

# Green Pulse

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**DOES CHINA'S  
EMBRACE OF THE  
CIRCULAR ECONOMY  
SET AN EXAMPLE  
FOR THE WEST?**



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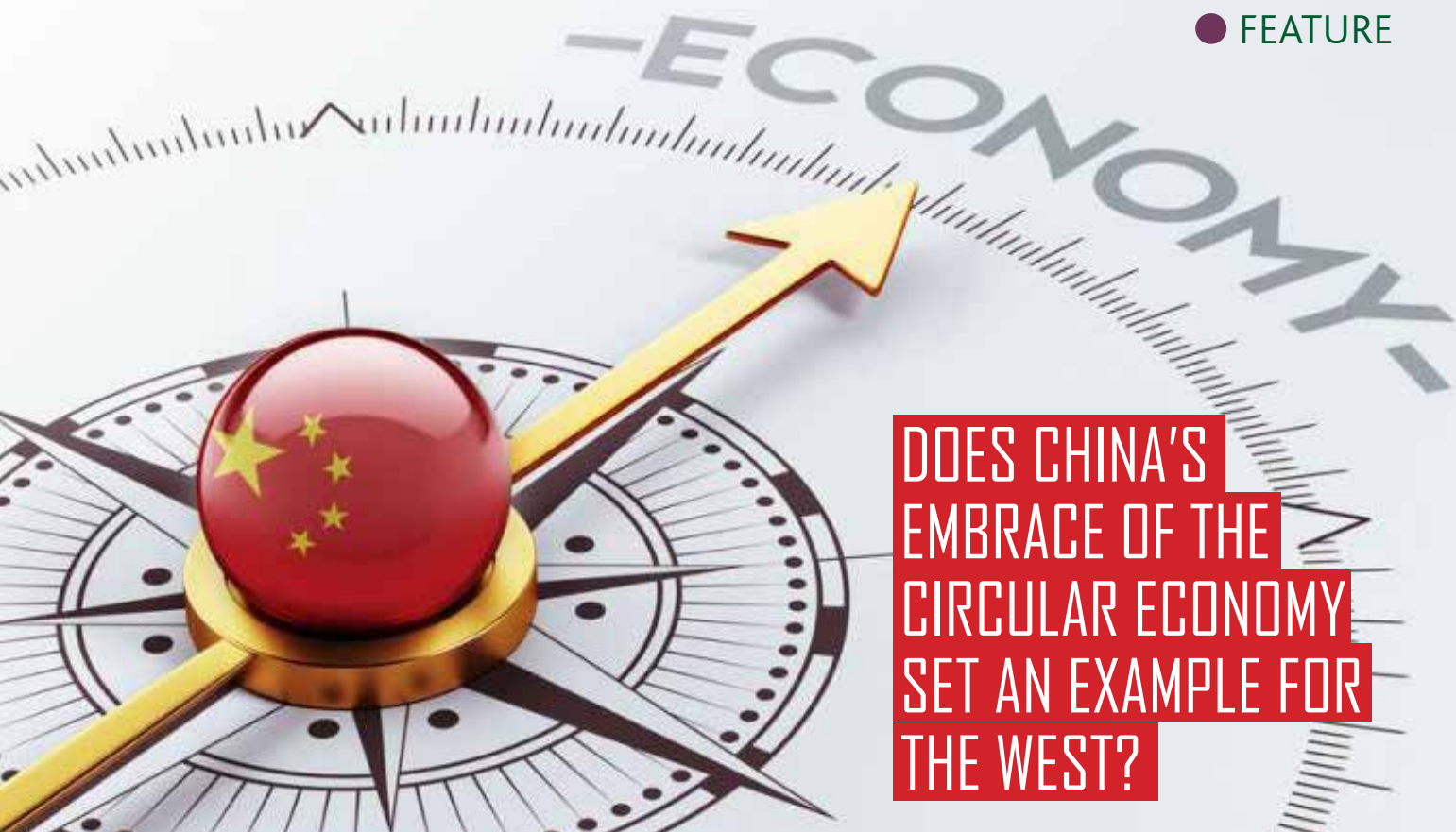
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## DOES CHINA'S EMBRACE OF THE CIRCULAR ECONOMY SET AN EXAMPLE FOR THE WEST?

Innovation is far more than the simple launch of a new product or service that increases the profits of an organisation. Rather, the essence of innovation is to resolve problems – that is, taking action to survive.

The emergence of the circular economy fits effortlessly within this more outcome-oriented understanding of innovation. It is an innovation of processes with the clear objectives of keeping our environmental and business ecosystems alive and ensuring a symbiotic existence between industry, consumers and our valuable environment.

### THE PLANET: RUNNING OUT OF RESOURCES

Since the beginnings of the First Industrial Revolution, our models of production and consumption have followed the pattern of a linear economy, based on the tryptic of produce, consume, dispose. While this model has enabled the spectacular improvement of living conditions for millions of people in developed countries, its large-scale, negative impact on the environment means that it has very clearly reached its limits.

Each year, we get ever-closer to “Earth overshoot day” – or the date where mankind has exhausted the natural resources the Earth is capable of renewing in a year. In 2017, this point of no return was reached on 2 August<sup>1</sup>. In December of the same year, global consumption surpassed the 70 per cent mark of available resources.

