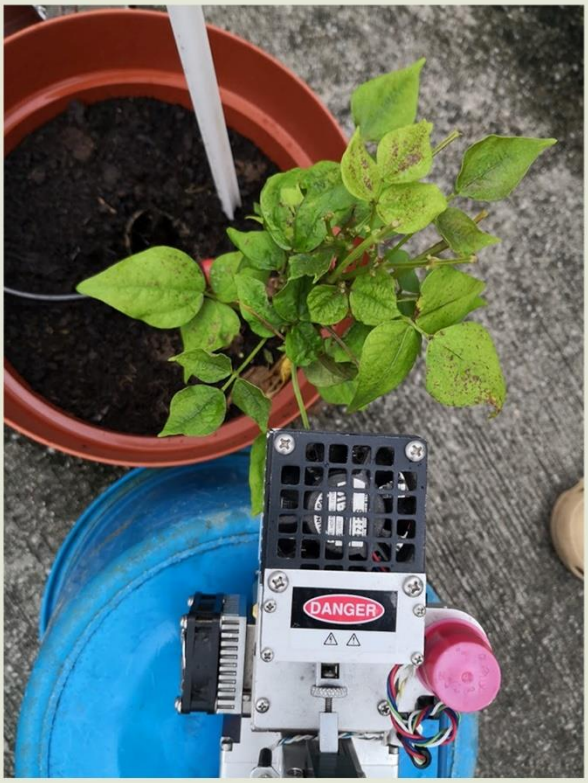
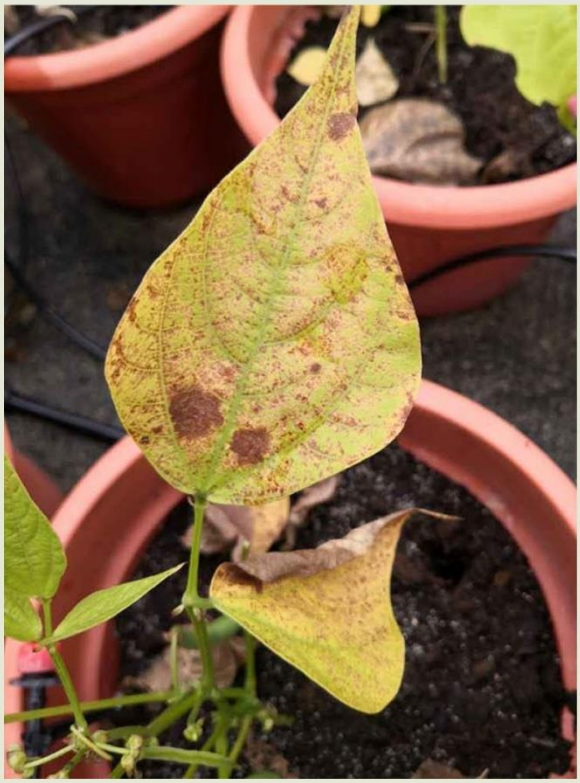
Green Pulse

A Publication from **Green In Future Pte Ltd**, Singapore

Volume 4 Issue 20 • 2020 • www.greeninfuture.com

HARMFUL EFFECT OF OZONE DAMAGE ON PLANTS





INSIDE

GreenPulse
VOLUME: 4
ISSUE: 20

Credits:
Editor: editor@greeninfuture.com
Marketing: marketing@greeninfuture.com
Business Development: info@greeninfuture.com
Design and Production: Nandini Subramanian

Harmful Effect of Ozone Damage on plants

CUHK Proves and Visualises the Harmful Effect of Ozone Damage on Plants
First Plant-based Measurement of Ozone in South China Region

Professor Tai (second right) and his team (left to right: Dr Felix Leung, Xueying Shirley and Mehliyar Sadiq) visit the experimental site for investigating ozone and plant interaction at the Institute of Atmospheric Physics, Chinese Academy of Science in Beijing

A research team led by **Professor Amos Tai**, Associate Professor of the Earth System Science Programme at The Chinese University of Hong Kong (CUHK), has successfully quantified and visualised the impact of Hong Kong air pollution especially ozone pollutant on plants and the environment. Although the experiment took place in a rural area and in Spring, which would usually have a lower average ozone concentration, the pollutant level still reached high enough to do significant damage to the bioindicator plant. The finding was recently published in *Atmosphere*.

Hong Kong is one of the most densely populated cities in the world, with millions of people living and working in close proximity to busy roads with severe air pollution. Among various air pollutants, surface ozone is of particular concern. According to the 2019 air quality monitoring results announced by the Environmental Protection Department, the average ozone level has been increasing over the past 20 years, despite overall air quality and other four major pollutants level being on an improving trend. (https://www.info.gov.hk/gia/general/202001/20/P2020012000874.htm?fontSize=1)

Ozone is mostly produced photochemically from anthropogenic precursor gases such as Volatile Organic Compounds (VOCs) and Nitrogen Oxides which are emitted by vehicles. Ozone can cause considerable harm to both human and ecosystem health. The phytotoxicity of ozone has been shown

to damage photosynthesis, reduce gas exchange, induce early leaf senescence, and retard growth in both natural vegetation and crops. As plants play vital roles in regulating the ambient environment, ozone-induced damage in plants may further accelerate environmental degradation, with severe consequences for human health.

