Our Air, Our Health!

Clean up Hong Kong's air until it meets World Health Organization’s recommended safe level in order to protect public health.

To achieve this vision, Clean Air Network is dedicated to driving policy change by building knowledge, collaborating strategically, and advocating solutions in a collaborative approach. Without losing sight of the pollution from regional activities, marine vessels, and power plants, our current primary focus is on roadside pollution.
Our Story

Clean Air Network (CAN) is a non-profit organization with charitable status founded in 2009. We are exclusively dedicated to improving Hong Kong’s air quality.

Over a decade, CAN has made great strides, successfully pushing for environmental policy change. Over the last few years (2013-17), Hong Kong’s air quality at ambient and roadside level has improved by 30% due to the various emission control measures, including subsidy scheme to phase out diesel commercial vehicles and mandating ocean going vessel to fuel switch at berth.

Despite the significant improvement made, it is expected that roadside air pollution will still exceed WHO’s recommended safe level by over 60% in the year 2020 if there is no further intervention.

Public health is still at risk in this international financial center. Every day, dirty air is damaging our health as individuals, the profitability of our companies and our economy as a whole. Primarily caused by roadside and marine emissions and the “street canyons” trapping them around us, it affects us all, especially the most vulnerable in the communities.

By working closely with District Councilors, Legislative Council members, medical professionals, the community, business and student leaders, CAN is spreading its message through numerous channels in the society and forming a coalition to fight for better air in Hong Kong.

Our unified approach has enabled us to achieve systematic change in the way Hong Kong monitors and reports its air quality and also pass landmark legislation, improving the way our public transportation is managed and marine vessels are regulated.

We are delighted to be working with more community partners and student-led initiative to create an effective working model and to open up policy dialogues focused on tackling air pollution. Our strengths are our strategic approach, proven commitment, and established network.
Message from CEO

In 2017-18, Clean Air Network (CAN hereafter) continued to meet important milestones and create positive impact through our advocacy and empowerment projects.

As the Air Pollution Control Ordinance was amended in 2014, it became mandatory to conduct a periodic review of AQOs at least once every five years. CAN took part in the first round of AQO review (between 2016 and 2018) as a member of the official AQO Review Working Group.

Within the Working Group, we advocated more ambitious measures and goal setting with reference to international success stories. We also put forward the suggestion of adding public health gain as another basis for evaluating potential policy measures. Outside of the working group, we continued to use multiple means to attract public attention to the insufficient consideration of public health protection in the Government’s proposal for the new AQOs.

Since the establishment of CAN, we have been working towards closing the gap between the level of Hong Kong’s AQOs and that suggested by the World Health Organisation. Despite some improvements as a result of the first review, the gap remains. It will take another couple rounds of review before the ideal standard is set. Our work is far from finished.

Meanwhile, it is encouraging to see the further strengthening of our community empowerment efforts, mainly manifested in the Clean Air Neighbourhood trial project in Tuen Mun and the Social Lab - Healthy Street Lab in Sham Shui Po. With a design thinking approach to the projects, we successfully identified air pollution related problems and possible solutions. Both projects have also inspired new ways to develop more environmental education projects that are more relatable to and engaging for local communities.

With our strong commitment to promote clean air for all, environmental justice is another important aspect we work on. The projects took place in relatively low-income districts. We found that residents in low-income neighbourhoods were also ones that were the most at risk of high exposure to air pollution. The latest research conducted by the University of Hong Kong and University of Cambridge also resonates this observation and finds that there is a statistically significant relationship between ambient air pollution (PM$_{2.5}$) concentration and the Social Deprivation Index in Hong Kong.

Besides the success of our empowerment and advocacy projects, our partners have also made remarkable breakthroughs to democratise the access of information. The launch of HKUST’s PRAISE-HK mobile app puts real-time air quality information in your hands. College students from the RCHK also came up with a newer design for handheld air pollution monitoring sensors which will be installed across different school campuses.

With all this progress made, on behalf of the organization, I would like to thank our collaborators for their ongoing support and making all these possible. We look forward to bringing further positive impact with the participation of the wider community.
Background of Air Quality Objectives (AQOs)

Problem:
The current review assessed air quality improvements in 2025 and the scope for tightening the AQOs. Since no further recommendations were made for tightening other air pollutants, Hong Kong’s AQOs will continue to significantly fall short of the safety standards established by WHO in the coming five years.

It means the citizen’s health will continuously be affected by air pollution. Hong Kong’s 2025 air quality goals fail to put public health first.