### THE ADVENT OF THE CIRCULAR ECONOMY

Conscious of the ecological impact of their growth, an increasing number of countries are looking to a new model of consumption and production: the circular economy. This is a system of production which, at every stage of the product lifecycle, aims to increase resource efficiency, lower the impact of the consumer on the environment, and enhance the well-being of humans.

First mooted in the 1970s, this economic concept is founded on several green and innovative approaches to production and consumption, such as the sustainable supply chain, eco-design, industrial and area ecology, the product-service system, responsible consumption, extending the duration of product use and recycling. Germany and the Netherlands were among the first in the world to enforce policies aimed at encouraging its implementation, closely followed by Japan.

It was during its 12th Five-Year Plan, from 2011 to 2015, that China itself became aware of the impact of its rapid development on the environment and the costs generated by it. In response, the country succeeded in re-thinking its strategy by putting greater emphasis on the development of a sustainable economy. For example, since 2011 large investments have been allocated to environmental conservation through projects aimed at reducing greenhouse gases, increasing forest growth, and creating eco-towns and eco-parks.

## THE CIRCULAR ECONOMY IS NOT OPTIONAL

Today, China is one of the rare countries to have adopted a legislation mandating progress and awareness in this area. Its "law for the promotion of the circular economy" has been rolled out widely across the nation, impacting millions across the country. First introduced in 2013, the law proposes that towns and communities work on the post-use reintroduction of natural resources (solids, liquids, gases and organics) in their cycles of production and consumption.

It is expected that China will go even further than the other nations committed to the cause by demanding its local authorities revise their regional planning to take this into account. So, while Germany and the Netherlands have made industrial ecology and eco-technological research a priority, no other country has yet ordered its contracting authorities to make the circular economy a central issue.

China has also earmarked a specific budget for this new form of economy. In 2013, 360 billion yuan (over 53.7 billion USD)—from the 52,000 billion yuan (over 7,766 billion USD) in financial credit granted by the major Chinese banks – was dedicated to energy-efficient and environmental protection projects, with 63 million yuan specifically allocated for the circular economy<sup>2</sup>.

In addition, China is the first nation to have established circular economy indicators on a macro-economic scale, at both national and provincial levels. More than 80 measurement indicators enable the country to make a clear assessment of its strategy and to

set new objectives accordingly. The first results have turned out to be promising. In 2010, 78 per cent of municipal waste produced was sent to the tip, which was reduced to 65 per cent in 2014.

## BUT IT'S JUST THE BEGINNING...

With emissions that reach 10.357 megatons of CO<sub>2</sub> per year, it is important to remind ourselves that China remains the biggest polluter on the planet – well ahead of the United States, whose emissions reach 5.414 megatons. It is also the nation that produces the greatest quantity of greenhouse gases globally, hence the importance of its initiatives around the circular economy.

While the country's numerous projects for more sustainable and ecological growth are to be praised and potentially serve as inspiration for others, there is still a long way to go before we can consider China as a truly eco-responsible country. Only by adopting the circular economy on a larger scale and maintaining its sustainability in the longer term can it become a true agent of change in the years to come.

This carries lessons for the rest of the region, too. Asia is without doubt the economy of the 21st century, with stellar growth expected not only in China but also Korea, India, Japan and emerging economies such as Malaysia, Indonesia, and Thailand. At the same time, however, Asia will also be the first in line to suffer the impact of global warming, notably with the rise in the sea level. Countries within the region understand this and are on the lookout for effective and easily implemented models that will enable them to survive.

The issue isn't just felt in Asia though. Western economies are aware of this challenge as well and cannot remain on the side-lines. If globalisation enables us to see the planet as a market, it must also enable us to see it as a place that we must take exceptional care of.

Xavier Pavie is a Professor at ESSEC Business School, Academic Director of the Grande Ecole programme in Singapore and the iMagination Center. He has recently published *L'Innovation à l'épreuve de la philosophie*, (PUF 2018) and is notably co-author of the book *Responsible Innovation: From Concept to Practice* (WorldScientific 2014) and *Innovation, creativity and imagination* (WorldScientific 2018).





## Interview with **MR. AXEL BERKLING**

Mr. Axel Berkling has been an Executive Vice President for the Asia-Pacific Region based in Singapore and Member of the Executive Board at KONE Corporation since October 01, 2016. Mr. Berkling served as Managing Director of Germany at KONE from 2012 to 2016. He began his career in the finance department at KONE Germany in 1998 and has held various regional commercial roles including managing KONE's service business in Germany. He has also served as the Director of Kone Holdings (Australia) Limited. Prior to joining KONE, he served as the Managing Director of Nass Magnet GmbH 1996–1998 and held different roles at Arthur Andersen from 1992–1995. Mr. Berkling holds an M.Sc. (Econ) from the Fachhochschule Nordostniedersachsen.

### **Q** Tell us briefly about yourself and your current role at KONE

I've been with KONE for over 20 years and held roles in the finance and commercial functions back in Germany including overseeing the company's German business. I currently oversee KONE's operations in the Asia-Pacific region (excluding China) that comprises of markets - Australia, Singapore, Malaysia, Philippines, Vietnam, Indonesia, Thailand and India. Prior to joining KONE, I was the Managing Director of Nass Magnet where I led the setting up the company's Hungarian operations from scratch and oversaw the building of the factory. Earlier in my career, I was with Arthur Andersen consulting where I advised oil and gas industry clients in the mergers and acquisitions (M&A) practice. During that time, we were always conscious about the environmental impact arising from the business

### **Q** What are the challenges you are facing in this current role and how you overcome this?

We live in an interesting world today and in Asia-Pacific, things are changing rapidly and each market is very diverse. This makes it interesting yet challenging at the same time. We are always looking at how we can ensure we stay relevant and competitive.