Professor Tai and his research team established a free-air experimental garden to monitor, quantify and understand the mechanisms of ozone damage on plants. In this experimental field, dubbed the "ozone garden", the team grew cultivars of beans with different ozone sensitivities as a bioindicator of the local air pollution impacts on ecosystems.

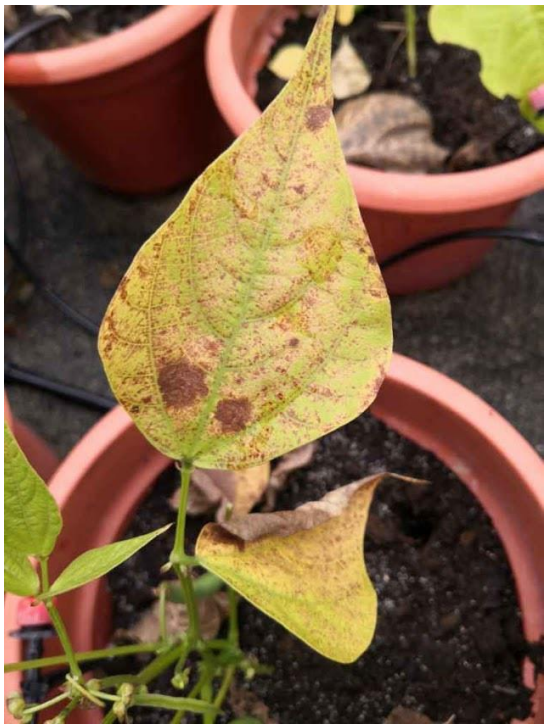
The research team counts the number of flowers on each individual bean pot at the Ozone garden

The team sets up a weather station in the ozone garden to monitor the micro-meteorology of the field site and the data is used for modelling the ozone impact on photosynthesis

Professor Tai is excited about establishing the "ozone garden", "Such a free-air ozone garden has been built at many locations in the US and Europe but this is the first of its kind in South China. The data obtained from this garden is essential to demonstrating the impact of air pollution on plants under locally specific environmental conditions and to deriving important parameters of ecophysiology and biometeorology that can be used to build a regionally relevant earth system model for predictive purposes."

The species of bean that is chosen shows a distinctive red mottles pattern on the leaves according to the level of ozone in the atmosphere. And there are two genotypes of beans, one sensitive type and one resistant type, that show different sensitivity to ozone. The beans are supplied by the Centre for Ecology and Hydrology, UK. Dr.Felix Leung, project leader, found that the ozone-sensitive genotype bean suffers higher ozone-induced foliar damage, with more red mottles and a higher death rate. The sensitive genotype plants also produce 30% more flowers than the resistant genotypes. This is the result of stress-induced flowering caused by ozone, which triggers the plant to produce more flowers and therefore maintain its chance of fertilisation and reproduction. The team also found that the resistant genotype has a higher success rate (17% more) of fruiting development from flowering to bean formation and less immature or dead pods than the sensitive one.

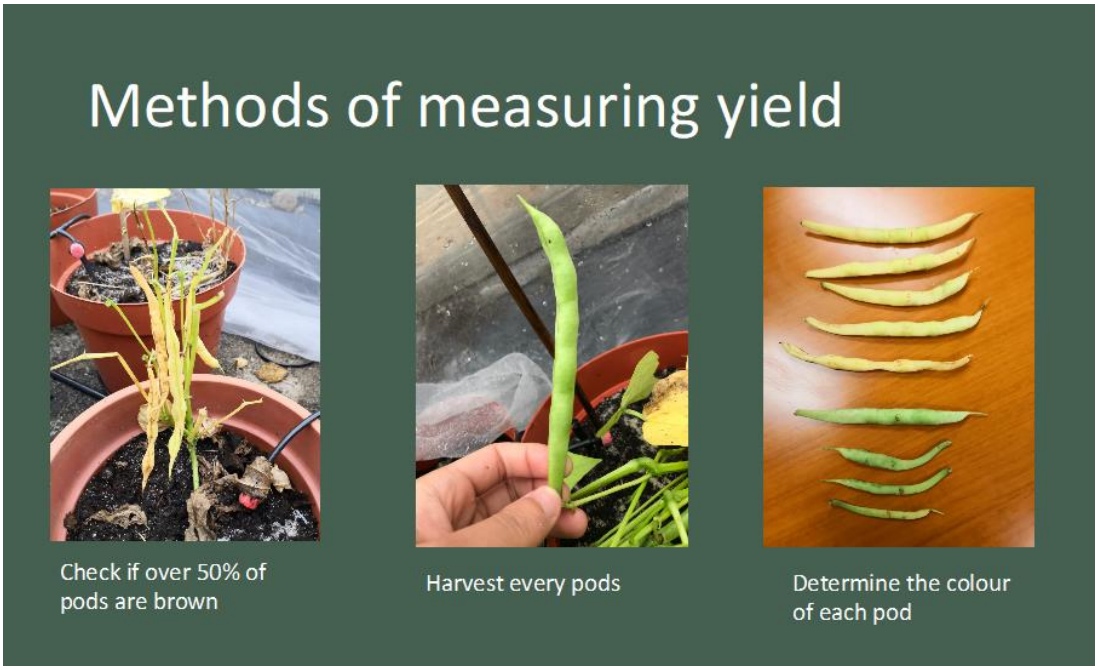
A Li-cor photosynthesis system was used to measure the photosynthetic rate of the plant