Going Forward

- A three-month public consultation is going to be launched in mid-2019 to solicit public views on the new AQOs proposal.
- The new objectives were expected to come into effect around 2020.

After the Review, the Government eventually put forward a proposal that recommended tightening of two types of pollutants (SO\textsubscript{2} and PM\textsubscript{2.5}) while relaxing the number of annual allowable exceedance of PM\textsubscript{2.5} to nearly 3 times more.

Worse, despite of our continuing effort, the Government made no commitment on a roadmap or definite time range by when Hong Kong’s AQOs will be leveled with the most stringent standard of the WHO.

Air Quality Objectives Review

2018 was a critical year that the first AQOs Review was conducted since amendment of the APCO in 2014 that stipulated the AQOs must be review at least once every five years.
Promotion Video

Actors Stephen Au and Renci Yeung were featured in our videos to address the public on the health threats of roadside pollution and the review of AQO. Videos were released in March and April of 2019.

Petition

In March 2019, CAN initiated a petition calling for the withdrawal of the Government’s proposal to increase PM$_{2.5}$ from WHO’s Interim Target 1 to Interim Target 2, but based on a controversial clause to relax its annual number of allowable exceedance from existing 9 to 35 times.

The proposal ignores the importance of public health as research of 2011, done by the University of Hong Kong which shows a 24% increase in the health risks every year if the government is allowed to increase the number of exceedances.

Infographic

10 Infographic posts were created to illustrate facts and arguments through compelling visuals.

Legal Research

Multi-jurisdictional Comparative Study on Air Pollution Control Regulations facilitated by Thomson Reuters Foundation. The research project aims to conduct comparative legal research on air pollution among Hong Kong and five other jurisdictions, including UK, US, Japan, Singapore and Canada, to identify the potential legal loophole of Hong Kong’s APCO.

The AQO Review Coalition was established in July 2018. The coalition members include environmental groups, medical organizations, Legislative Council members and lawyers. Clean Air Network is one of the pioneer members.

The AQO Review Coalition petitions that:
1. The Hong Kong AQO be tightened to WHO standards;
2. The AQO Review be based on the protection of citizens’ health, and a more progressive policy framework be established on such basis;
3. Set out more detailed air policies for specific area such as emission control and transport planning, which aims to reduce carbon emission and pollution.

In March 2019, the Coalition sent a written submission to the Legislative Council Panel on Environmental Affairs opposing the government’s proposal on relaxing the exceedances allowed for air pollutants.

Coalition member includes:
- 350HK
- Barrister Antonio Da Roza
- Blue Skies China
- CHEST Delegation HK & Macau
- Clean Air Network
- Friends of the Earth (HK)
- Greenpeace
- Green Power
- Health in Action
- Hong Kong Doctors Union
- Hong Kong Thoracic Society
- Hong Kong Lung Foundation
- Hong Kong Society of Paediatric Respiriology and Allergy
- LegCo Chu Hoi Dick office
- LegCo Dennis Kwok office
- LegCo Jeremy Tam office
- LegCo Kenneth Leung office
- LegCo Kwok Ka Ki office
- LegCo Tanya Chan office
- LegCo Ted Hui Chi Fung office

Actions by Coalition

December 2018
Protest outside the Central Government Office

March 2019
The joint press conference requested the Government to withdraw the proposal to relax the number of exceedances to 35 times a year for PM$_{2.5}$.
We Are Transport

Yearly Highlights

Over 60 Walk leaders and over 2400 participants have joined the Hong Kong Jockey Club “We Are Transport” program since 2017. Dozens of thematic walking activities were held across the city to encourage people to walk instead of taking vehicular transport as a way to reduce their contribution to roadside emission and enhance individual fitness.

Jul – Sep 2018

- Actor George Charles Rivers dog walking and live stream on Facebook
- Hiking enthusiast Wong Wai Kin
- Vivek Mahbubani performed a stand-up comedy about air pollution
- Lam Chiu Ying, former director of the Hong Kong Observatory, held a talk at PMQ

Oct - Dec 2018

- Actress Leila Kong shared her favorite walking route in Sam Mun Tsai, Tai Po on Facebook live
- Art Jamming with Kong Hong Cheun when walking from Kowloon City to Prince Edward by photo taking on our smart phones
- Collaboration with schools and elderly: Senior Leaders acted as walk leaders bringing students and going around Tuen Mun. The elderly shared their own stories and memories about the community

"Clean air is important for children's health and development.”
----Leila Kong
actor and a mother of two kids

Round-up happenings / activities

- Appreciation parties: to thank all the support from Walk Leaders and a chance for them to share their own experience about the walking tours
- Light project at PMQ, Central: 4 videos showing information about air pollution with lights and images during summer time

Achievements

Total no. of walking steps of all walks: 19 million

Average step of Walk Leaders and their followers: 8189 steps

Average daily step for Hong Kong people: 6860 steps
Minimum daily step to maintain good health: 8000 steps (suggested by health sector)

The project is dedicated to promoting a healthy walking lifestyle and the possibilities of walking to improve air quality. “We Are Transport” demonstrates a better attitude towards tackling the air pollution issue to advocate a clean air city.

