

# ANGVA2U Info 05/2019. 11<sup>th</sup> June 2019. (for ANGVA members only)

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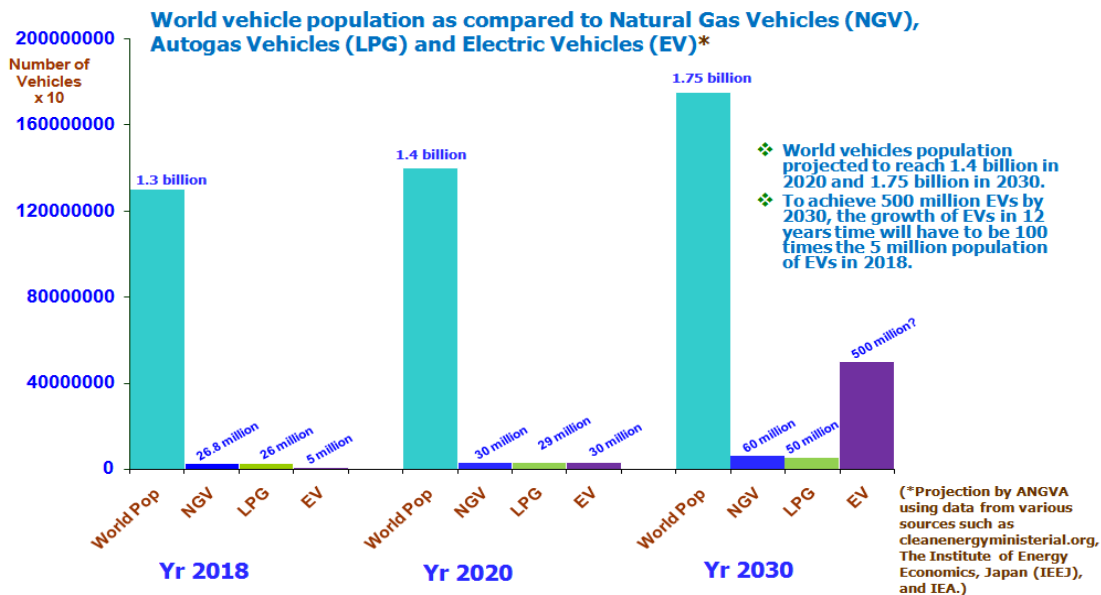
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## 1.0 Moving Forward with NGV

According to the latest U.N. Intergovernmental Panel on Climate Change (IPCC) report released last fall, under the current emissions path the world will cross the 1.5 degrees threshold by 2040 and without significantly stronger global action the world will surpass the 2 degrees target in 2060. Global warming beyond these targets would risk triggering irreversible climate tipping points including the collapse of the West Antarctic ice sheet and with it dangerous sea level rise, along with melting permafrost — this frozen Arctic tundra stores carbon dioxide and methane, emissions which would be released into the atmosphere if it melts, further triggering even more warming. Scientists in the IPCC report warned that in order to avert this dangerous warming, urgent action must be taken to sharply reduce carbon emissions by 2030.

Transport is a major contributor of greenhouse gas (GHG) emissions; responsible for 23 % of global energy-related carbon dioxide (CO<sub>2</sub>) emissions. It is the third largest source of CO<sub>2</sub> after power and industrial combustion and the rate of emissions is increasing faster than any other sectors. Without rapid and ambitious mitigation action, transport emissions could more than double by 2050. Thus, any path to a 1.5DS (degree Celsius scenario) must include low carbon transport as a central element.

Electric vehicles and Fuel Cell Electric Vehicles (hydrogen) are being heavily promoted and subsidized by government in many countries to drastically reduce the carbon footprint of the transport sector. However, with 2030 just ten years away, it seemed next to impossible to electrify significant number of vehicles (see figure 1) to quickly reduce carbon emissions from the transport sector to avoid reaching the point of no return. Hence, clean fuels, such as natural gas (NGV), has a crucial role to play to quickly and drastically reduce carbon footprint of the transport sector before it is too late.