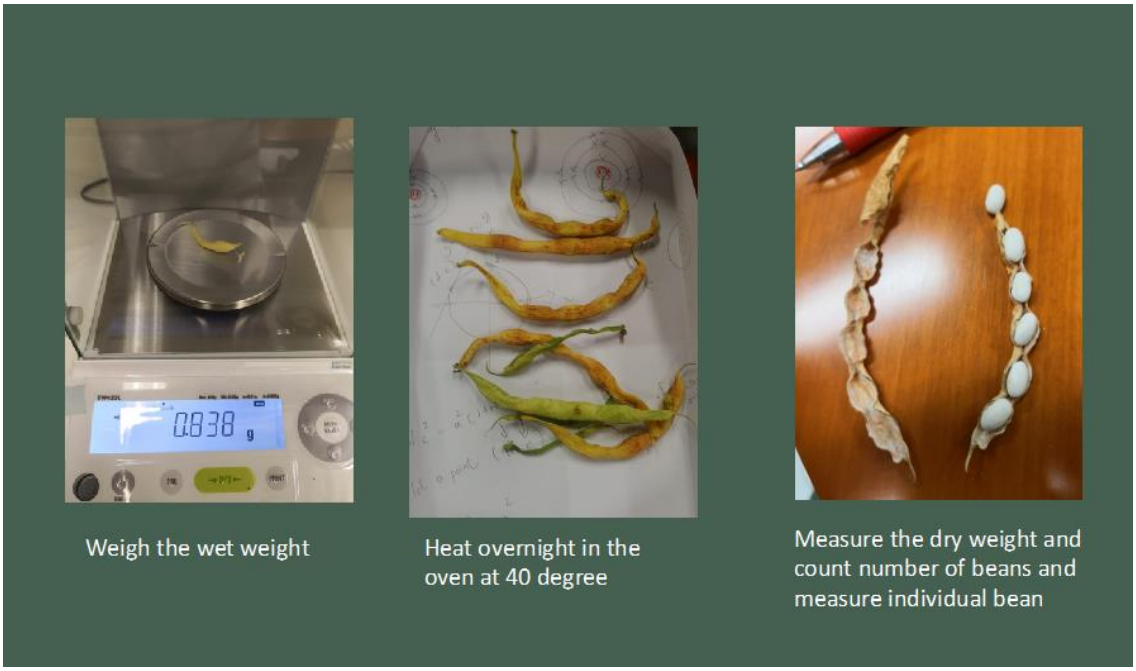


The plant's foliar is damaged by high intensity of ozone, thus showing more red mottles

The findings show that the ozone level in Hong Kong is high enough to cause significant damage to plants even in the countryside, like CUHK campus. It has important implications for farmers in Hong Kong and South China where their crops suffer from ozone pollution. This experiment also gives evidence to support a clean air policy that reduces vehicle emissions in Hong Kong. Continuing work on the experiment will be carried out to investigate the physiology of the beans under various ozone concentrations in a controlled environment.

This research was funded by the Research Sustainability of Major RGC Funding Schemes of The Chinese University of Hong Kong, and supported by the State Key Laboratory of Agrobiotechnology (CUHK).





About the State Key Laboratory of Agrobiotechnology, Partner Laboratory in The Chinese University of Hong Kong

The laboratory was established essentially to tackle the pressing demand of food supply by increasing yield, food safety, and nutrition in a country of a billion-plus people. The laboratory builds on the close partnership between CUHK and China Agricultural University, both leaders in agrobiotechnology. The two universities work together on the development of molecular biotechnology and its practical applications in terms of the increase of yields and enhancement of the nutritional value of crops.