Funded by: the Hong Kong Jockey Club Charities Trust
Yearly Highlights

Ship Emission Control

In 2015, Hong Kong became the first port in Asia to mandate ocean-going vessels to switch to cleaner fuel at berth. The measure brought significant reduction in terms of SO$_2$ and PM$_{10}$ level by about 60%, showcasing to neighboring cities how ship emission can be controlled.

With relentless effort made by CAN and other experts, a new rule came into effect from January 2019 to expand the scope of clean fuel requirement to whole Hong Kong’s water.

Under the new policy, it is expected that air pollution will be further reduced thus safeguarding the health of Hong Kong people.

Ocean-going vessels are one of the main sources of air pollution in Hong Kong.

Since 2015, CAN has called for further tightening of standard of the fuels use at berthing ships and setting up emission control area in Hong Kong and PRD waters. We also recommended to active the onshore power system vessels especially at Kai Tak Cruise Terminal.

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Ocean-going vessels (OGVs) that are using heavy fuel oil (with an average sulphur content of 2.6%) must switch to compliant fuel before entering Hong Kong waters.

Compliant fuel includes low-sulphur marine fuel with sulphur content not exceeding 0.5%, liquefied natural gas or any other fuel approved by the Director of Environmental Protection.

Air Pollution Control (Fuel for Vessels) Regulation

All vessels were required to use compliant fuel within Hong Kong waters.

Ocean-going vessels (OGVs) that are using heavy fuel oil and gas must switch to compliant fuel before entering Hong Kong waters.

Compliant fuel includes low-sulphur marine fuel with sulphur content not exceeding 0.5%, liquefied natural gas or any other fuel approved by the Director of Environmental Protection.

Cap. 311AB

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Clean Air Network analyses the 2018 air quality data collected by the air monitoring stations operated by the Environmental Protection Department. Here are the insights of our findings and our recommendations emerged from the review:

**Insight 1**
If the air quality doesn’t get better and we fail to achieve the emission reduction targets in 2020 set by Clean Air Plan:

--- Every year in Hong Kong ---

<table>
<thead>
<tr>
<th>493</th>
<th>premature deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>thousands upper respiratory tract infection cases</td>
</tr>
<tr>
<td>542</td>
<td>emergency admissions to hospitals</td>
</tr>
<tr>
<td>9</td>
<td>billion Hong Kong dollars direct economic loss</td>
</tr>
</tbody>
</table>

**Insight 2**
2016-2018 (3 years): The concentration of PM10 and ozone has increased significantly.

**Insight 3**
The level of PM2.5 has generally decreased (2016-2018), except for roadside monitoring stations.

**Insight 4**
Figures presented at the Government’s AQOs Review Working Group showed that the areas with the exceeding level of NO2 are highly overlapping with the areas proposed as the reclamation for the Lantau Tomorrow Vision project. The worry is that a waiver will be issued to benchmark future mega infrastructure projects with prevailing and more lax AQOs, instead of the updated and tighter standard.

**Insight 5**
WHO suggests a much stricter guideline regarding the notion of exceedance allowed for air pollutants - allows only 3 exceedances for PM2.5 and PM10 per year.

Government’s suggestion to relax allowable exceedances for PM2.5 under the new AQOs proposal clearly contradicts with WHO’s health-first principle and seems to conflict with Hong Kong Air Pollution Control Ordinance’s (APCO) interpretation on public interest.

“Street walking in Hong Kong is an unpleasant experience because of narrow streets with high traffic.”

-----Lam Woon-kwong

--- Check the full review on CAN official website: ---
Monitoring Network

Through monitoring and reporting level of air pollution in different places in Hong Kong, CAN voiced out the concern of high level of air pollution and its health impacts on vulnerable population such as kids, students, elderly, commuters and outdoor sport lovers.