**Figure 1:** Projected population of vehicles by year 2020 and 2030

Moving forward, the NGV Industry must highlight and promote the benefits and contributions of NGV as follows:

- Conversions of gasoline and diesel vehicles to NGVs are straight forward and can be deployed quickly to reduce air pollution and harmful emissions.
  - No new power-trains or vehicle platforms are needed. Conversions can be done as OEMs, factory-fittings and also aftermarket conversions.
- Usage of LNG for heavy duty and long distance trucks are currently the best route to quickly reduce harmful diesel emissions. LNG is also beginning to be very popular as clean fuel for the marine sector.
- Usage of Renewable Natural Gas (in the form of BioCNG or BioLNG) will make NGV carbon neutral and sustainable.
- NGV is a quick and sure pathway for road transport to reduce harmful exhaust emissions and GHG emissions to meet the 1.5DS by 2040.
- The retail price of compressed natural gas (CNG) and liquefied natural gas (LNG) are normally and consistently much less than that of gasoline and diesel and has less price volatility.
- There are many cases where CNG and LNG vehicles have been operating successfully and help to reduce air pollutions and carbon emissions. These success stories must be studied, researched and shared within and outside the NGV industry.
  - Experiences and improvements in designs, technologies, energy efficiencies, operations, maintenance, safety, management, etc, related to NGVs must be shared so that the overall NGV Industry can benefit and be more efficient, economical and sustainable.

## 2.0 Selected News / Articles

### 2.1 'Reaching end game': New paper on climate change raises alarm

by Robert Kennedy. June 9, 2019.

*'Hell on Earth' scenario predicted if urgent action isn't taken to replace fossil fuels with clean energy.*



*Protesters in Mumbai last month demanded urgent measures to combat climate change [Francis Mascarenhas/Reuters]*

A climate change paper grabbed headlines this week with its terrifying prediction of what the world will be in 30 years' time - absent drastic and immediate change to human societies.

"World of outright chaos," "Climate apocalypse," "We're all gonna die," the media banners blared.

The sobering headlines and equally disconcerting stories beneath described a "[scenario analysis](#)" by an Australian think-tank, Breakthrough National Center for Climate Restoration. The paper portrayed what the year 2050 will look like if urgent action to build carbon-neutral energy systems around the world fails to come to fruition in the next 10 years. It's worse than any of the apocalyptic Hollywood horror films making the rounds.

One billion people displaced and fighting desperately for survival, with half the world's population subjected to "lethal heat" conditions for more than 20 days a year - "beyond the threshold of human survivability". Drought, wildfires, and floods collapse entire ecosystems as two billion people struggle for potable water. Mega-cities such as Mumbai, Hong Kong, Lagos, and Manila are largely abandoned because of massive floods. "This scenario provides a glimpse into a world of 'outright chaos' on a path to the end of human civilisation and modern society as we have known it," said the paper, co-authored by

Ian Dunlop, a former chair of the Australian Coal Association, and David Spratt, a long-time climate researcher.

### 'The end game'

Spratt told Al Jazeera the eye-catching headlines were "somewhat over the top", but he maintained the dire warnings were legitimate. "We are reaching the end game, there are not a lot of pieces left on the chess board. We have to take action really fast," said Spratt.

He challenged climate scientists, including those from the leading Intergovernmental Panel on Climate Change (IPCC), to be more forthright with the global public about the calamity awaiting humanity if nothing is immediately done to halt the pumping of carbon dioxide (CO<sub>2</sub>) into the Earth's atmosphere.

The planet is currently on track for a 4.5 degree Celsius increase in global temperature as CO<sub>2</sub> emissions continue to rise each year.

Dunlop noted the IPCC set a target of staying below a 1.5C increase in the coming decades. "This IPCC analysis assumes only a 50-66 percent chance of meeting the targets. Not good odds for the future of humanity," he [wrote](#) this week.

Asked about the criticism, IPCC's Nina Peeva responded: "We can't comment on individual papers on climate science. Our job is to inform policymakers about the current state of knowledge on climate change... If this paper was published in a peer-reviewed journal, it will probably be considered in the next assessment appearing in 2021."

### US intelligence warnings

Congressional testimony from two US government intelligence analysts on Wednesday seemed to corroborate Breakthrough's grim climate change analysis. Peter Kiemel, from the Office of the Director of National Intelligence, told a House committee investigating the global effects of climate change on national security that it played a role in the bloody civil wars in Syria and Libya, and will do the same in the future.

Just prior to the outbreak of Syria's devastating war in 2011, the region suffered one of the most severe droughts in its history, quadrupling rural-to-urban migration and causing food riots.

