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## **Our Vision**

### "Our Air, Our Health!"

Our vision is to preserve clean air in Hong Kong.

To achieve this vision, CAN is dedicated to driving policy and behavioural change to improve Hong Kong's air quality. Without losing sight on air pollution from regional activities, marine vessels and power plants, our current primary focus is on roadside pollution and indoor air impact.

Our long term goal is for Hong Kong to reach WHO's standard and be among the top-ranked Asian metropolises and world financial centres for air quality by 2030.

To achieve this, we will educate and engage children, parents and the wider community, and empower them with data on, and insights into, the impact of air quality on human health and wellbeing leading to change in decision-making, driving behaviour change and enhancing policy standards.

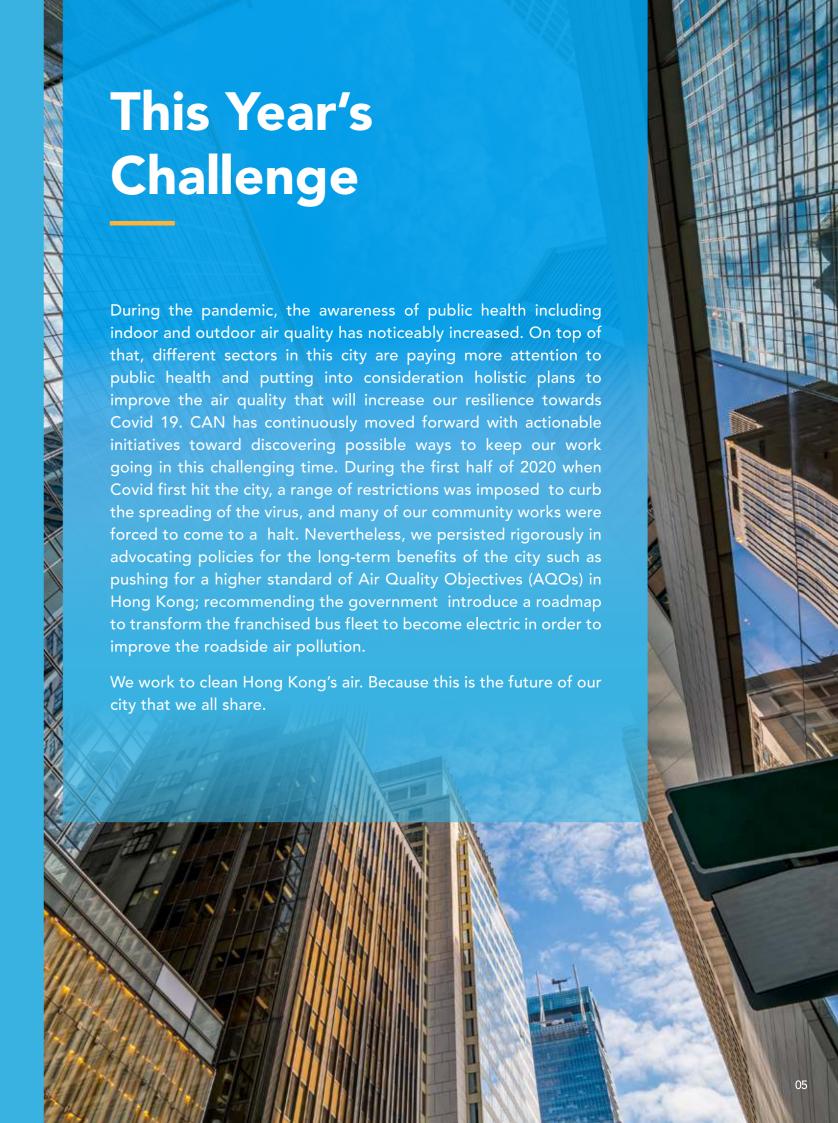
## **Our Story**

As a non-profit organization with charitable status, Clean Air Network (CAN) has been dedicating its efforts relentlessly to improving Hong Kong's air quality since 2009.