CAN is developing an equipment that measures NO$_2$ concentrations in the air. The module can monitor the GPS location of the sensor. The portable device is constantly improving with better accuracy and becoming more user-friendly.

Air pollution is an invisible threat to health and it acts as an invisible burden to all of us. A portable equipment monitoring air quality at anytime can make the air pollution "visible". The "visible" air data helps the public easier to see the full picture of pollution in the community.

Bus Terminal in Lam Tin

September 2018

Legislative council member Jeremy Tam collected air data with us in the Lam Tin indoor bus terminal to address the problem of highly polluted environment for passengers waiting for buses.

Workshop with Goldman Sachs

Volunteers from Goldman Sachs got involved in the air monitoring workshop held at Sham Shui Po in December 2018 and they measured the PM$_{2.5}$ level around the school.

PRAISE-HK

Personalised Real-Time Air Quality Informatics System for Exposure - Hong Kong

One of the common goals between CAN and HKUST is to migrate Hong Kong’s air quality management system to a new paradigm based on exposure/health risk management as compared to emission-based management.

With technology, it is more possible to track all factors which opens up possibility to better manage exposure beyond managing emission. The PRAISE-HK project is one of the best examples.

Our aspiration is for Hong Kong to become one of the places with the best knowledge of exposure control. By doing so, we will contribute further to exposure science in the world and make an impact on local population.

Project Matter

Campus network on air monitoring

Project Matter is a student-led initiative started by students from Renaissance College, Ma On Shan and its current project focuses on installation of real-time self-built sensors in different school campuses across the city.

With the purpose of knowledge sharing and experience exchange, over the summer in 2018, CAN and Project Matter co-learned on multiple subjects including sensors technology, equipment calibration and monitoring mechanism.

Run for Clean Air

In February 2019, 5 runners helped us monitor the NO$_2$ concentration along the route of one of the largest marathons held in Hong Kong in the race. Their devices showed the NO$_2$ levels in the Kwai Chung area and near the entrance of Western Harbour Crossing tunnel would threaten racers’ health on that day.

Since 2013, outdoor runners were invited to conduct multiple pollution monitoring exercise across Hong Kong. Being affected constantly by roadside air pollution, they are one of the best persons to voice out the concern on the impact of air pollution on public health.

CAN invited the public to join a user interface (UI) workshop of PRAISE-HK in August 2018. The event included an introduction of the project and app, followed by small group discussions to experience the device prototype and collect user feedback which contributed to the app’s final phase development.

Download the app on Apple store or Google Play

1817

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World Environment Day

June 2019

The theme of this year’s United Nations World Environment Day on 5th June was “Beat Air Pollution”.

Our Young Advocates along with the CAN team responded to #BeatAirPollution. We would urge the general public in Hong Kong to address the problem of air pollution that is threatening human health and the environment.

Green Policies

Step Forward

CAN submitted our recommendations to the Government on the 2018 Chief Executive Policy Address.

Our recommendations:

- Government to set a timeline to clean air
- Upgrading commercial vehicles
- Enhancing Low Emission Zones
- Publicizing data for public to better monitor effectiveness of the emission control program for LPG vehicles
- Strengthening efforts to manage transport demand to ease traffic congestion
- Strengthening efforts to minimize ship-induced air pollution

Policy Address 2018-2019

- Pilot scheme for local ferries to ascertain the viability of green technologies in the local context
- Phase out Euro IV diesel commercial vehicles by the end of 2023

Budget 2019-2020

Plan to implement the Electronic Road Pricing Scheme Pilot (ERP) to address the city’s congestion problem.

March 2019

Young Power - School Strike for Climate

An international movement initiated by young students to urge the authorities to take strong action over climate change. Hundreds of young environmentalists also joined the protest in Hong Kong to voice out their concerns while addressing poor air quality and climate change are closely linked.
Community Engagement

Social Lab - Finale
Learnings from the Healthy Street Lab
July 2018
Open Class in Sham Shui Po – CAN shared our views on health street approach: How we build a walkable and healthy community

Knowledge Sharing with Octopus' Staff
August 2018

Paediatric Respirology and Allergy TALK
September 2018
Talk for medical professionals at the General Meeting of Hong Kong Society of Paediatric Respirology and Allergy.

Education Workshop
Collaborating with Special Educational Needs & Parents Association, CAN held an educational workshop for students and parents from different districts on 20th August 2018 at The Church of Christ in China Tam Lee Lai Fun Memorial Secondary School in Tuen Mun. Around 20 participated and were introduced to the causes and health impacts of air pollution in Hong Kong.

