk). This paper summarises the monitoring results for Members' information.

MARINE WATER QUALITY

2. In 2020, our marine waters attained an overall Water Quality Objective (WQO) compliance rate of 86%, staying within the natural fluctuations over the past five years and maintaining a general improving trend observed in the past decade (see **Figure 1 in Annex**). Among the four key WQO parameters, both unionised ammonia nitrogen (NH_3-N) and *E. coli* bacteria maintained at 100%. The compliance rate for dissolved oxygen (DO) further improved to 97%, while that for total inorganic nitrogen (TIN) was 57%, which was within the range of levels recorded in the past decade.

3. The water quality of Victoria Harbour continued to unveil noticeable improvements along with the staged implementation of the Harbour Area Treatment Scheme (HATS) (see **Figure 2 in Annex**). A snapshot of the situation in 2020 as compared with that before the introduction of HATS (1997-2001) is captured as follows:

a) *E. coli* bacteria reduced by 89%;
b) Unionised NH_3-N reduced by 47%;
c) TIN reduced by 12%; and
d) DO increased by 14%.

4. Among the ten Water Control Zones (WCZs), four of them including the Eastern Buffer WCZ, Junk Bay WCZ, Port Shelter WCZ and Western Buffer WCZ continued to fully achieve the WQOs, and high levels of compliance were achieved in two of them including the Mirs Bay WCZ (98%) and Tolo Harbour and Channel WCZ (93%) in 2020. The WQO compliance rates for the remaining WCZs were within normal fluctuations: Victoria Harbour WCZ (90%), Southern WCZ (69%), North Western WCZ (67%) and Deep Bay WCZ (67%).

5. In 2020, there were eight red tide incidents reported in Hong Kong waters, less than the average of 12 incidents in the past five years (2015-2019) (see **Figure 3 in Annex**). These natural occurrences were caused by eight phytoplankton species, most of which are not harmful to marine lives. No red tide related fish kill in Hong Kong waters was recorded in 2020.

RIVER WATER QUALITY

6. The overall water quality of Hong Kong's rivers continued to perform well in 2020. In terms of key WQOs, the overall compliance rate in 2020 was 87%, staying within the normal range of fluctuations in recent years but exhibiting significant improvement over that of 48% in 1987, achieved under the counter-pressure of a doubled population residing in the New Territories where most of the rivers lie (see **Figure 4 in Annex**).

7. With regard to the Water Quality Index (WQI) which indicates the overall state of health of the watercourses, 82% of the river monitoring stations were graded "Excellent" or "Good" in 2020, as compared with only 26% in 1987. These more pristine watercourses are mainly located in Lantau Island, eastern and southwestern New Territories, and Kowloon.

8. The high WQO compliance rates and WQI gradings were the result of pollution control measures taken under the Water Pollution Control Ordinance and the Livestock Waste Control Scheme of the Waste Disposal Ordinance, as well as progressive extension of the sewerage network to more villages under various Sewerage Master Plans.

9. Nevertheless, some rivers in the western part of the New Territories remained a challenge in water quality. Yuen Long Creek and Kam Tin River stayed below 50% in WQO compliance rate and at "High" to "Very High" levels of *E. coli* bacteria, i.e. over 10 000 counts/100mL. They were adversely impacted by runoff from unsewered village houses, expedient connections in old districts and illegal discharges from livestock farms. To improve the situation, the Government will enhance the sewerage infrastructure in these districts further by upgrading the sewage treatment facilities and expediting the extension of sewerage network to unsewered villages. Other feasible pollution abatement options including the installation of dry weather flow interceptors at appropriate locations will be pursued and vigilant enforcement against illegal discharges will continue.

CONCLUSION

10. Our environmental water quality continued to perform well in 2020 with an overall WQO compliance rate for marine and river waters at 86% and 87% respectively. This was the outcome of sustained enforcement of pollution control legislations, extension of sewerage infrastructure to remote areas, connection of more village houses to public sewers and implementation of the HATS in a territorial scale in the past two decades. In the coming years, we will focus these efforts to combat specific pollution problems in rivers in the New Territories and coastal areas of Victoria Harbour, together with a series of engineering and pollution control measures to further improve their water quality.