About the Institute of Environment, Energy and Sustainability (IEES)

The Institute of Environment, Energy and Sustainability (IEES), established in 2011, aims to promote multidisciplinary environmental research and education for The Chinese University of Hong Kong (CUHK). Through integrating CUHK's strengths in various cognate disciplines, IEES aspires to build synergy to address some of the most pressing issues confronting the long-term sustainability of human society. IEES endeavours to work in collaboration with industrial, government and non-government organisations as well as different community stakeholders to build a better environment for our future generations.

Note:
Evidence of Ozone-Induced Visible Foliar Injury in Hong Kong Using Phaseolus Vulgaris as a Bioindicator, Atmosphere

https://www.mdpi.com/2073-4433/11/3/266

Media enquiries: Mr. Henry Kwan (Tel: 3943-1719), Communications and Public Relations Office, CUHK

Anurag Bajpayee

Anurag Bajpayee is the co-founder and CEO of Gradiant Corporation, which has evolved from a technology start-up into a global brand with diversified applications and multiple divisions around the world. Anurag earned his PhD in Mechanical Engineering from MIT where he worked on industrial desalination and water treatment. His doctoral work was recognized by the Scientific American as a top 10 world changing idea and is now part of Gradiant's technology portfolio.

He was named in the MIT Technology Review's annual list of Innovators under 35, under the Entrepreneur category in 2019, an initiative that recognises exceptionally talented technologists whose work has great potential to transform the world.

Anurag Bajpayee shared his views with Green in Future on the role of Gradiant in water treatment and management initiatives.
Here is an excerpt of the interview.

What is the current role you play and how did you get introduced to this industry?

I am the co-founder and CEO of Gradiant, a global water treatment company which provides tailored solutions for complex industrial wastewaters and desalinated seawater through our suite of proprietary technologies.

Our CTO, Prakash Govindan, and I started Gradiant about 8 years ago at MIT where we both received our PhDs in Mechanical Engineering with focuses on desalination and industrial water treatment. At the time, the oil & gas industry in the United States was desperately looking for technologies which could treat and recycle highly contaminated water coming out of their oil wells.

That's where we first broke ground, but over the years we've diversified into other industries including power, mining, textiles, pharma, infrastructure, municipality, etc. and branched out to new geographies including China, India, Australia, APAC, and the Middle East. We've maintained our technology DNA the entire time and recently commercialized our CFRO (Counter Flow Reverse Osmosis) process that increases the fresh-water production capacity of seawater desalination plants in an environmentally friendly yet economic manner. This has brought us into one of the largest and most impactful markets, seawater desalination, producing drinking water from oceans and seas. Today, Gradiant has completed over three dozen projects around the world.

We remain committed to using the best technologies to ensure that our customers have the most sustainable, economically and environmentally friendly water solutions.

How is Gradiant planning to tackle increasing water demand and problems, and how cost effective and sustainable are your solutions?

Gradiant tackles increasing water demand and water pollution challenges in two ways.

First, we treat and recycle contaminated wastewater for our industrial customers. This process both reduces the volume of wastewater for disposal which threatens the environment as well as reduces the customers' intake of fresh water from other sources, saving money for our clients and allowing them to be more resource independent/sustainable.

Secondly, we make seawater desalination-production of fresh water from the oceans-more efficient and maintainable, ensuring the earth's largest water source can be responsibly tapped.
Traditionally, cost and complexity have been deterrents for adopting water treatment technologies. Today, the overall cost of treating highly saline industrial wastewaters with Gradiant's technologies is almost half that of traditional techniques. Additionally, our systems are more robust and easier to operate compared to conventional methods even with the most complex waters. Overall, Gradiant and similar companies which are shifting the paradigm on how to treat water are the future of the industry.

Please elaborate Gradiant's role in waste-water management.

Industrial wastewater management is a very large and diverse field that is constantly adapting to new challenges. We know there is no silver bullet to address the entire gamut of water issues our clients face.
Therefore, Gradiant has built a portfolio of technologies and business solutions to address the wide-ranging needs of our various industrial customers. We work with our clients as partners to design the treatment process, as well as deliver and maintain projects (generally under a build-own-operate model) so that our customers can focus on what they do best while we provide end-to-end solutions to their water problems. Many of our customers approach us to solve their water challenges today while strategising and adapting to potential water challenges tomorrow as their plans and needs evolve.

Water, being an important component for all living forms, is a diversified field. Which categories do Gradiant deal with?

Gradiant currently focuses on two main sectors: industrial water treatment and seawater desalination with a focus on the most complex waters from those industries.
For industrial water, we clean the effluent wastewater from industries such as textiles, pharmaceuticals, power, oil & gas, chemical, F&B etc., often recycling that water to reduce discharge of contaminated water to the environment and the extraction of fresh water from public water supplies.
For seawater desalination, our technology removes salt from ocean water to make it drinkable and reusable. Oceans make up 97% of the earth's water and by economically and sustainably producing fresh water from these, it is an almost infinite source for the world.