Climate change impacts on food and water systems were also "catalysts for social breakdown and conflict" in the Maghreb and the Sahel, contributing to the European migration crisis, Breakthrough's paper said. "We already have seen water crises exacerbate social unrest in and emigration from fragile states in the Middle East and North Africa," [said](#) Kiemel. "As the climate changes, disputes over water and access to arable land are likely to grow, prompting more such local conflicts."

Rod Schoonover, a senior State Department analyst, told members of the House Intelligence Committee no nation would be immune from the ravages of climate change. "Most countries, if not all, are already unable to fully respond to the risks posed by climate-linked hazards under the present conditions," [said](#) Schoonover. "Absent extensive mitigating factors or events, we see few plausible future scenarios where significant harm does not arise from the compounded effects of climate change."

The Washington Post [reported](#) on Friday that Trump administration officials ordered the words "possibly catastrophic" erased from Schoonover's written statement.

What can't be deleted is a 2007 climate change security report titled The Age of Consequences, co-authored by former CIA director James Woolsey. Its wording leaves no doubt about the threat to the human species. "Armed conflict between nations over resources, such as the Nile and its tributaries, is likely and nuclear war is possible. The social consequences range from increased religious fervour to outright chaos," [the study](#) warned.



*Activists take part in an Extinction Rebellion climate change march on May 12 in London [Simon Dawson/Reuters]*

## Race against time

While the immense challenge of abruptly ending fossil fuel use seems extremely daunting, there are reasons for hope.

Spratt and others noted the technology to shift away from fossil fuels to clean energy is already in place, and more could be done if government budgets were allocated towards decarbonisation. "We have the technological and economic capacity. If we would have made the shift in 2009, we would be all right today," said Spratt. Climate watchers say what is desperately needed is political leadership worldwide to rein in CO<sub>2</sub>-burning corporations and shift the global economic system to green technology.

Jonathan Patz, director of the Global Health Institute at the University of Wisconsin-Madison, [told](#) USA Today the technology for a carbon-free economic system is already in place. "We're not waiting for solutions. We're simply waiting for political will to understand that the solutions are here. Clean energy is not a matter of waiting, it's a matter of implementing," said Patz.

But with US President Donald Trump, who denies human-induced climate change and oversees the world's largest economy, there is ample reason for serious concern. The winds of change are blowing, however, as climate change [protest movements](#) sprout up worldwide.

In the US, the world's second largest CO<sub>2</sub> emitter after China, presidential candidate Joe Biden announced a \$5 trillion climate proposal on Tuesday as part of his campaign for 2020. The same day, Hollywood actor Robert Downey Jr said he would launch a new hi-tech venture called the Footprint Coalition to combat climate change.

On Thursday, US billionaire and former New York City mayor Michael Bloomberg said he would spend \$500m in the "fight of our time" to move the US away from carbon energy.

Breakthrough's paper stated "a massive global mobilisation" of resources was needed in the next decade to build a zero-emissions industrial system.

So can humanity save itself with the clock ticking down fast? Admiral Chris Barrie - the former chief of Australia's defence forces who wrote the foreword to Breakthrough's paper - said human societies must act collectively to survive. "A doomsday future is not inevitable, but without immediate drastic action, our prospects are poor."

*Source:* <https://www.aljazeera.com/news/2019/06/game-paper-climate-change-raises-alarm-190608101953511.html>

## 2.2 China

### China's Electric Vehicle Industry Hit Hard by Policy Shift as Beijing Turns Toward Hydrogen Fuel

by Olivia Li, EPOCH Times. April 12, 2019 Updated: April 16, 2019



*Electric cars charge at a Sinopec service station in Hangzhou, in China's eastern Zhejiang province on Jan. 14, 2019. The service station is one of the first in the country to offer petrol, compressed natural gas (CNG) and electric car charging service. (STR/AFP/Getty Images)*

China's electric vehicle (EV) industry has been booming for nearly a decade, with generous subsidies from the Chinese government and state-sponsored marketing efforts. However, the research and development (R&D) subsidies are now shifting to vehicles with hydrogen fuel cells, a new technology that, according to industry, is cleaner and more efficient

than lithium battery-run cars. Current EV automakers in China will have to face the cruel reality: The EV industry will soon suffer financial losses with the disappearance of state support.

### **Chinese Regime Shifting Subsidies**

On March 26, China's Ministry of Finance, Ministry of Science and Technology, and other agencies jointly announced changes to the subsidy program for lithium battery-powered electric cars, slashing subsidies by 67 percent.