“Beyond the Invisibility” seminar for corporates
June 2019
CAN delivered lunch talks on Air Pollution with the topic “Beyond the Invisibility knowledge sharing with corporates”

The AQOs Review aroused some interest among various sectors on the issue of air pollution in Hong Kong. CAN was privileged to engage with SMEs and multi-national corporates from financial, tourism, utilities sectors, including the likes of Bloomberg, WeWork, Towngas, etc, through informational knowledge sharing sessions. Frequently asked questions ranged from air quality in their office/home locations, impact of air pollution on human health, related regulation and policy measures in Hong Kong.

Airmazing Race with Credit Suisse in Central
December 2018
With 7 checkpoints and 8 teams competing, the participants were seen running frantically in the streets of Central looking for clues and searching for answers with the theme of tackling air pollution.

Participants Feedback:
“Bring my awareness of the air quality control effort”
“Good event to combine awareness and exercise”
“Be more aware of air pollutants and join the effort”

Broadcast program: Cultural Express
Cultural express is a 2-minute program broadcasted at RTHK. Clean Air Network is one of the invited speakers to share valuable information about air pollution and health several times a year.
The pilot project aimed to develop a relatable environmental education model that is able to sustainably enhance overall literacy and participation of the general public of selected neighborhood on air pollution issue.

CAN led a project team comprised of a group of kaifongs, a dozen of senior citizens and secondary students reside and study in Tuen Mun and a group of professional urban planners. We appreciate the participation of the students from The Church of Christ in China Tam Lee Lai Fun Memorial Secondary School and the support from the Hong Kong Institute of Planners.

Throughout a 4-months period, with the fusing of both local and professional knowledge, the project team made its best effort to identify causes and factors contributing to high level of air pollution in the district, and communicate across the neighborhood.

At the final stage, a townhall meeting and data visualization presentation was held to showcase individual efforts which could be a crucial part to clean air.

Action and Impact
- Encourage drivers to stop idling with vehicles on a running engine
- Set up air monitoring devices at a few street shops
- Find suitable locations for expanding cycle parking racks near the campus
- Identify air pollution “hotspot” with health risk problems – Heavy pollution because of high traffic and street canyon effect

Field trip with kaifong, students and urban planners
Visualization of air data presented in a small exhibition
Set up an air sensor at a local store
Townhall meeting in school hall

Acknowledgement
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MarkerBay

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Two Presents

In no particular order, thank you for all your continued support.
SDG has been adopted by all United Nations Member States in 2015 as the blueprint to achieve a better and more sustainable future for all by the year 2030.

All 17 SDGs are intergrated but 4 of them can dominantly serve as a review and an assessment to combat air pollution:

World Health Organization Air Quality Guidelines (WHO-AQGs)

The 2005 update of AQGs represent the most current assesment of air pollution health effects, based on expert evaluation of the scientific evidence. The guidelines offer recommended exposure level of SO2, NO2, PM2.5, PM10, O3, as well as a set of interim targets to encourage a progressive improvment in air quality.

The summary of WHO-AQG is avaliable at: https://www.who.int/airpollution/publications/aqg2005/en/

Sustainable Development Goals (SDGs)

SDG has been adopted by all United Nations Member States in 2015 as the blueprint to achieve a better and more sustainable future for all by the year 2030.

Hedley Environmental Index (HEI)

An environmental air pollution related health index quantifies the public health, monetary and social cost of air pollution in Hong Kong. HEI is developed by the School of Public Health at the University of Hong Kong.

Air Quality Health Index (AQHI)

A health risk-based air pollution index estimates the additional short-term health risk caused by heart and respiratory diseases from air pollution that leads to hospital admission. AQHI is issued by the Environmental Protection Department and the index is updated hourly on the basis of data recorded by the general monitoring stations and roadside monitoring stations in various districts.

Air Quality Objectives (AQOs)

The current AQOs comprise seven key pollutants (SO2, NO2, PM2.5, PM10, O3, Carbon monoxide, and Lead) and are benchmarks against a combination of interim and ultimate targets under the WHO-AQGs.

AQOs are not merely a set of air-quality goals, but also the benchmark for the issuance of environmental permits for designated projects under the Environmental Impact Assessment Ordinance (EIAO).

Air Pollution Control Ordinance (APCO)

The APCO (Chapter 311) stipulates a set of AQO that the Authority shall aim to achieve as soon as it is reasonably practicable and thereafter to maintain the air quality so achieved in order to promote the conservation and best use of air in the public interest.