Can you name the key sectors that cause waste water management issues? And which one, according to you, is the major culprit in causing water pollution?

Wastewater is a byproduct of virtually every industrial process. Most industrial activity consumes a lot of water as well as produces a lot of contaminated water. Traditionally, many industries such as oil & gas, textiles, pharma, etc. have been associated with water pollution but that reality is rapidly changing with growing environmental consciousness, water scarcity, and regulation. Wastewater effluent has become a source of value and Gradiant provides technologies that make treating and recycling industrial wastewater feasible.

What are the future plans of your organisation? How are you addressing climate change and sustainability issues through them?

Gradiant plans to continue our current global operations with further focus on seawater desalination, industrial wastewater, mining, and infrastructure in the Middle East, APAC, and Australian region along with stepping into Advanced Oxidation Processes which treat PFAS, a group of manmade chemicals which represent another industry that is in dire need of water treatment solutions.
Coming to the question of climate change, our water bodies are huge carbon sinks – be it rivers, lakes, and of course the oceans. Through our work, we are already and will continue doing our part to address climate change by rescuing these invaluable carbon sinks.

LG TO LAUNCH THE NEW COMMERCIAL AIR CONDITIONER WITH INNOVATIVE AIR PURIFICATION FUNCTION

Raising standard of the building by implementing LG Electronics' revolutionary 4-step air purifying process

LG Electronics (LG) launches the new commercial air conditioner (CAC), equipped with its innovative air purification function. The product is optimized for crowded facilities where users spend a long time, especially places frequent by those with weaker immunity and are more vulnerable to fine dust. These includes kindergartens, schools, hospitals, offices and retail malls. LG's new cassette offers more choices to building owners and consultants who are torn between various selections of cassettes.

In May 2018, WHO reported that 9 out of 10 people breathe air containing high levels of pollutants while in January 2019, UNICEF announced that over 130,000 children die every year because of air pollution. According to the "2019 World Air Quality Report" published by IQAir, a Swiss air quality technology company, Singapore's air quality stands in the 'Moderate' range (The average PM2.5 concentration, weighted by population for Singapore in 2019 is 19.00 (moderate range). Source: https://www.iqair.com/world-most-polluted-countries). This means that the air quality is acceptable, however there could be presence of some pollutants that may cause a slight health concern for a small group of people who are sensitive to air pollution.

LG's cassette type indoor unit, equipped with air purification function, is the best option when considering the installation of air purification products for large indoor spaces. To implement efficient air purifying technology, LG has supplemented air purification solutions to 1 Way and 4 Way cassette indoor units.

Air Purifying Process for Cleaner, Fresher Air

LG's innovative 4-step air purifying process consists of ▲Pre-filter ▲Dust Electrification ▲Ultrafine dust filter ▲Photocatalytic deodorization filter. With this process, it allows ultrafine dust, level of PM1.0, to be removed.

Firstly, multi-layer structure of Pre-filter removes particle, which is 2.5 times higher efficiency than general pre-filters. Then, Dust Electrification increases the electrostatic force of particle improving the filter's collecting efficiency. The following step is removing dust up to PM1.0 ultrafine particle with Electric Dust Filter. Lastly, Deodorization filter removes life odour and harmful gases with high efficiency gas adsorption technology.

Marrying Slim Design and High Performance

LG's new cassette provides powerful air purification performance. The filter removes a dust up to PM1.0 with LG's revolutionary technology, which is guaranteed by Korea Air Cleaning Association (KACA). The new cassette shows Clean Air Delivery Rate (CADR) of 19.1 m3/min, which is much higher than the standard CADR of 10.0 m3/min. Even though LG adds air purifying process to the cassette, it keeps its excellence in appearance as separate filter frames are applied to air purification filters inside the product. As a result, LG's indoor unit looks the slimmest among any other products in the market. Another notable feature of LG's new cassette is its indoor panel LED lamp and a wired remote control, which allows to monitor air quality in real time. Monitoring can be done anytime via mobile LG ThinQ app.

Moreover, the integral panel is installed to the indoor unit body, therefore it does not take up space on the floor and interior space can be utilized more widely. Since the air purification filters are semi-

permanent and one-touch, it does not need to be replaced, providing convenient maintenance for building owners.

"By using LG's revolutionary air conditioning system, building owners, consultants and installers can raise the standard of the buildings," said Kam-gyu Lee, LG's air solution business unit chief. "Based on the innovative feature and technology, LG will continue to work as a leader in the world-class HVAC market and make the healthy living environment for humans."

For more information, please visit: **https://www.lg.com/global/business/air-solution**

About LG Electronics Inc.