As a company that strives to provide innovative and sustainable solutions, we are always training our workers in order for them to have a strong foundation in the technologies we are investing in and to have the knowledge to provide sound advice to our customers. One example would be the UltraRope. We have sent our sales and technical teams for training so that our sales team

possess the knowledge of the product to sell and the technical team have the competency to install the product.

We are the market leader in the new equipment segment and the second largest maintenance service provider in the region. With buildings requiring modernisation of their elevators and escalators, there is a huge growth potential for us to tap on. For example, we take concerted efforts to ensure that elevators and escalators adhere to the stringent safety standards and are eco-efficient as customers are prioritising on these factors now. Today, maintenance and service is an important part of what we do, a service disruption can hugely dent our reputation and cause inconvenience to many. It requires constant monitoring and service upgrade from our end to ensure smooth operations for our clients. We have built a very strong and smart monitoring and issue resolution process. With services like predictive maintenance, we can pre-empt issues before they arise and also, have a 24x7 service centre that keeps a track on the progress of redressal of customer complaints that are reported.

Diversity and inclusion is our recipe for success. That is why we are always looking for is to attract a wide range of talent to join our company. We've taken steps to hire talent beyond engineering backgrounds and tell prospective hires that how to make the People Flow experience a seamless one.

**Q Tell us briefly how KONE's new offerings and enhanced services would enable buildings to adopt smarter people flow solutions?**

At KONE, we seek to drive alignment between our operating and business models. We create value by providing customers with escalator and elevator solutions that leverage the latest proprietary KONE technologies and innovative designs. Being at the forefront of escalator and elevator technology has enabled KONE to grow its installed base of escalators and elevators to over 1,000,000 units, globally.

We are not one to shy away from innovations to complement our technology. By using open application programming interfaces (APIs) KONE's approach makes it easy to manage different devices and integrate them with new and existing

systems and we can now create integrated and tailored solutions for our customers and personalised experiences for equipment users in a safe, secure and flexible manner. We have built our digital platform to anticipate these changes. From now on, our services will be even better tailored to customer needs. Our solutions will be connected to the environments in which they function, enabling a truly personalised people flow experience. Elevators, escalators, building doors, and maintenance and modernisation services - can now be connected and upgraded, which means they can be integrated with the digital platform.

Another example would be KONE 24/7 Connected Services uses the IBM Watson IoT platform and its cognitive capabilities in many different ways. Incorporating artificial intelligence helps predict elevator or escalator conditions, thereby helping customers manage their equipment over its life cycle. By leveraging artificial intelligence into our services, we help predict and suggest resolutions to potential problems long before they manifest. This benefits all stakeholders in the people flow ecosystem from property managers to maintenance crews to elevator and escalator users.

KONE was recently ranked as one of the world's most innovative companies for 2018, by Forbes. We were ranked 59th, making us the 7th most innovative company in the world. KONE was also the only elevator and escalator company featured on the list.

**Q In your opinion how can the elevator and escalator industry tap on opportunities in the developed and emerging markets?**

The opportunities in developed and emerging markets differ. In developed markets such as Australia, New Zealand and Singapore, industry players can tap on modernising elevators and escalators in older buildings whereby property owners are striving to make their buildings more energy efficient in a bid to reduce energy costs. In fact, we are seeing more of our customers' tenants being interested about the building's energy efficiency and green measures. By and large, the tenants become the customer of our customer and we have to also consider how our solutions will allow people to move smoothly and safely in and within the building.

With the large number of new buildings being built, especially in South East Asia, this translates into opportunities for industry players to provide maintenance services for property managers. This presents an opportunity for the industry and we at KONE strive to continue developing positive relationships with our customers. With the largest growth being seen in emerging markets given the rapid urbanisation levels, this is where the greatest opportunities lie. Industry players should constantly invest and innovate to introduce new products to the market.



### **How does KONE help the built environment design buildings that are energy efficient and minimise carbon output? Any case study?**

Sustainability is more than just a buzzword but a core value that we fully embrace in every part of our business. At KONE, we develop and use innovative and eco-efficient technologies that drastically reduces the energy consumption of elevators and escalators. Furthermore, we are taking strides in reducing the negative environmental impacts of our solutions through focusing on the use of healthy and long-lasting materials as well as closely collaborating with our suppliers to provide material transparency and traceability.

Our commitment to sustainability has been recognised by the industry. KONE is recognised as a top climate change performer with an A- score in CDP 2017. KONE was confirmed as a constituent of the FTSE4Good Index in July and December 2016. KONE ranked 28th in the 2015 list of Global 100 Most Sustainable Corporations in the World, released by a Toronto-based media and investment advisory company Corporate Knights.

Many building projects in the region are consciously making efforts to minimise their carbon footprint and focusing on the concept of green buildings. For example, a building owner can achieve up to 70% energy savings through modernising an elevator. KONE's modernisation solutions range from retrofitting LED lights to replacing existing elevator shafts with an entirely new elevator with energy-regeneration technology. Our current machine room-less elevator, KONE MonoSpace® 500, is up to 90% more energy efficient than our elevators from the 1990s.