Over the years, we knitted the fabric that connected the professionals with the community trying to build a cross-disciplinary and inter-generational network that concerns clean air.

In the recent past, CAN has made some great achievements. Since 2014, in a joint effort with others, we have contributed to landmark policy changes that reduced the concentration of the major air pollutants at an ambient and roadside levels. Since 2016, we've campaigned for better transport demand management and successfully pushed for the first Government-led walkability study in Hong Kong in 2017. In 2017-18, we dived deep into a campaign to demand a review of Hong Kong's principal air pollution control ordinance and a tightening of the Air Quality Objectives (AQOs).

At Clean Air Network, we are committed to the mindset that air pollution is a problem we can tackle together.



## Message from CEO

2019 marked the 10th anniversary of Clean Air Network (CAN). Founded in 2009 as a non-profit organization that solely focuses on air pollution, at the onset, we promised the public that we would dedicate our work to cleaning up Hong Kong air, making every effort to move this society towards zero emission, and lobbying the government for sustainable policy changes to protect public health and mitigate air pollution. Despite the challenges we face , we kept our promise.

At Clean Air Network, we are delighted to share with you our efforts of the key milestones that we have achieved during this meaningful period of 2019-2020.

CAN is always at the forefront of policy advocacy for bettering air quality and reducing air pollution. One of the focal points of our advocacy is urging the government to develop an updated Clean Air Plan for Hong Kong. CAN successfully identified roadside pollution hotspots through our district-based air quality monitoring projects and submitted our recommendations for the government's 2019 Policy Address.

One of the responsibilities of a member of civil society is to act as a link between the people and the government in the development of public policies. As the new set of Air Quality Objectives (AQOs) is set to take effect in 2020, CAN conducted a public opinion survey to demonstrate the

public's demand to the government to tighten Hong Kong's AQOs to the World Health Organization standards.

Meanwhile, accelerated public concern over climate change and adverse weather is serving as a driving force for the government to phase out diesel vehicles to electric transport. In 2020, CAN launched a campaign called "Getting Ahead" to promote the benefits of replacing diesel franchised buses with zero-emission buses. As zeroemission by 2050 is both the local and global governments' target to tackle climate change and air pollution, CAN believes that by launching this campaign to educate the public, we can deliver to the society a clearer message that both the government and stakeholders should step up their pace to transfer to green transport.

We could not have done what we have done this year without the ongoing support of our collaborators, especially during the Covid 19 pandemic. I'd like to thank our project partners, volunteers, and board members for all of your hard work. In the last decade. CAN planted a seed of clean air in Hong Kong, and that seed has germinated and become rooted in society. I sincerely hope that we will not have to wait another decade for cleaner air for this city.

————— Patrick Fung, Chief Executive Officer





# **Shaping the Future**

Throughout the past decade, CAN has developed into one of the most influential NGOs in Hong Kong advocating air quality improvement measures to the government. Our strong network reaching across multilevel sectors in society is the paramount factor contributing to our success. The Board of CAN, including the directors and advisors, are significant contributors to helping the organization to build up this strong network. In January 2020, CAN further expanded and strengthened our senior bench by having two new directors and four new advisors. We truly believe the professional knowledge, insights, and energy that the Board has given to the team will open the doors up for a better future for CAN and better air quality in Hong Kong.

### **Board Chair**

Ms. Tong Zhao

### **Board Director**

Ms. Chun, May Mr. Williamson, Richard

Ms. Yip, Yan yan

### **Board Advisor**

Ms. Chang, Feng

Dr. Hung, Wing Tat

Dr. Ng, Daniel

Dr. Ng, Anthony

Mr. Poon, Joseph

Mr. Tang, Po

Ms. Wright, Sally

# Our focus areas in the year







Tighten Hong Kong
Air Quality Objectives (AQOs)
to WHO's Standard



Green Transport

# Clean Air Plan Beyond 2020

In 2019, more than 90% of the global population lived in areas where concentrations exceeded the 2005 WHO air quality guideline for long term exposure to PM<sub>2.5</sub>. Countries with strong policy-driven improvements in air quality have often seen a marked reduction in air pollution, whereas declines over the past 30 years were less noticeable in regions with already good air quality.