LG Electronics Inc. is a global innovator in technology and manufacturing with operations in 140 locations and a workforce of over 70,000 around the world. With 2018 global sales of USD 54.4 billion, LG is composed of five companies – Home Appliance & Air Solution, Home Entertainment, Mobile Communications, Vehicle Component Solutions and Business Solutions. LG is a world-leading producer of TVs, refrigerators, air conditioners, washing machines and mobile devices, including premium LG SIGNATURE and LG ThinQ products featuring artificial intelligence. For the latest LG news, go to www.LGnewsroom.com.

About LG Electronics Air Solution Business Unit

LG Electronics' Air Solution Business Unit is a global leader in HVAC and energy solutions with a comprehensive portfolio of proven expertise and performance. Launching Korea's first residential air conditioner in 1968, LG has paved the way for total HVAC solutions over the last five decades through strategic utilization of advanced technologies. With a well-established production base and industry-leading capacity, the company provides effective HVAC solutions for both the commercial and residential sectors. Its wide range of cutting-edge systems for heating, ventilation and air conditioning truly represent LG's initiative in offering the most optimized solutions for a variety of uses. Pursuant to its mission of "Innovation for a Better Life," the company offers solutions boasting high energy efficiency and reliability based on its state-of-the-art knowhow and technologies to ensure the most optimal environment for users. For more information, please visit www.LG.com.

About LG Electronics Singapore Pte Ltd

LG Electronics Singapore Pte Ltd (LG Electronics Singapore) is a fully-owned subsidiary of LG Electronics Inc., the pioneer and market leader of the Korean electronics industry. LG Electronics Singapore operates three business units – Home Entertainment, Mobile Communications and Home Appliance & Air Solution. In recognition of its vision to enrich people's life with smart technologies and innovative design, LG Electronics Singapore has been recognized with prominent local and international accolades, such as the CNET Asia Editor's and Readers' Choice Awards, HWM+HardwareZone.com Tech Awards, Red Dot Design, and GfK No. 1 Awards. For more information, please visit lg.com/sg.

Media Contacts:
Valerie Ong
LG Electronics Singapore
E-mail: valerie.ong@lge.com
Mark Juan
Asia PR Werkz
Tel: +65 9005 3361
E-mail: mark@asiaprwerkz.com
Pearlene Wong
Asia PR Werkz
Tel: +65 9271 7890 E-mail: pearlene@asiaprwerkz.com

Upcoming GREEN Events:

World Battery Industry Expo (WBE 2020)
Formerly the 5th Asia Battery Sourcing Fair (GBF Asia 2020)
16th- 18th August 2020
China Import & Export Fair Complex, Guangzhou, China

11th World Renewable Energy Technologies
20-23 August
Convention Centre, New Delhi, India

2nd Vietnam Solar Expo 2020
3rd-4th November 2020
National Convention Center, Hanoi

Asean Clean Energy Week
24th-25th November 2020
Okado Manila, Phllippine

Geo Connect Asia 2021
24th-25th March 2021
Suntec Singapore Convention & Exhibition Centre

Strategies Towards Impactful Corporate Philanthropy in the 2020s

Corporate social responsibility (CSR) is no longer a choice for businesses. Today, investors, consumers and stakeholders around the world expect that corporations and wealthy individuals give back to improve the community, society and the environment at large.

This sentiment also led to the revision of the Business Roundtable's Purpose of a Corporation in August 2019, which was redefined to promote 'an economy that serves all Americans'. The new statement was signed by over 180 CEOs and, while the document is focused on the United States, it symbolises a shift in business leaders recognising the importance of having to lead their companies for the benefit of all stakeholders, not just shareholders.

While Milton Friedman advocated that businesses maximise profits as their primary objective, it is often overlooked that he also suggested businesses should do so by "conforming to the basic rules of the society, both those embodied in law and those embodied in ethical custom." As such, neither extremes of maximising profit at all costs, nor engaging in CSR (of which corporate philanthropy is one of them) to the detriment of shareholders, are sustainable business models.

Herein lies the dilemma. As stewards of shareholders' investments, businesses must be accountable for how they deploy those resources. Yet, there is also increasing external expectations from the public and non-financial stakeholders to deploy those resources better and more sustainably. In this context, it is unclear if managers can be considered as responsible stewards when they deploy resources for CSR activities that are not related to a firm's primary business or purpose, but which are nevertheless needed for the company to survive and to pay their own employees and suppliers.

Through my research, I have found that while CSR engagements can be valuable to firms, they are less so when firms are not financially healthy. For instance, is it socially responsible to run down a company in pursue of CSR engagements that yielded benefits incommensurate to job losses within the company and its supply chains, many times to sole breadwinners of families? As such, it is essential that conversations surrounding CSR engagements in general – and corporate philanthropy more specifically – need to be context-specific.

For businesses to fulfil their responsibilities towards immediate stakeholders, such as employees and shareholders, and still be responsible corporate citizens that conform to broader societal expectations, they must consider three critical points.