Environmental Protection Department
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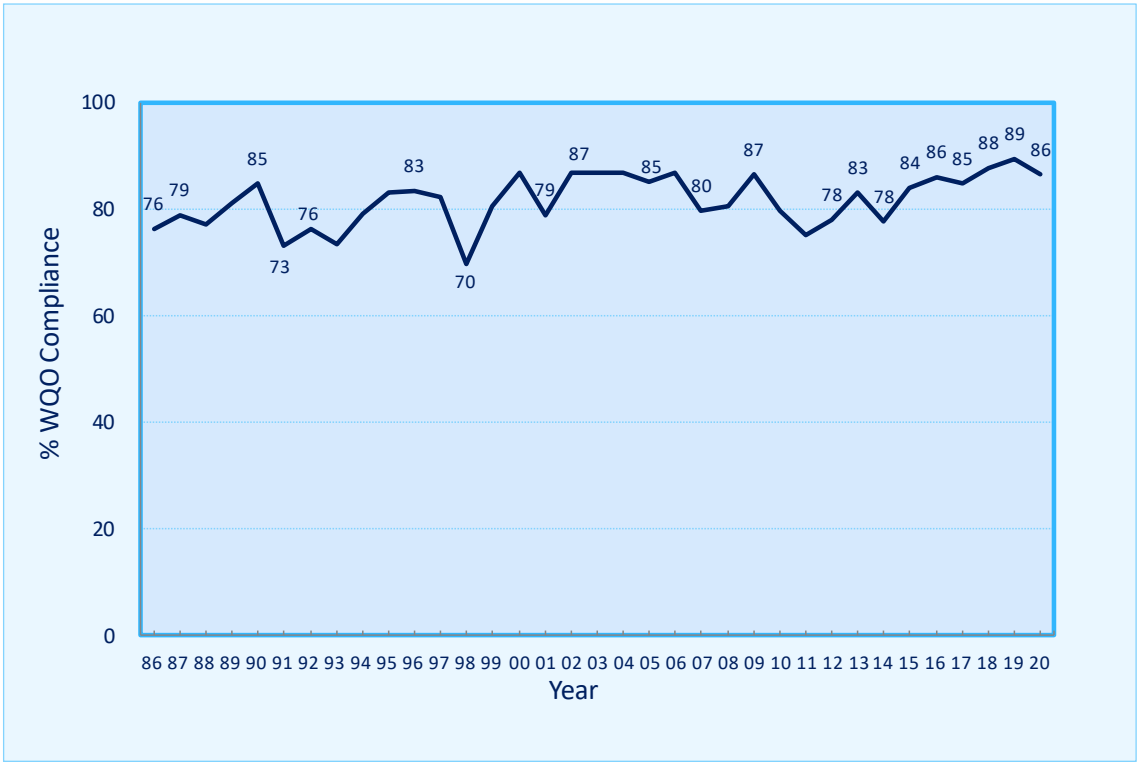

Figure 1 Overall marine WQO compliance rates of Hong Kong, 1986-2020

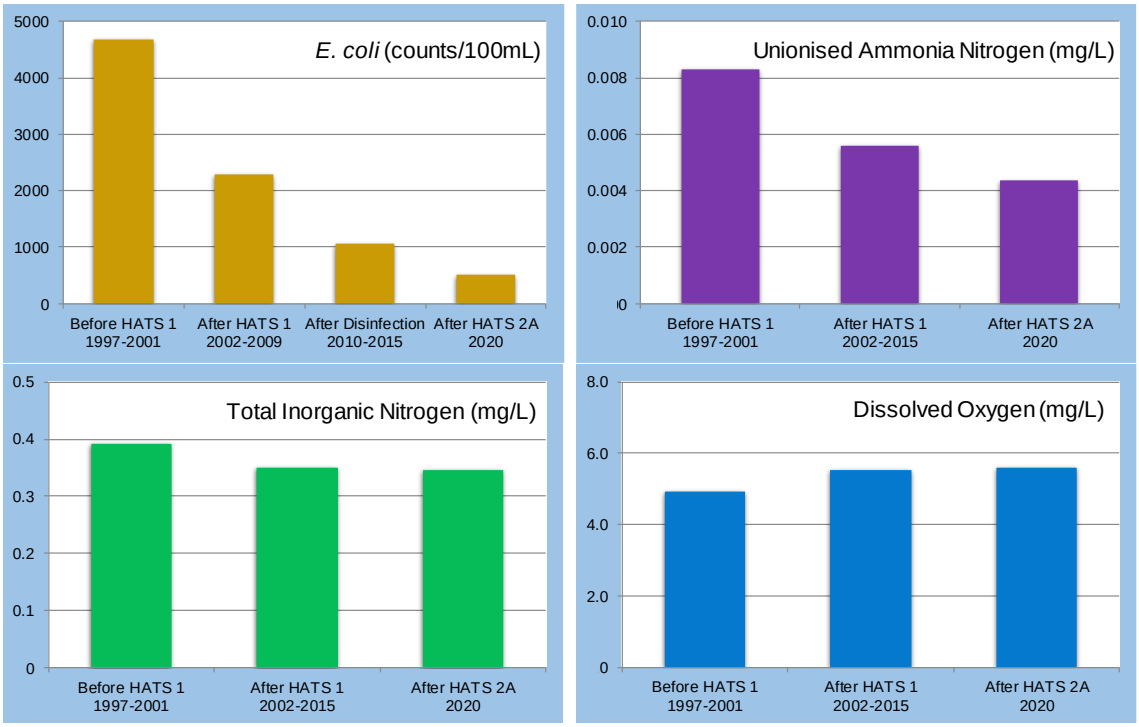

Figure 2 Water quality improvement in Victoria Harbour since the implementation of Harbour Area Treatment Scheme (HATS)