----- World Health Organization

This very statement from the World Health Organization (WHO) tells a compelling truth: fighting air pollution is an uphill battle that requires long-term measures and determination. In the 2019 Policy Address, CAN had submitted a series of recommendations to the government, one of them was urging the government to formulate an updated 'Clean Air Plan for Hong Kong beyond 2020' to outline a 10-year strategy with time-bound, control measures, and action items to clean up Hong Kong's air.

## **Advocacy**

- CAN urges the government to update the Clean Air Plan for Hong Kong which was set out by the Environment Bureau in 2013 and expires in 2020.
- CAN urges the government to formulate a 10-year strategy plan to clean air.
- CAN urges the government to improve Hong Kong's ambient and roadside air quality to comply with the WHO's standard.
- CAN urges the government to tighten Air Quality Objectives (AOQs) up to WHO's standard.



We clean up Hong Kong's air to safeguard public health. More and more scientific studies regarding public health have shown the correlations between air quality and human well-being. The human and economic loss that we've suffered due to the Covid 19 pandemic in Hong Kong and the globe during 2019-2020 has proven that having long-term measures to tackle both in-door and out-door better air quality is vital to public health. Based on WHO's research findings, it shows clearly that long-term exposure to a higher concentration of air pollutants is associated with high hospital admission and premature deaths. Another new study released by the Harvard T.H. Chan School of Public Health has found that people who live for decades in a county with high levels of fine particulate pollution are 8% more likely to die from COVID-19 than someone who lives in a region that has just one unit (one microgram per cubic meter) less of such pollution.

# The Purpose of Conducting Monitoring

### **Current Situation**

In Hong Kong, the Government's air quality monitoring network comprises, monitoring stations operating at varying sampling heights. Among all 18 monitoring stations, there are only 3 (Causeway Bay, Central, Mongkok) located at 3 - 4.5 metes above the ground. The rest are located from 11 metes to 28 metes above the ground. It is therefore challenging for members of the general public to understand the severity of health risks they are exposed to, due to air pollution at ground level. Consequently, CAN decided to take reference from an approach that has been widely used in other countries to identify concentrations of the pollutant that were measured at various monitoring spots.

### **Actions**

## Installation of NO2 Diffusion Tube in Central District as an investigative study in March 2020

Air quality monitoring was conducted using one surrogate air pollutant (nitrogen dioxide, NO2) to reflect the level of street-level air quality. Concentrations of the pollutant were measured at various monitoring spots using the Palmes-type diffusion tubes.

#### What is the Palmes-type diffusion tube?

Palmes-type diffusion tubes have been widely used in the UK for measuring ambient concentrations of nitrogen dioxide (NO2) since their development in 1976 by Palmes et al. Diffusion tubes are categorised as an "indicative" monitoring technique. They are useful for identifying areas of high NO2 concentration, particularly when dealing with sources such as traffic emissions and with less noticeable changes daily.

## • Air data collection in different selected districts:

CAN conducted a study for a duration of 2 weeks in March 2020, with the purpose to identify the level of air pollution concentration (Nitrogen Dioxide, NO2) at 10 bus stops located on 3 main traffic roads in Central District. It was considered the first investigative study after the emission standard of the Franchised Bus Low Emission Zones was tightened in December 2019.





## <sup>2</sup> Air Pollution Monitoring in March 2020

In March 2020, CAN compiled an analysis of the monitoring result.

### What we've discovered

This study has proven our long-term advocacy for reducing roadside pollution is vital to public health. As the findings have revealed, the more buses passing by the bus stops, the higher the average NO2 concentration is recorded. CAN has submitted recommendations on the government 2019 Policy Address; we've stated that in order to reduce roadside pollution, specific measures for highly affected districts are needed urgently without delay. The new set of "AQOs" will come into effect in 2022.