Electric cars with driving ranges of 400 kilometers (250 miles) and above will be cut by half, to 25,000 yuan (\$3,700) per vehicle, from 50,000 yuan. And to qualify for any subsidy, electric cars need to have a range of at least 250 kilometers, compared with 150 kilometers previously. In addition, subsidies for EV vehicles will be phased out completely after 2020.

### **The Trigger: Li's Trip to Japan**

Chinese Premier Li Keqiang's visit to Japan in 2018 fundamentally changed his thinking about electric vehicles. Li visited Toyota Motor Corp.'s factory for manufacturing EV auto parts in Hokkaido on May 11, 2018, and saw a hydrogen fuel-cell vehicle called "MIRAI." He learned that the MIRAI, which takes only three to four minutes to fuel, has a 650 kilometer (404 miles) driving range.

According to several Chinese media reports, upon Li's return to China, several ministries and commissions in China quickly assembled a team to develop hydrogen fuel-cell technology, the first signal that China's policymakers would make the fuel cells a major R&D project.

A lithium battery has several drawbacks when compared with a hydrogen fuel cell, which uses hydrogen gas as power. Lithium batteries contain heavy metals such as nickel, cobalt, and manganese, and the mining process to extract such metals can cause pollution to nearby water sources. Meanwhile, processing of copper, lithium, and other metals create toxic waste that, if not treated and recycled properly, can cause serious environmental problems.

On March 15, China's cabinet-like State Council publicized 83 amendments to its annual Government Work Report delivered before its rubber-stamp legislature. Among them was a provision to promote the construction of infrastructure related to electric and hydrogen fuel-cell technology. At the time, there were no additional policy details, but it was the first time that hydrogen fuel was included in the report.

Eleven days later, the Chinese government announced the new EV subsidy policies.

On April 11, the state-run, English-language newspaper China Daily reported that the central authorities' development plan for hydrogen fuel technology set targets of getting 5,000 hydrogen energy vehicles on the road by 2020, 50,000 by 2025, and 1 million by 2030.

### **Subsidy Reductions**

China's EV automakers are already losing money. For example, Chinese automaker BYD is a star brand in the domestic market. BYD started new energy vehicle (NEV) R&D 10 years ago.

According to Chinese news portal Sohu, citing information from BYD's financial reports, in the past five years, the company has received a total of 6.93 billion yuan (\$1.03 billion) in electric vehicle subsidies from the Chinese regime. But the industry's profitability was already falling. In BYD's 2018 annual report released on March 27, the company's net profit attributable to shareholders was 2.78 billion yuan, down 31.6 percent from the previous year. BYD explained that decline was mainly due to the reduction in subsidies and increases in R&D costs.

In early March, NIO (known as Shanghai Weilai Automobile in Chinese), which specializes in making electric autonomous vehicles and became publicly listed only half a year ago, reported revenue of 4.951 billion yuan (\$738 million) in 2018 while net losses were 9.639 billion yuan (\$1.44 billion). In addition, NIO also announced that it would cancel plans to build a new plant in Shanghai.

According to an October 2018 Morgan Stanley research report, NIO has been losing money year after year. The net loss in 2018 was 9.639 billion (\$1.44 billion), almost double the figure from 2017. Total losses from



2016 to 2018 amounted to 17.233 billion yuan (\$2.57 billion). The Chinese regime’s phasing out of EV subsidies could be devastating to the industry.

### **Rise and Fall of China’s EV Industry**

The concept of new energy vehicles (NEV) has long existed. The Paris agreement adopted in 2015 has led many countries to transform in that direction. The Chinese regime took it as an opportunity to “surpass competitors by overtaking them at the curve,” hoping that NEVs would help China transform from a follower to a leader in the auto industry.

In the Chinese regime’s 10-year economic blueprint “Made in China 2025,” released in 2015, NEVs were among the 10 high-tech sectors that Beijing targeted for aggressive development, so the country could emerge as a global tech manufacturing powerhouse. At the same time, the Chinese regime provided multiple incentives—subsidies to EV manufacturers; mandatory requirements for government agencies to purchase certain percentage of EVs; subsidies to auto consumers to buy EVs; and increased access to EV-only carpool lanes among them—all of which quickly propelled the growth of EV industry. China is now the global leader in making and buying electric cars.

Morgan Stanley estimated that by 2020, China is expected to account for 59 percent of worldwide EV sales.