As more high-rise buildings are being constructed, KONE has also introduced the UltraRope® that boasts eco-efficiency, durability and reliability. It uses a lightweight carbon fibre rope that is 60 per cent lighter than ordinary steel ropes and has twice as long a lifetime than that of conventional steel ropes. This reduces energy costs by up to 15 per cent for a 500 metre elevator. allowing elevators to travel to greater heights of up to 1,000 metres. The first UltraRope® elevator was installed at the iconic Marina Bay Sands (MBS) integrated resort situated in the heart of Singapore's Marina Bay.



### **Please shed some lights on KONE's successes in Asia-Pacific and what's next: What has KONE been doing right and how does it plan to tap on their successes moving forward?**

KONE is in the right neighbourhood with good growth potential given the prospect of rapid urbanisation in time to come. Asia-Pacific is a key market for us and we have over 27,000 employees in the region. This makes up almost half of our 57,000-strong workforce worldwide. In Asia-Pacific, KONE is the largest and second largest by market share for new equipment and maintenance respectively. We've seen a healthy mix of growth across new equipment and modernisation orders in the region in 2018 with new equipment sales grew by 4.9 per cent and the modernisation market grew by over 10 per cent. New equipment sales were also driven by the Indian and South-East Asian markets. The maintenance market did well too and grew between 5 and 10 per cent. We are expecting to see the maintenance and modernisation markets grow the fastest in this part of the world.

KONE's innovative People Flow solutions have had been installed in landmarks and major infrastructure projects across the region for decades. This include the iconic MBS integrated resort situated in the heart of Singapore's Marina Bay and the Singapore MRT Circle Line.

Recently, we won a contract to supply elevators and escalators on stages 4 and 5 of the Thomson-East Coast MRT Line. This is a testament to the high level of trust from our customers and the importance of developing customer relationships.



Many developers in the region have placed their trust in us and we have emerged as a choice people flow solutions provider. This is evidenced by the high conversion rates from new equipment to maintenance despite the preference for OEM maintenance services is a sign of our success so far and puts us in a good position to growing this part of our business. There is a huge focus on the development of new and sustainable technologies and KONE will continue to innovate and introduce products that would improve reliability, safety and energy efficiency. Coupled with the rapid adoption of new technologies and governments embracing the digitalisation agenda, we are confident that we learn from our successes and have a competitive edge that will allow us to step into the future.

**Q Does Kone Elevator hold the key to future urban mobility solutions?**

Urbanisation is happening rapidly and over 20 million people are moving into cities every year in this part of the world. We are conscious of the fact that about two-thirds of the world's population would be living in cities by 2050. This is a challenge we need to quickly address as the pace

of urbanisation is faster than ever before, particularly in Southeast Asia and India.

KONE is constantly investing in research and development (R&D) and as the industry leader in the technology innovation race, we have been successfully rolling out new solutions built on top of our digital platform that integrates equipment and devices to enable a seamless people flow experience from entrance to destination. To date, we have over 3,000 technology patents to our name with 1,000 professionals at eight R&D centres worldwide. With a history of over 100 years, KONE has been part of the evolution of cities and is definitely going to be a catalyst for the urban mobility solutions.

Furthermore, our products continuously improve to ensure they are sustainable and energy efficient to reduce the carbon footprint. This is what our customers want to see today and they are equally committed to the sustainability cause. This trend transcends across all industries from automobiles to construction to real estate. In the auto industry, we are seeing how automakers are producing cars that are fuel efficient and low on CO2 emissions. Here at KONE, we are making cities grow sustainably and our elevators today is up to 90% more energy efficient than those in the 1990s.

**Upcoming GREEN Events:**

**Future Food Asia 2019**

03-04 June 2019

Singapore

- <https://futurefoodasia.com/ffa2019>

**Ecosperity Week 2019**

04-07 June 2019

Singapore

- [www.ecosperity.sg/en/2019-conference.html](http://www.ecosperity.sg/en/2019-conference.html)

**5th Annual Global Solar + Energy Storage Congress & Expo 2019**

24-25, June 2019

Grand Hilton Seoul, Korea

**Smart Cities & Buildings Asia 2019**

04-06 September 2019

Marina Bay Sands Expo, Singapore

- [www.scb-asia.com/en-gb.html](http://www.scb-asia.com/en-gb.html)

**2019 Vietnam**

**LNG-to-Power Summit**

19-20 September 2019

Hanoi, Vietnam

**Solar Power Expo Vietnam**

25-26 September 2019

NCC Hanoi, Vietnam



## New initiatives presented at COLA 2018



Cities of Love Awards, also known as COLA, recognises outstanding initiatives developed by individuals, groups, and organisations, in their efforts to promote sustainability. Started in 2017, the awards are presented annually. This year, COLA 2018 award winners were announced on the 27th April 2019 at the Singapore Sustainability Academy.

The prize presentation ceremony was inaugurated by Mr. Tai Lee Siang, the Founder of COLA and attended by Guest-of-Honor Dr. Teo Ho Pin, Mayor of North West CDC.