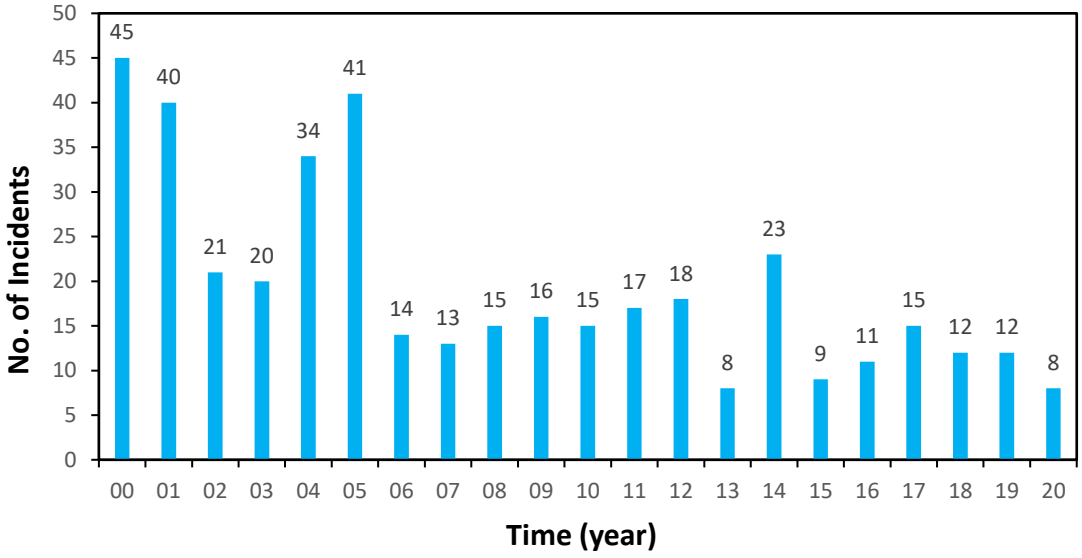

Figure 3 Occurrence of red tides in Hong Kong waters, 2000-2020

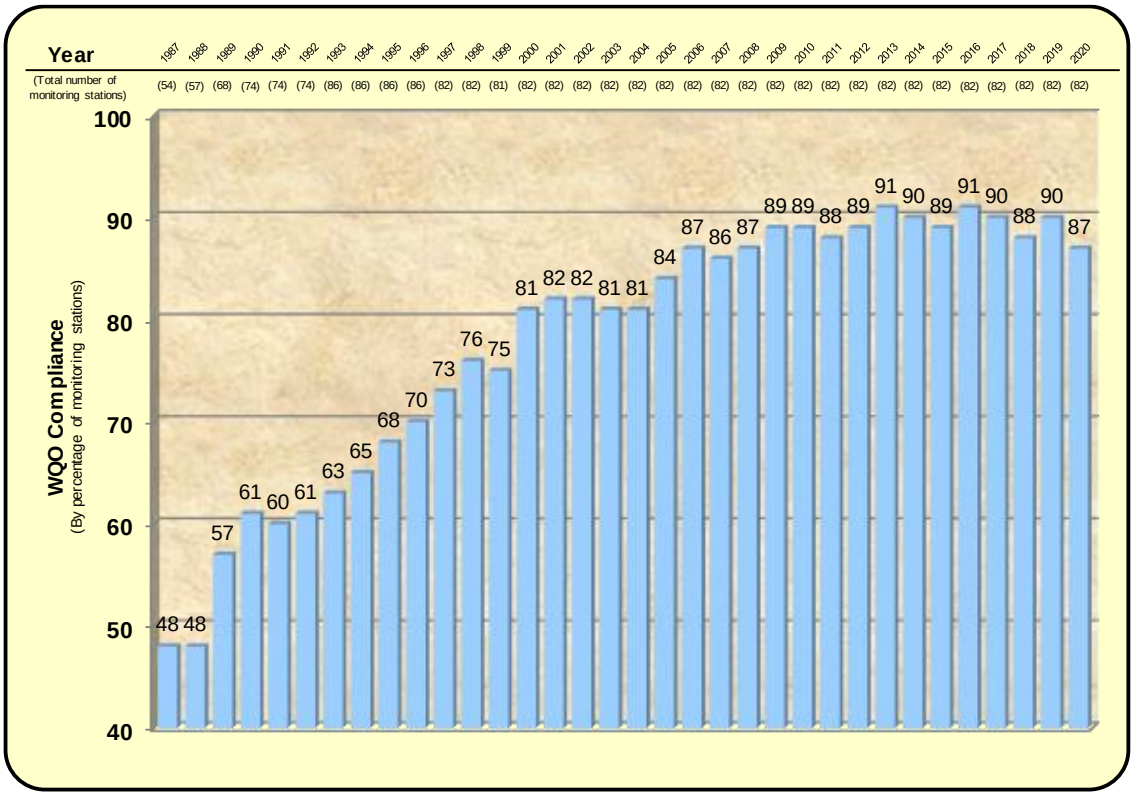

Figure 4 Overall river WQO compliance rates of Hong Kong, 1987-2020