*Source:* [https://www.theepochtimes.com/chinas-electric-vehicle-industry-hit-hard-by-sudden-policy-shift-as-beijing-turns-toward-hydrogen-fuel\\_2865743.html](https://www.theepochtimes.com/chinas-electric-vehicle-industry-hit-hard-by-sudden-policy-shift-as-beijing-turns-toward-hydrogen-fuel_2865743.html)

## **2.3 USA**

### **Atlanta Gas Light Trying out ANG Technology for Light-Duty Truck Fleet**

by Betsy Lillian. May 29, 2019



Atlanta Gas Light, a subsidiary of Southern Co. Gas, plans to test adsorbed natural gas (ANG) bi-fuel vehicles with new integrated fuel storage technology developed by Adsorbed Natural Gas Products Inc. (ANGP).

ANG technology uses activated carbon to reduce the storage pressure of natural gas without sacrificing its volume. ANG vehicles operate at a significantly lower storage pressure than standard compressed natural gas vehicles, refilling at 900 psi instead of 3600 psi. According to Southern Co. Gas, this can reduce energy consumption by over 50% and decrease fueling time by over 60%.

“The transportation sector accounts for the largest portion of total U.S. greenhouse-gas emissions, and 80 percent of smog-forming pollutants come from mobile sources,” says Ian Skelton, director of natural gas vehicles at Southern Co. Gas. “Natural gas is playing an important role in reducing emissions, and adsorbed natural gas can significantly reduce the cost and complexity of fueling natural gas vehicles.”

Atlanta Gas Light, which provides natural gas delivery service to more than 1.6 million customers in Georgia, is purchasing light-duty trucks for its fleet with the new ANG storage system and will test their performance compared to standard natural gas and gasoline vehicles over the demonstration period.

Results from the test will inform the company’s decision to purchase additional ANG vehicles and help validate the technology for use by others.

Bob Bonelli, president of ANGP, says, “Having Atlanta Gas Light as a project partner will provide invaluable insight and support as we work to demonstrate the value of ANG to light-duty vehicle fleets and commercialize this exciting new technology.”

*Source:* <https://ngtnews.com/atlanta-gas-light-trying-out-ang-technology-for-light-duty-truck-fleet>

## 2.4 Norway

### Chart completes LNG fueling station in Norway

May 29, 2019



*Illustration purposes only (Image courtesy of Chart Industries)*

Chart Ferox, a Chart Industries unit, has commissioned a natural gas fueling station in Borgeskogen, Norway, expanding the European infrastructure for natural gas vehicles.

The outlet owned and operated by Air Liquide Skagerak is fully equipped to serve two LNG/LBG trucks simultaneously and incorporates a CNG module for cars.

The station will be formally opened next month Chart Industries said in a brief statement through its social media channels. Chart noted that the total re-fueling times at the facility are consistent with those for equivalent diesel engine vehicles.

**Source:** [https://www.lngworldnews.com/chart-completes-lng-fueling-station-in-norway/?utm\\_source=emark&utm\\_medium=email&utm\\_campaign=daily-update-lng-world-news-2019-05-30&uid=46966](https://www.lngworldnews.com/chart-completes-lng-fueling-station-in-norway/?utm_source=emark&utm_medium=email&utm_campaign=daily-update-lng-world-news-2019-05-30&uid=46966)

## 2.5 United Kingdom

### CNG Fuels to Open Five Renewable Biomethane Refueling Stations

Waste360 Staff. May 28, 2019.

The new stations aim to help meet demand from haulers seeking to cut carbon emissions, pollution and costs.



*CNG Fuels Image*

U.K.-based CNG Fuels has commenced construction of two new public access renewable biomethane compressed natural gas (bio-CNG) refueling stations, two of five due to open in 2019 to cater for soaring demand from heavy goods vehicle (HGV) operators switching from diesel, the company announced.

The new public access bio-CNG stations will serve major truck routes and cities and will be able to refuel up to 3000 HGVs a day, a near 500 percent increase on capacity at the company's existing England-based stations in Leyland, Lancashire and Crewe, Cheshire, which can refuel more than 600 vehicles daily.

According to the company, all of the fuel supplied by CNG Fuels is renewable and sustainable biomethane approved under the Department for Transport's Renewable Transport Fuel Obligation (RTFO) scheme. The gas is sourced from waste feedstocks such as food waste and cuts vehicle greenhouse gas (GHG) emissions by up to 85 percent.