### Healthy products from 'ugly' food

This year, Ugly Food bagged the Distinction Award for Corporate category. Initially started out as a university project, Augustine Tan and Yeo Pei Shan has since then continued to carry out in-depth research about the cosmetic filtering of perfectly edible and nutritious food. They saw a gap in the society as they discovered how 'ugly foods' are put aside and often left uneaten.

"We hope that our story can be shared to a bigger platform, to highlight that there is a direct way everyone can play a part to reduce food wastage, starting from understanding better the definition of edible, that not all 'ugly' produce is spoilt", Pei Shan shared with Green Pulse when asked on her motivation for taking part in COLA.

Despite focussing fully on Ugly Food only a couple of months before submitting the application for the award in 2018, the positive impacts that Ugly Food have brought to the environment were tremendous. Pei Shan and her team transformed 'ugly' fruits into a range of healthy products such as popsicles, fruit tea and cold-pressed juice. Moving forward, the F&B social enterprise plans to work on three key areas - partnerships, product development, and education awareness.

Ugly Food will continue its effort to forge close partnerships with established importers and supermarkets in reducing food wastage. As Pei Shan also explained, "we are still open to understand any businesses who are facing large volumes of unsold fresh produce that is still good to eat."

The enterprise has also expanded to fresh produce start of this year and actively seeking new ways to expand its product offerings. Lastly, the team is currently working on "curating more education content and tying them together as workshops either in the form of gameplay or cooking workshops." Through the education awareness initiatives, Pei Shan hopes that every participant "will develop the skills to differentiate what is safe to consume, how to better store fresh produce, and nevertheless the skills to cook up a great dish while reducing food wastage."

## Recycling in the community

While Ugly Food was commended for its initiatives under the corporate category, Recycle@North West received a Distinction Award for the Group category. Recycle@North West is a community initiative carried out by North West CDC where a network of green volunteers setup active recycling points around the district. Since its inception in October 2011, the project has collected more than 465,000 kgs of recyclables and expanded its recycling points from 3 to 23.

Green Pulse had the opportunity to speak with Mr. Dennis Chee as the Co-Chairman of North West CDC Green Living Standing Committee about the initiative and what the team hopes to achieve further.

Mr. Chee was heartened to know that the efforts put in by volunteers, partners and residents in the North West CDC were recognised by COLA this year. He also highlighted that, “unlike other community recycling programmes where residents usually just place their recyclables in the recycling bags or bins, Recycle @ North West focuses on education and encourages Active Recycling.”

“At the recycling points, volunteers share with residents on how to recycle and what to recycle. While

residents contribute and get involved actively in sorting the recyclables together, they learn more about resource conservation and bond with neighbours at the common recycling points.”

With the addition of more recycling points, it increases the accessibility for more residents to participate as well. Mr. Chee also hopes that residents would be more encouraged to play a bigger role in creating positive environmental impact by “progressing from participants to becoming active green volunteers and contribute by sharing their experiences on resource conservation with others in the community.”

In light of this, Dr. Teo Ho Pin also expressed the need for more community-led initiatives and how the annual COLA awards can serve as a source of motivation and inspiration. When speaking to Green Pulse, Dr. Teo repeatedly highlighted that sustainability is all



## ● FEATURE

about bottom up. “I hope to see more ground-up initiative by our residents in the community. So each individual, each community must take ownership. They have to work together and self-initiate, so it can sustain. It cannot be top down, it has to be bottom up”.

After all, every individual can contribute in safeguarding environmental sustainability. Small steps such as saying no to plastic straw, reducing the use of plastic bags, or simply throwing recyclable products into the recycling bin can make a difference. As Mr. Tai puts it, “the thing about sustainability is not just about saving the energy, not just about reducing carbon. We must have fun too! And fun comes from creativity. Overcoming the limitations of insufficient resources require creativity, and I think sustainability gives us the opportunity to exercise creativity”



### Mr. Tai Lee Siang:



“The impact I hope to achieve is that more individuals than Small and Medium Enterprises (SMEs) will take up the challenge to do something about the environment and social sustainability, and not be afraid to think that their effort is small or insignificant. We are prepared to help them to be recognised and through that I think the cumulative effect of every little effort will amount to a huge change in society. The thing about sustainability is not just about saving energy, not just about reducing carbon. We must have fun too! And fun comes from creativity. And also to overcome the limitations of, insufficient resources, that requires creativity. And I think sustainability gives us the opportunity to exercise creativity”

### Dr. Teo Ho Pin:



“What I hope to see is actually more ground-up initiative by our residents in the community. But I think we should continue to encourage more people to take up sustainability projects, and through this sort of awards, they are the role models of the community. So hopefully they can convey their work to the community, raise awareness and inspire more people to have more ground-up initiatives. At the end of the day, sustainability is all about environmental initiatives. So each individual, each community, must take ownership. They have to work together and self-initiated, so it can sustain. Therefore, it cannot be done top down, it has to be bottom up. Sustainability is all about bottom up.”