## Tighten Hong Kong Air Quality Objectives (AQOs) to WHO's Standard

Air pollution kills an estimated seven million people worldwide every year. WHO data shows that almost all of the global population (99%) breathe air that exceeds WHO guideline limits containing high levels of pollutants, with low- and middle-income countries suffering from the highest exposures.

World Health Organization

Tightening the Hong Kong Air Quality Objectives (AQOs) up to the WHO's standard is the centrepiece of CAN's advocacy over the past years. The New set of AOQs will come into effect in 2020, but it is far below the WHO safety standards. Poor air quality will impose a greater health threat to seven million Hong Kong people particularly in the midst of the Covid 19 pandemic.

## **Advocacy**

- Call for a withdrawal of the new proposal to increase the number of exceedances to 35 times annually for PM2.5.
- Upgrade air monitoring infrastructure & reporting mechanism.

## Hong Kong Air Quality Objectives (AQOs)

The Air Pollution Control Ordinance (Cap. 311) sets out Air Quality Objectives (AQOs) that the HKSAR should aim to achieve as soon as reasonably practicable and to maintain thereafter to safeguard the health of the community.

The current AQOs took effect in January 2014. Under the APCO, the Secretary for the Environment (SEN) is required to review the AQOs at least once every five years and submit a report of the review to the Advisory Council on the Environment (ACE).

## World Health Organization Air Quality Guideline

Since WHO last updated the guideline in 2005, the organisation found increasing evidence that has shown that air pollution is affecting human health in different aspects. For that reason, WHO will update the Guideline in 2021 as a global target for governments around the world to clean up the air.

The WHO Air quality guidelines recommend levels and interim targets for common air pollutants: Particulate Matter, ozone, Nitrogen dioxide, Sulfur dioxide.

### **Actions**

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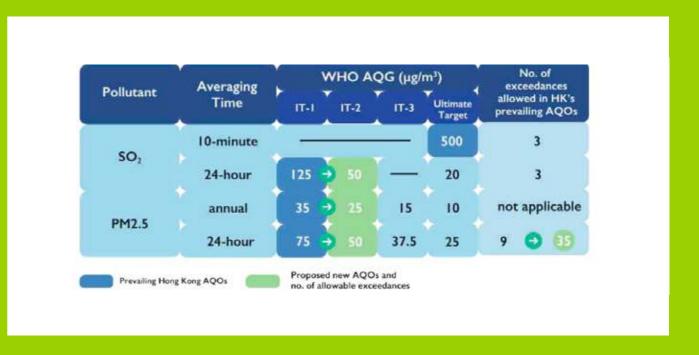
#### Public Opinion Survey on the Public Consultation on the AOQs Review in August 2019

In August 2019, CAN conducted a public opinion survey to better understand the public opinions on the AQOs review during the public consultation on the Air Quality Objectives Reviewed by the Environment Bureau. With the support of the AQOs Review Concern Group which was formed during the same period of time, CAN and the concern group commissioned The Hong Kong Public Opinion Research Institute (formerly the Public Opinion Programme of The University of Hong Kong) to conduct a phone survey on the Government's AQOs proposal.

- Out of 574 samples aged 18 or above Hong Kong residents, 73% of the interviewees are unsatisfied with the government proposal to relax the "allowable exceedances" from 9 times to 35 times for PM2.5 daily average level.
- More than half 59% of interviewees reject the selective scope of the review on tightening AQOs of PM2.5 and SO2 only.