1. It's not just about money – be purposeful and teach a man to fish

Over the years, society has moved away from the cliché of 'more is better' and the publicity stunts of philanthropy. High net worth individuals often come in for criticism for generously donating to well-publicised causes while ignoring the social challenges encountered in the communities where their businesses operate. This is a reminder of the perils of using such causes to engender goodwill without the right motives.

Although generous donations can be helpful, more purposeful and strategic philanthropy is likely to achieve greater impact. As the saying goes, "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime." How much one gives is not necessarily as important as how resources are deployed for maximum impact.

2. Less can be more if done with purpose and effort

Similarly, it is important for firms to align what they do as a business with their corporate philanthropy activities. For example, my research shows that generous donations by firms operating in socially contestable industries are discounted, as they are often perceived as a type of 'blood money'. More importantly, while doing good can be beneficial to firms, not all 'good' is created equal. That is to say, substance is more important than form.

This suggests several ways firms can enhance the impact of their philanthropy activities. For example, they should champion causes that are consistent with their company values and thereby enable mobilization of their employees' support and participation. In this way, businesses can focus on fewer projects but commit to them for the long-term and see them through.

This also applies to individuals who don't necessarily need to balance the interests of shareholders with those of other stakeholders. While their financial support creates resources and facilitates the causes, time and effort from individuals are essential for those charitable causes to come to fruition.

3. The right mindset is needed at all levels of an organisation

While senior leadership has the final say when it comes to choosing philanthropic causes and activities, all employees can be champions of causes and advocate for them internally. This means that social responsibility is felt throughout a business, regardless of job roles and scopes.

To ensure employees understand this, it is important for us to nurture individuals to be responsible citizens before they join the workforce. Educational institutions can play an important part in this by informing students of the roles they can play in the future.

At ESSEC Business School, for example, we require our students to participate actively in internships with social enterprises around the world. This is a way to ensure the next generation of leaders can internalise the importance of good business leadership, helping them to understand the broader context in which organisations operate.

When corporates and individuals engage in meaningful and purposeful charitable causes, inevitably some of their convictions will line up against one or more of the UN's 17 Sustainable Development Goals. It is important that a company's involvement or claims to be making a difference are not simply showboating or one-off engagements. Rather, their contributions should be genuine and driven by deep convictions that become longer-term commitments. Only then can we make real progress.

Professor Ping-Sheng Koh, Professor, Accounting and Management Control Department, ESSEC Business School

cair fresh, A Washable Paint That Also Cleans the Air

Singapore-based start-up gush, an innovator of sustainable paints and advanced building materials has launched its new series of washable paints, cair fresh. In addition, gush is rebranding to a new slogan, “Clean Air In Your Favourite Colours”.

Founded in Mid-2017 and recently raising $3m SGD in their pre-Series A round, gush is known for its flagship product, cair interior paint, which provides an all-round solution for a safer and healthier indoor environment. The cair fresh series is reformulated for easy removal of dirt and stains, while still enjoying cair’s air-purifying benefits.

For walls prone to surface marks and grime, whether it’s from high activity environments or the bustle of the day-to-day. cair fresh’s washable feature offers fuss-free maintenance, so surfaces are always kept fresh and looking their best.

Ryan Lim, CEO and Co-founder of gush, said, “As the newest result of our constant feedback-innovation loops, the launch of cair fresh is another exciting step for gush, towards our dream of creating a range of sustainable solutions that create safer, better environments for you and your loved ones.

It also showcases our brand’s new visual identity, which now incorporates the bold, fun and also versatile traits that have always been key values in gush. We’re not afraid to be different, and we can’t wait for our rebranding to showcase our motto, “Live right, Breathe right”, in a dynamic new way.”

Features of cair fresh:
Air-purifying: Catalytic reactions break down toxic VOCs found within your spaces, including formaldehyde and benzene. Pollutants and unpleasant odours are turned safely into H_2O and CO_2.

Fuss-free Freshness: Featuring high dirt tolerance and release for easy removal of marks and oil-based stains, cair fresh ensures that simple cleaning keeps walls looking as fresh as ever.

Anti-moulding: Containing powerful anti-microbial agents, cair fresh inhibits growth of mould and fungal spores, stopping moulding from affecting one’s spaces and health.

Anti-bacterial: Eliminates 99.9% of infection-causing bacteria, including E. Coli and S. Aureus. By puncturing the membrane upon contact, cair fresh causes bacteria cells to dehydrate and perish.

VOC-free: cair fresh is non-toxic and contains zero VOCs. Key raw materials are produced by pulverization, releasing less carbon dioxide than traditional manufacturing processes.

Odourless: cair fresh emits minimal odours, reducing the time needed for your spaces to be ventilated of any unpleasant or unsafe fumes. Besides a safer painting experience, cair fresh gives an interior environment that's especially suitable for those sensitive to respiratory conditions, children and the elderly.