# A.I. Powered. Air Conditioning Redefined

## Common AC Issues

- Fails to provide indoor comfort
- ACs undercool on hot days
- ACs are too cold at times
- Users feel hot/cold when outdoor weather changes
- Users wake up cold at night
- Users adjust the AC constantly
- AC remotes are unintuitive, only allows temperature control

## About Ambi Climate

- The world's first AI enabled smart air conditioner controller
- Is designed to solve daily common comfort issues while users using the AC
- Leverages data from onboard sensors and external data sources
- Intelligently learns from users' feedbacks on their comfort level
- Analyzes how temperature and other key factors including humidity, sunlight, weather and time of day affect thermal comfort
- The performance of AC is also analyzed by Machine Learning algorithms
- By analyzing all these data and combining them with users' personal feedback about their comfort level, Ambi Climate is able to create unique profile, then adjust the AC to fit users in any situation.
- Revolutionizes the way users use their ACs - from controlling the temperature to indicating comfort level

## Unique Selling Points

- **AI Technology** - Our unique AI technology leverages data from onboard sensors and external sources to analyze how different factors affect users' comfort. Combining the data with users' feedback about their comfort level, the AI engine will then develop personalized comfort profile. A second set of AI machine learning models analyzes the performance of the AC, which can be affected by room size, layout, age of AC and other elements. We combine these two models to auto-adjust the AC to enhance comfort.
- **Consider Multiple Factors** - According to ASHRAE, there are 6 factors which affect thermal comfort.



While ACs only consider temperature, Ambi Climate takes other factors, including humidity, sunlight, weather and time of day (metabolism) into account.

- **Learns From Feedback** - Ambi Climate revolutionizes the usage paradigm of ACs. User simply report their comfort level - whether hot, cold or comfortable, in different seasons and times, Ambi Climate will then learn from their feedback, combining with sensors reading and online weather data to create personal comfort profile for users and auto-adjust the AC.

## Product Features

- **AI Engine and Multiple Sensors** - Ambi Climate intelligently learns from users' feedback and analyzes online data to deliver enhanced comfort.
- **Comfort Model** - Creates a personal comfort profile for users, matching their needs and continuously delivers a tailor-made comfortable environment by auto-adjusting the air conditioner.
- **Smart Home Integrations** - Users can enjoy a true Smart Home experience with IFTTT or an open API for further home automation. Through IFTTT, users can utilize other smart assistant platforms, such as Apple Siri, Samsung Bixby, Microsoft Cortana, and more.
- **Voice Control** - Ambi Climate is fully and directly integrated with Amazon Alexa and Google Home, for easy on/off air conditioner control, settings adjustment and comfort feedback.
- **Multi-user Geolocation** - automatically controls your AC and turns it on/off based on your distance from home and your preset radius of arrival or departure. Users can set personal 'geo-rules', or presets, depending on their preferences, to ensure perfect conditions at any time.

- **Smart Scheduling** - Set up timers and rules for users to plan out the day and for better home automation.
- **Access Anywhere and Analytics** - Users can monitor and control the AC on-the-go. Through our dedicated smartphone app (iOS/Android), users can also learn more about their AC usage and habits with extensive insights and tools.

## Unique Product Design

Our principal innovation is in redefining the AC usage paradigm from a temperature only control to one that focuses on comfort, leveraging artificial intelligence to concurrently consider all the factors that make up this comfort.

Many of the problems caused by human thermal comfort are caused by the anchoring of a user around a single temperature number. Whether you prefer 68F or 72F, the common issue is that a single temperature is insufficient to fully define your comfort.

Our product changes this paradigm. By asking the user to simply indicate if they feel hot, cold, or comfortable, we free the user from this temperature focus and instead consider how they feel.

Through AI, we combine this feedback with data from our onboard sensors, as well as the local weather (via an internet based service), learning how sensitive the user is to factors such as humidity and changing weather, and learning what feels comfortable to them at various times throughout the day. We have even been able to learn how the body acclimatizes to weather during the seasons, ensuring that we maintain perfect conditions all the time.

Our application of AI in this way is revolutionary. While there are other smart AC type products that use AI (e.g. Nest and Ecobee), these tend to be schedule or location based, learning the habits of users in this regard (such as when they are at home).

## Ambi Climate Modes (3 smart modes and manual mode)

Ambi Climate has various smart modes utilizes AI technology to match different lifestyle:

- **COMFORT MODE** - Simply indicate your comfort level (hot, cold or comfortable) and from the 3rd feedback onward the AI engine will learn from you and start auto-adjusting to deliver an optimal environment to match your needs. Comfort mode is good for users who find themselves constantly adjusting the AC and never feeling “just right”.
- **AWAY MODE** - Set threshold of your choice (heating,

cooling or drying), Ambi Climate will fulfill your preference in the most energy-efficient way; it will turn on the AC when needed to maintain the threshold. Away Mode is good for users who work long hours or travel a lot and need hassle-free control of the environment.

- **TEMPERATURE MODE** - Select your set target temperature, and Ambi Climate will then reach it by using the most efficient setting and either lowering or raising your AC’s temperature. Taking into account how both your room environment and the performance of your AC are affected by climate changes, our AI and Machine Learning algorithms will ensure your comfort no matter what happens.

Temperature Mode is suitable for users who already know which temperature condition is the best for them.

- **MANUAL MODE** - Control your AC without having to use your old-fashioned remote or necessarily being next to the AC or even at home with Ambi Climate. Through the dedicated app, you’ll be able to use your AC just as you would with your normal remote (meaning you can also set the fan, swing and louver) without any added AI or smart features. Manual Mode is suitable for users who simply want to control their ACs on-the-go.