## Reality Check: The proposed AQOs fall short of the WHO standards

In the recommendations for 2019 Policy Address, CAN specifically indicated that in order to have a benchmark for improving Hong Kong air quality, we need a better air monitoring infrastructure and reporting mechanism to see the reality and create actionable. The current roadside monitoring stations are excluded for the purposes of meeting AQOs which is portraying an inaccurate picture to the public that the quality is acceptable. In fact, the monitoring is underestimating the actual quality of air inhaled by people at the street level. Therefore, in our recommendations for the 2019 Policy Address, we urged the government to upgrade the roadside monitoring facility in each of the 18 districts in the city. On top of that, the government should publish more stringent district-based health information timely.



# Petition in May 2020

In May 2020, CAN initiated a petition to the Secretary for Home Affairs and Director Environmental Protection Department, calling for the installation of the Air Quality Health Index (AQHI) display in public playgrounds.

By having this facility being installed in public playgrounds, it'd help the population to better understand the level of air pollution so that the population in the city can better prepare themselves for having outdoor activities on poor air quality days.

## **Clear Days in Hong Kong**

Year	2016	2017	2018	2019	2020
no. of Days	109	150	153	169	241
% Change	N/A	37.6%	2%	10.5%	42.6%

According to the Hedley Environmental Index data, it shows that the Hong Kong population has enjoyed cleaner days during the past five years. CAN believes government measures regarding vessel emission control in Hong Kong waters, which is one of CAN's advocacy that the government had taken on and public awareness of air pollution, the weather, and so forth are all the contributors to better Hong Kong air quality. We'll keep up our good work with the support of our community.



The cost of the transition will be big, but the cost of non-action will be much bigger

———— The European Green Deal

CAN has never underestimated the challenges and obstacles from moving fossil fuel vehicles to new energy vehicles to meet the 2050 zero emission target as well as reduce roadside pollution in Hong Kong. We truly believe that through increasing public awareness, we can strengthen the energy for lobbying the government moving towards green transport. Meanwhile, tightening the control over ship emissions in Hong Kong is urgently needed simultaneously in order to improve the air quality in Hong Kong and the neighborhood region.

### **Advocacy**

- Urge the government to update a roadmap with time-bound final and interim targets to transform the franchised bus fleet to become electric- powered.
- Expand the existing e-buses trial.
- Create the right business environment and collaborations amongst battery and bus manufacturers.
- Urge the government to update the public regarding the progress of purchasing and operating electric vessels locally.
- Continue to tighten regulations over ship emissions.
- Collaborate with related authorities in the Pearl Delta River region.



### **Actions**

#### Launching the "Getting Ahead" campaign in April 2020

CAN launched a website "Getting Ahead" to promote the benefits of replacing diesel franchised buses with zero emission (electric or hydrogen) buses in April 2020. We truly believe that advocacy and public education should go hand in hand to maximize the power of knowledge of green energy and prepare the public for a better and greener future.



#### Our Campaign

Getting Ahead is a campaign that equips Hong Kong with the knowledge of mobility, local opportunities, and overseas experiences, to enable the full transformation to the Zero Emission Bus (ZEB) fleet tomorrow.

Together with the community and experts, Clean Air Network urged the Government to shoulder the responsibility to equip Hong Kong with policy and infrastructure to lead such transformation. Let's get ahead to a better alternative future with better air quality, public health, and living standards.



#### Our Strategy

To safeguard public health, Hong Kong needs a cleaner and healthier mobility system. To start with, Hong Kong's first EV Roadmap should articulate how our franchised bus fleet and other vehicles should be transformed to respond to growing environmental health concerns among the public. The Steering Committee on the Promotion of Electric Vehicles, under the leadership of the Financial Secretary, should take full responsibility to formulate this roadmap. The Roadmap should outline Hong Kong's plan to invest in infrastructure and subsidise the transition of vehicle, maintenance, and support technology.

## **Reality Check**

#### **Zero Emission Bus**

#### Inhaling fresh air

Powered by batteries therefore e-bus releases no unbreathable exhaust fumes.

#### **Exhaust emissions**

Zero level of exhaust fumes emission.

## Improvements of roadside & compartment air quality

In London and Beijing, many e-buses have installed air filters to clean up the air from the roadside and circulate to the inside of the bus compartment.