At the same time, gush's rebranding is to show that its paint does more than just bring colour to a space. There will be a new visual presentation and new product design which will be present on the new cair fresh series. For gush, the 'more' it is offering is clean air, free of harmful pollutants, bacteria, mould, and odours.

Lester Leong, Co-founder of gush, said, "As gush paint cleans the air, you've got a safer space, and that means your lives changing for the better. Now, you're less worried about air pollution. Or, you're more assured that your allergies are less likely to act up. With the rebrand, we want people to start picturing the benefits of the cleaner, healthier home they will have if they use gush paint, and the different ways their day-to-day lives will be improved."

The rebranding campaign aims to:
- Generate familiarity with, and spark curiosity about gush with a larger audience, while still focusing on new home owners and new families.
- Define the gush experience as one which ultimately leads customers to see paint differently. With gush, paint can empower you to care, by creating better living spaces for you and your loved ones.
- Showcase gush's brand identity as bold, fun and relatable, highlighting a dynamic, lifestyle-oriented version of the gush tagline: Live right, breathe right.

To date, gush paints have been trusted to provide clean air in your favourite colours in more than 1000 residential and 60 commercial projects in Singapore and the region.

More information on gush:
Bad air quality leads to asthma, allergies, decrease in cognitive abilities and has adverse long-term health effects. This is made worse by the fact that we spend, on average, 80% of our time indoors, and indoor air pollution is 3-5 times worse than outdoor.

At gush, we want to help you take charge of your interior environment by transforming your walls, the biggest surface area around you, into a tool that purifies your air of pollutants, so that your loved ones can breathe easy and live better.
www.gowithgush.com

The most inspiring International Platform for the Global Renewable Energy Industry

11th WORLD RENEWABLE ENERGY TECHNOLOGY CONGRESS

INTERNATIONAL CONFERENCE AND EXHIBITION

21 22 23 AUGUST 2020 | New Delhi India

Supported by

Ministry of New and Renewable Energy
Government of India

IREDA

Organised by

For a better life on a greener planet

Energy And Environment Foundation
www.ee-foundation.org

Renewable Energy Solutions for a Sustainable Future

Area Spread over	Visitors	Country	Delegates
18,000 sqm	6000+	32+	550+

KEY HIGHLIGHT

- 18,000 sq. mtrs. of Business Space
- Connect with International Exhibitors
- Keep up with future trends for continued business success
- 3 days International Conference and B2B session
- Global Awards 2018 in Renewable Energy Sectors

Book Stall Space Now

SOLAR | WIND | BIO ENERGY | ENERGY EFFICIENCY | WASTE TO ENERGY

GREEN VEHICLES | SMALL HYDRO | GREEN BUILDINGS | GEOTHERMAL | TIDAL

Reserve your exhibition space today!

- Meet with industry leaders, policy and decision makers at networking events.
- Position your company as the leading brand for future energy solutions.

11th World Renewable Energy Technology Congress & Expo-2020
is an excellent platform to promote your organization to influential players and investors in the industry. Showcase your technology, products and services.
Sponsorship opportunity available. Contact 91-9971500028

Proud Sponsors

Is your company missing from this list! Join these prestigious 2020 RE International Conference & Expo...

BERGEN | SKYPOWER GLOBAL | Trinasolar | GE | 2018 YEAR OF TRUST | SBI | NTPC | SmartPower India | Renewables | SunEdison | IREDA | ReNew Power | REVA | SCANIA | ACME | ONGC | HP | ALTERNRG | REC | ebtc | PCRA | SIDBI | giz | SUZLON | Oil India Limited | centrotherm | R&D | JINDAL POWER | SUNPOWER | ORGANIC RECYCLING SYSTEMS PVT. LTD | Intelligent Energy | SunSource ENERGY | praj | IREDA | EIL | CONTINUUM | Webel | GERMI | NHPC | GREEN ELEPHANT | HINDUSTAN POWER

Media Partner: GREEN IN FUTURE

We would like to extend an Invitation for you to nominate for the most deserving individuals and organisations today

Global Awards Category

Environment Awards
Sustainability Awards
WasteMet Awards
Green Building Awards

Nomination Deadline
June 30, 2020

Earlybird Disocunt Deadline
April 31, 2020

Application Form
Application Form and Ruels & Regulations can be obtained by sending request by email to dranilgarg2011@gmail.com

For details visit us
www.ee-foundation.org/awards.html

For More Information

Dr. Anil K. Garg
President, WRETC-2020
Cell : 9971500028, 9999071071
dranilgarg2011@gmail.com

Punit Singh
Senior Manager-Conference
Cell : 9213901510, 011-22758149
Telefax : 011-43019379
punit.nagi@ee-foundation.org

www.wretc.in

For regular update join