## Benefits

- **Deliver enhanced personalized comfort** - Create personal comfort profile for you and auto-adjust the AC to match your needs.
- **Save Energy** - Virtually eliminating overcool and overheating, saving up to 30% on energy consumption.

## Compatibility

- Works with any type of AC, window, wall-mounted or portable
- Compatible with over 50 brands, 1,200 models of LCD remotes

## Product Design

- A minimalistic black-and-white design, finished with a shinier finish and supported on a wood platform for a touch of class.
- LED indicators are combined into the company logo: using various colors and glows when responding to commands and working.
- The goal of the design is to make the product feel more domestic, like a ceramic cup on a wooden coaster.

## Kimberly-Clark switches on one of Singapore's largest solar roofs at Tuas



Kimberly-Clark Corporation (NYSE:KMB) today switched on one of Singapore's largest solar energy installations at its manufacturing facility in Tuas, which produces Huggies diapers and Huggies baby wipes. 7,730 photovoltaic panels mounted on its roof will generate 3.5 Gigawatt hours of clean energy, enough to power up a thousand 3-bedroom HDB flats for a year.

With this investment, renewable energy will now replace 15% of conventional energy use at the plant, reducing Green House Gas emissions (GHGs) by approximately 1,600 metric tons per year. This is equivalent to removing nearly 350 passenger cars from roads annually.

Kimberly-Clark's Tuas plant has a long track record of reducing its environmental footprint. In 2016, it launched an in-house wastewater treatment plant that recycles 75% of the water used in its wet wipes production. Since 2017, it has partnered with Ngee Ann polytechnic researchers to find utility for material waste generated during its production process, as part of its broader efforts to re-use or recycle 100% of its waste.

At a ceremony held to inaugurate its solar roof, Achal Agarwal, President, Kimberly-Clark Asia Pacific, said "Our manufacturing operations in Singapore have long been recognized as a leader in environmental protection. Switching on this solar roof marks a new milestone in our sustainability journey and accelerates our progress towards our goal of achieving a 20% reduction in GHG emissions globally, by 2022."



Mr Masagos Zulkifli, Singapore's Minister for



the Environment and Water Resources, was the guest of honour at the inauguration. He said, "I am glad to see enterprises such as Kimberly-Clark Corporation step up efforts to adopt renewable energy. Sustainable development is not just central to the mitigation of climate change and protection of the environment. When thoughtfully incorporated, it can benefit business operations and reduce costs in the long run."

The solar roof panels were installed in partnership with Singapore-based solar energy provider Sunseap, which has played an instrumental role in the development of many grid-connected PV systems, pioneering the solar energy movement in Singapore.

"We are pleased to work with Kimberly-Clark in their efforts to go green. As the leading integrated clean energy solutions provider in Singapore, we encourage all companies to look for ways to be environmentally friendly in their business. There are various measures companies can take to reduce their carbon footprint including tapping renewable energy for their operations and going paperless in their day-to-day work," said Frank Phuan, CEO and Executive Director, Sunseap Group.



## Ambi Labs Earns Spot in Prestigious Free The Electron Accelerator Program

The AIoT Smart AC controller startup is the only Asian entrant in the 2019 class of the world's most promising startups to work with leading utility companies.

Ambi Labs, the makers of smart AI-enabled air-conditioner (AC) control, Ambi Climate, announced today it was accepted to the 2019 class of Free The Electron.

Free The Electron is a startup Program focused on the energy sector where selected startups have the chance to work alongside 10 Global Energy Utilities - the Free Electrons consortium - for the course of one year. The finalists will compete for the coveted "Free Electrons World's Best Energy Startup" with a prize of USD 200,000 – no strings attached.

Out of over 400 global applications, Ambi was chosen to be among the top 30 to attend a grueling 2 day bootcamp in Dublin, Ireland in early April. After doing a showcase and having various 1-to-1 meeting with global utilities firms, Ambi was the only Asian startup to be selected among the top 15.

"We are excited for the opportunity to represent the Asian startup community in Free The Electons and get the chance to work not only with an inspiring group of mentors but also with the other exceptional startups," said Julian Lee, CEO and founder of Ambi Labs. "Free The Electons will give our team the opportunity to look at ways we can take our technology and expand its application within the energy sector."

Besides executing great pitches, Ambi Labs produces Ambi Climate, which creates personalised AC comfort and saves energy at the same time. Typically ACs only operate around temperature, Ambi Climate uses AI and machine learning to account for (humidity,

sunlight, weather, metabolic cycle, personal feedback) to improve your thermal comfort. By doing so, ACs will need up to 30% less energy by preventing overcooling.

A cornerstone of the accelerator program includes three international modules across the globe, where participants will work closely with local accelerators, utilities, mentors and other resources in order to jump-start their company's growth.

Following this, the top 15 startups will begin the 3 separate but intensive 3 day modules. The first will be in Columbus, Ohio from May 21st - 24th. The objective is to match solutions with concrete challenges and define collaborative roadmap for the first pilot among startups and Utilities.

The second will be in Hong Kong from June 25th - 28th. The objective of this module is to define the scope of potential pilot projects, present to all Utilities and Startups the progress made on their first pilot and go forward with commercial transactions and/or investment contracts. The Asia module offers an immersion in the world's leading clean tech innovation ecosystem, connecting startups to the epicenter of the technology world.