Construction work on a station in Warrington, England, at Omega South on the M62, has begun. It is expected to be the largest public access gas refueling station in Europe, catering to several major haulers in the area. It will be able to refuel up to 800 HGVs a day and serve 12 vehicles simultaneously.

CNG Fuels has also commenced construction at Erdington, close to the M6 in Birmingham. The station will be able to refuel more than 600 HGVs a day and will be built on land belonging to Cadent, operators

of Britain's biggest gas distribution network, at its National Distribution Centre in Gravelly Way Industrial Park. Cadent, with whom CNG Fuels have collaborated previously on Leyland CNG station, has committed to convert its entire fleet from diesel to CNG.

These stations have been supported by Ingenious, an investment manager specializing in the infrastructure, real estate and media sectors. They are due to open in the fall together with a third, previously announced station at the Red Lion Truckstop off the M1 at Northampton, which will be able to refuel more than 350 HGVs a day. The Northampton station is part of the U.K.'s first large-scale study of how renewable and sustainable biomethane can help slash road transport emissions.

"The spotlight on climate change continues to grow in intensity, and the U.K. haulage sector has for many years been a laggard when it comes to reducing greenhouse gas emissions," said Philip Fjeld, CNG Fuels CEO, in a statement. "Renewable and sustainable biomethane allows companies to achieve deep cuts to greenhouse gas emissions, cut pollution and save money—no wonder demand is soaring. Our customers are already planning to order hundreds of new biomethane fuelled trucks in 2019, and we have interest from companies that run a third of the U.K.'s HGVs."

The company also launched a new Bio-CNG tractor unit, which will allow trucks carrying loads of up to 44 tonnes to benefit from renewable and sustainable biomethane. The unit has been developed in collaboration with Iveco and Agility Fuel Solutions.

CNG Fuels said it expects to start construction on two more public access stations in the fall, at Larkhall in Scotland and Knowsley near Liverpool and plans to add a further eight in 2020, making renewable and sustainable biomethane fuel available throughout the U.K. It is also developing the portfolio with support from investment company Ingenious.

The government reinforced its support for biomethane as an alternative fuel in the last budget by extending the fuel duty differential between natural gas and diesel from 2024 to 2032. Element Energy forecasts the U.K. will have 10,000 HGVs and buses running on natural gas by 2020 and 60,000 by 2030.

*Source:* <https://www.waste360.com/fuel/cng-fuels-open-five-renewable-biomethane-refueling-stations>

### **3.0 ANGVA related events**

- i. LNG Supply, Storage and Transportation South Asia Forum 2019. Dhaka Bangladesh. 5<sup>th</sup> – 7<sup>th</sup> August 2019. This event is organized by All Events Group AEG), Singapore and supported by ANGVA. More information on this event at: [http://www.lng-world.com/lng\\_southasia2019/](http://www.lng-world.com/lng_southasia2019/)
- ii. Biogas Upgrading and CBG Roundtable 2019. Chiangmai, Thailand. 14<sup>th</sup> – 15<sup>th</sup> August 2019. This event is organized by International Clean Energy and Sustainability (ICESN), Singapore and supported by ANGVA. More information on this event at: <http://www.icesn.com/thai2019/assets/BiogasThailand2019.pdf>
- iii. 9<sup>th</sup> Annual LNG Transport, Handling and Storage 2019. Padma Resort, Bali, Indonesia. 10<sup>th</sup> – 13<sup>th</sup> September 2019. This event is organized by All Events Group (AEG), Singapore and supported by ANGVA. More information on this event at: [http://www.lng-world.com/lng\\_bali2019/](http://www.lng-world.com/lng_bali2019/)
- iv. ANGVA 2019, The 8<sup>th</sup> ANGVA International Biennial Conference & Exhibition. Balai Kartini Exhibition & Convention Center, Jakarta, Indonesia. 25<sup>th</sup> – 27<sup>th</sup> Nov 2019. Hosted by ANGVA and Indonesian CNG Association (APCNGI). For more information please contact [angva@angva.org](mailto:angva@angva.org) or [aznita@angva.org](mailto:aznita@angva.org) or visit website [www.angva2019.com](http://www.angva2019.com)

### **4.0 End**

Any comments and suggestions on the topics and information covered and to be covered in future are most welcome. Please send your comments and suggestions to Lee Giok Seng at email: [leegs@angva.org](mailto:leegs@angva.org)