#### **VS**

## Roadside air quality

bus terminus

#### Inhaling polluted air

Diesel buses release particulates & NO2 by burning petrol in the bus engine.

**Diesel Bus** 

Bubble: It will damage your lungs and cause you to have respiratory disease.

## Air quality at Surround by high concentrated exhaust emission

Poor ventilation at the half-closed terminus cannot circulate pollutants out of the area.

## Polluted air flows into the compartment

CAN has invited bus drivers to measure the NO2 level on the bus compartments.

The finding shows the NO2 level on the bus is higher than on the roadside level based on the NO2 Environmental Protection Department data.

## artment air quality ndon and Beijing, many Air o

Air quality inside the bus compartment



On local vessels pollution – Since the trial on hybrid / electric ferry was announced in the 2018 Policy Address, there was finally the first hybrid (diesel-electric) ferry launched in July 2020. However, the government has not yet provided any updates on the progress of purchasing and operating electric vessels locally.

To maximise health benefits, CAN urges the HKSAR to collaborate with the Pearl River Delta region (PRD) to setup an Emission Control Area in PDA waters, including Hong Kong waters, with a limit on sulphur content in marine fuel of 0.1%.

## Submitting recommendations on the 2019 Policy Address in September 2019

CAN has submitted recommendations on the 2019 Policy Address, in which we urged the government to establish the implementation details of the pilot scheme on electric local vessels (green ferry) to further reduce emission from marine transport. According to the study conducted by the Environmental Protection Department in 2017, it shows that, if all the ferries operating the seven in-harbour routes are replaced by electric ferries, the biggest environmental benefit would be the achievement of zero-emission of air pollutants from these ferries in Victoria Harbour. It is anticipated that both Sulphur Dioxide and Nitrogen Oxides concentration levels will be lowered quite significantly, especially the portion contributed by the outlying island ferry operation. Also, air quality improvement will be more noticeable during high air pollution days with weak or no wind, as a major source of air pollution in the harbour area will be eliminated.

# Walking with our Community

"Young Advocate" was formed by a group of enthusiastic teens who voice their opinions on the air quality of Hong Kong.



"Being a young advocate in CAN really inspired me a lot. It is fulfilling to participate in school workshops and air monitoring activities, and empower students to advocate for clean air."

Vincent Yan, 2019 Young Advocate



NGOs like Clean Air Network are vital in engaging and enriching the citizens' knowledge on air pollution and its invisible harm. Joining Clean Air Network as a Young Advocate, it has surely given me practical experience in policy advocacy.

— Jason Ngan, 2019 Young Advocate



"People sacrifice the environment for economic development and it has led to the problem of air pollution. It has become a serious problem in the world that not only affects wildlife but also human beings. It is believed that we have to bear the responsibility of taking care of our environment from now on. We should use our existing knowledge and technology to alleviate the problem."

— Winnie Lo , 2019 Young Advocate

# Walking with our Neighbors

Empowering and engaging our community to better understand the benefits of a healthier lifestyle, especially on air pollution issues, will bring about innovative ideas and create impacts in our society.

One of our centepiece campaigns for our community work is called "CAN Young Advocates". We recruited teenagers who are passionate about air quality issues and we guided them with knowledge on how to mitigate air pollution and communicate with different community groups so that they can grow and become young advocates among their peers.





## Talk Action for Cleaner Air in October 2019

CAN is pleased that many organizations are actively involved in climate change issues, particularly in how to reduce air pollution in Hong Kong. The American Club Foundation, American Women's Association, Hong Kong International School, and the American Chamber of Commerce in Hong Kong have all contributed to Take Action for Clean Air. Because air pollution is a pressing issue both locally and globally, our guest speakers, who have extensive, experience in climate actions for clean air in various contexts, joined this discussion with the common goal of securing clean air as a basic human right. In this online panel, we discussed what has been done to improve our air quality while also looking forward to how we can put knowledge and vision into action.