The final module will be in Lisbon, Portugal from September 16th - 19th. It will be focused on concluding negotiations of pilot projects as well as the definition of scaling prospects. Besides granular contract discussions, a final pitch event and an award ceremony before representatives of the clean tech innovation ecosystem with will take place.

GREEN IN FUTURE



GREEN  
IN FUTURE

ACTUATING  
SUSTAINABILITY



# Vietnam LNG-to-Power Summit 2019

19-20 September, 2019 | InterContinental Hanoi Landmark72, Hanoi, Vietnam

LNG continues to be the fast-growing gas supply source in Vietnam and the strong demand growth for gas outpaces domestic production from 2020 onwards, primarily driven by power generation (>85%). The production of matured gas fields is continuously declining, though new fields will be expected in production during 2024-2025, still cannot fill in the gap and solve the energy/electricity crisis. In order to fill in this gap, LNG import and LNG-to-Power utilization has become the urgent task for Vietnam market, which will also attract the investors, developers, suppliers, contractors rushing into this market.

To push forward the development of LNG utilization and LNG-to-Power development, Vietnam Government has proposed a series of initiatives, according to the Vietnam Gas Industry Development Master Plan to 2035, the gas production volume across the country will increase from 10 billion cubic meter per year to 21 billion cubic meter per year in the period 2015 – 2035. To achieve this target, Vietnam will develop the LNG terminal systems and related facilities: it is planned to build 3-4 LNG terminals with the estimated capacity of each depot around 1-3 million ton per year in the period of 2021-2025 and 5-6 LNG terminals with around 3 million tons/year in the period of 2026-2035.

To further enhance the LNG terminal and LNG-to-Power development in Vietnam and facilitate the collaboration between local and international, Neoventure Corporation is planning the tenth Vietnam Energy series event - Vietnam LNG-to-power Summit 2019, which will be scheduled in International Hanoi Landmark72 on 19-20 September, 2019 and it will combine with Exhibition, Conference, and Project Match-Making Forum creating a one-stop business

matching platform for all industry players to share their knowledge and to expand business contacts in Vietnam's rapid growing LNG sector.

With Neoventure's deep digging in Vietnam's energy sector, Vietnam LNG-to-Power Summit 2019 will provide you the most qualified participants in the region, which will cover 95% of the local developer and investor in this market with real decision power in hand.

We do look forward to seeing you in Hanoi this September!

## About Neoventure

Neoventure Corporation is an independent investment advisory agency based in China assisting international investors identify investment opportunities in emerging market. The footprints of Neoventure's business spread across the region inclusive of some of the hottest investment destinations as China, India, Vietnam, Myanmar, Australia, Malaysia, Singapore, United Arab Emirates, Turkey, Laos PDR, Indonesia, Nepal and elsewhere.

The main focus of Neoventure's business is in the power infrastructure sector. Neoventure has been following the development of Vietnam's infrastructure sector since 2010. We have successfully organized 10 oil & gas events before and 6 renewable energy events in Hanoi, HCMC and Nha Trang respectively in the past 2 years with a total number of participants exceeding 3,000 and successfully advised several energy acquisition deals in Vietnam market.

Neoventure is dedicated to supporting keen investors and developers for successful development and investment in Vietnam's energy sector.



# VIETNAM SOLAR POWER EXPO 2019

25-26 September, 2019 | National Convention Center, Hanoi, Vietnam

Vietnam, the hottest destination for solar power investment in Asia Pacific, got more than 3GW solar projects have been installed after its first round of FiT mechanism put into effect, with more than 1GW solar power installation for yearly growth.

To further enhance the renewable energy sustainable development in Vietnam, the Ministry of Industry and Trade of Vietnam (MOIT) released an updated draft (the New Draft) of the Decision of the Prime Minister on the mechanism for encouraging the development of solar power projects in Vietnam (the Draft Decision). Given that the current Decision 11 of the Prime Minister providing for the FiT of 9.35 US cents/kWh is in effect only until 30 June 2019, the Draft Decision would provide for a new FiT program for an additional 2 years from 1 July 2019 through 30 June 2021, for solar power projects in Vietnam. The decision proposes different levels of tariffs, classified by four irradiation regions of Vietnam and involving four different solar power technologies, which also indicates the government's policy to diversify solar investments in different regions of Vietnam.

Despite the challenges ahead, we witness the market quickly become the main focus of the key solar power stakeholders in the world and will continue attracting the investors, developers, OEMs, contractors rushing into the market.

To further push forward the solar power development in Vietnam and facilitate the collaboration between local and international, Neoventure Corporation



is planning the seventh RE series event in Vietnam - Vietnam Solar Power Expo 2019, which will be scheduled on National Convention Center on 25-26 September, 2019. The Expo is officially endorsed and supported by Ministry of Industry and Trade (MOIT), Vietnam Chamber of Commerce and Industry (VCCI), Vietnam Energy Association (VEA), and it will combine with Large Exhibition, Conference, Onsite Technical Seminar, Project Match-Making Forum creating a one-stop business matching platform for all industry players to share their knowledge and to expand business contacts in Vietnam's rapid growing solar energy sector.

With Neoventure's deep digging in Vietnam's RE sector, Vietnam Solar Power Expo 2019 will provide you the most qualified participants in the region, the visitors of the expo will cover 95% of the local developer and investor in this market with real decision power in hand.

We do look forward to seeing you in Hanoi this September!