#### Impact

- Engage with experts on air pollution.
- Better understand how to transform knowledge and policies into actionable.
- Generates ideas on how to motivate actions on climate change issues.

## Volunteer's participation in installing NO2 Diffusion in Sham Shui Po in October 2019



NO2 Diffusion Tube Action successfully collected street air samples in Sham Shui Po district with the help of our volunteer group in October 2019. Volunteers were divided into groups and they installed the tubes near the school campuses, parks, bus stops, and crossroads for two weeks.

#### **Impact**

- Increase public awareness of the air quality in the neighborhood.
- Help the district to identify highly concentrated polluted areas, especially those which are nearby school campuses.
- Better understand the correlations between poor air quality and potential harm to the population such as asthma and bronchitis.

## Walking with our Youths

CAN believes in order to shape the future into a better place, walking with our youth, and encouraging them to voice out their new ideas is vital.

During 2019-2020, CAN has organized different community activities for our junior population to equip them to tackle air pollution and move forward to the zero-emission path in the foreseeable future.

## Let our Children Breathe & Air Pollution Conference October 2019

On 26th October 2019, CAN successfully held the Hong Kong Environmental Essay Competition and Air Pollution Conference at Renaissance College under the project "Let Our Children Breathe".



## The Hong Kong Environmental Essay Competition

We'd like to acknowledge our appreciation for the great support from US Consulate General Hong Kong and Macau, CLP, and Towngas on our "Let Our Children Breathe" program, where we worked with a student-led think tank Project Matter in this program, to empower the students and parents, building up a pollution-free environment at school campuses.

Project Matter was started by students from Renaissance College and its current project focuses on the installation of real-time self-built sensors in different schools across the city. CAN has always relentlessly encouraged the youth to voice out their concerns and ideas about tackling air pollution. One of our highlight programs is The Hong Kong Environmental Writers' Competition. This annual competition called for all secondary school students to showcase their knowledge and creativity by writing about environmental issues. The idea was conceived to engage more students in environmental issues. This round of the competition was organized for the first time under the "Let Our Children Breathe" program, it was held in October 2019, and we received 50 essaysubmissions by students aged 12 to 18 from different international and local schools in Hong Kong.

- The winner in the senior category (14+) was Yoojin Jung from King George V School. His essay was on "Air pollution and dementia; how it hinders sustainability in Hong Kong"
- The winner of the junior category (below 14 years) was Adrian Wu also from King George V School. His essay was called "Stop air pollution trespassing on public health Time to show political passion and leadership to stop air pollution at the source".



#### Impact

- Nurture secondary students to become "mini-experts" in a small field of the environment through their research.
- Help our children to gain knowledge on environmental issues and skills for policy advocacy.



### **Air Pollution Conference**

The Hong Kong air Pollution Conference was held on 26th October 2019 supported by CAN. This event was the first conference dedicated to air pollution issues in Hong Kong, co-led and participated by local students. The main objective of this conference was to allow students from different schools to participate and share their views, engage and listen to experts working in the fields of air pollution. A total of 60 students and their parents signed up for the conference.

CAN invited three guest speakers from all different fields to share their insights with our participants, they are James Ockenden, who is a professional writer in environmental issues; Prof Amos Tai-Air Science (CUHK) Professors on Air Science at Chinese University Amos Tai and Rachel Chan, a master degree student at public health, University of Hong Kong.

#### **I**mpact

- Enhance cross-collaboration between children from local and international schools on air pollution issues.
- Enhance students' & parents' awareness of air pollution issues.
- Encourage positive interaction between children and their parents on green issues.

## Mini-triathlon Summer Camp in July 2019

In July 2019, CAN introduced a new programme activity "Mini-triathlon Summer Camp" which focuses on the wellbeing of children with asthma. Medical evidence has indicated that, if asthma can be controlled before 6 years old, there is a lower risk of prevalence of asthma in later life. There are generally two ways to control asthma before 6 years old – through medication and outdoor physical activities.

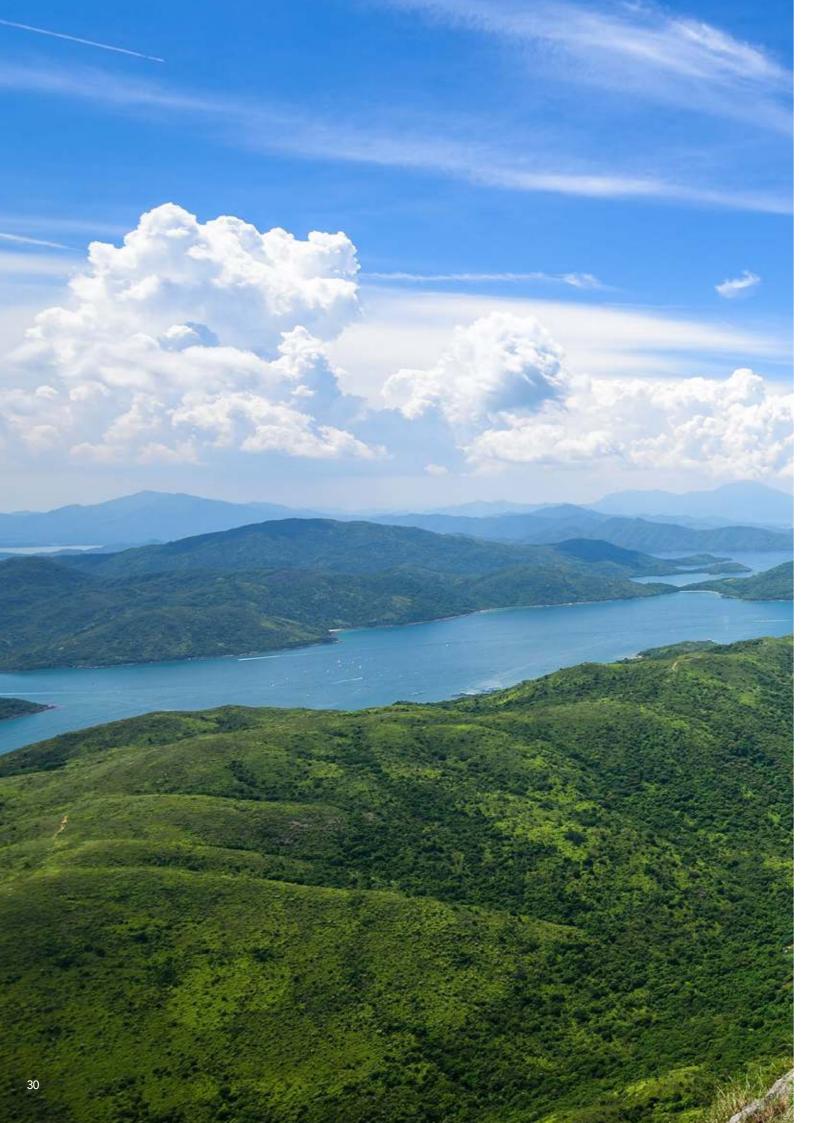
The goal of the Mini-triathlon programme is to increase the awareness and benefits of outdoor physical activity time for the participating pre-school children who are affected by asthma. On top of that, we hope this event will also enhance the knowledge for participating parents on the type of physical activities and the steps of safety precautions that are appropriate for asthma affected children.

This summer camp training programme is partnered with the Hong Kong Asthma Association and Hong Kong Society of Paediatric Respirology and Allergy, the venue is sponsored by Hong Kong Cricket Club. The professional coaches in this programme designed different activities for children aged 3-6 years old such as mini-cricket, mini-golf as well as body-training exercise

#### Impact

- Increase the awareness of the health impact of air pollution on asthma among the wider parents community (partici pants and non-participants).
- Increase the skill levels for parents to do more exercise with children with asthma in a safe environment.





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