

ANGVA2UInfo *11/2019. 29th September 2019. (for ANGVA members only)*

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1.0 Renewable Energy

Renewable Energy (RE) such as solar, wind, hydro, biodiesel, biogas, and hydrogen are being aggressively deployed around the world. Prices of RE are dropping and large amount of resources are diverted towards planning and implementation of RE projects especially for power generation. However the reality is that RE still has many challenges to fully replaced fossil fuels. Solar and wind outputs are inconsistent, and cannot be counted as a base-load power plant. For instance when it is a gloomy day, solar power plants would produce less electricity.

For the Transport Sector, the move towards electric and fuel cell vehicles have also been aggressive. But currently majority of electricity supplies are from fossil fuels and production of hydrogen is still expensive. And it will take some time to put in place adequate infrastructure to supply electricity and hydrogen to the transport sector. However, the deployment of upgraded biogas, known as Biomethane or Renewable Natural Gas (RNG), in the form of BioCNG or BioLNG could be quickly undertaken using current fossil natural gas infrastructures.

Combustion (or burning) of RNG / Biomethane fuel resulted in the conversion of methane in the fuel into carbon dioxide (CO₂) and other gases besides producing energy for the engine. CH₄ has a Global Warming Potential (GWP) of 21 (over a 100-year time horizon) as compared to GWP of CO₂ of 1.

2.0 Selected News / Articles

2.1 USA

The Environmental Costs of Renewable Energy Are Staggering

By Mark J Perry. Article. fee.org. Sunday, 15th September 2019

“If the world isn’t careful, renewable energy could become as destructive as fossil fuels,” warns a recent article from Foreign Policy.



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"The Limits of Clean Energy" is the title of an article by Jason Hickel in *Foreign Policy*, with the sub-title “[If the world isn’t careful, renewable energy could become as destructive as fossil fuels.](#)” Here’s the opening:

The conversation about [climate change](#) has been blazing ahead in recent months. Propelled by the school climate strikes and social movements like Extinction Rebellion, a number of governments have declared a climate emergency, and progressive political parties are making plans—at last—for a rapid transition to clean energy under the banner of the Green New Deal.

This is a welcome shift, and we need more of it.

But a new problem is beginning to emerge that warrants our attention. Some proponents of the Green New Deal seem to believe that it will pave the way to a utopia of “green growth.” Once we trade dirty fossil fuels for clean energy, there’s no reason we can’t keep expanding the economy forever.

This narrative may seem reasonable enough at first glance, but there are good reasons to think twice about it. One of them has to do with clean energy itself. The phrase “clean energy” normally conjures up happy, innocent images of warm sunshine and fresh wind. But while sunshine and wind is obviously clean, the infrastructure we need to capture it is not. Far from it. The transition to renewables is going to require a dramatic increase in the extraction of metals and rare-earth minerals, with real ecological and social costs.

In 2017, the World Bank released a little-noticed report that offered the [first comprehensive look](#) at this question. It models the increase in material extraction that would be required to build enough solar and wind utilities to produce an annual output of about 7 terawatts of electricity by 2050. That’s enough to power roughly half of the global economy. By doubling the World Bank figures, we can estimate what it will take to get all the way to zero emissions—and the results are staggering: 34 million metric tons of copper, 40 million tons of lead, 50 million tons of zinc, 162 million tons of aluminum, and no less than 4.8 billion tons of iron.

MP: As we learned from Thomas Sowell, “There are no solutions. There are only trade-offs.”

Source: <https://fee.org/articles/the-environmental-costs-of-renewable-energy-are-staggering/>

2.2 Japan

Ministers and delegates pledge to introduce 10 million fuel cell vehicles globally over 10 years at Japan conference

By Osamu Tsukimori. Staff Writer. Japan Times. 25th September 2019.

Ministers and delegates from more than 30 nations, regions and organizations pledged Wednesday in Tokyo to introduce 10 million fuel cell vehicles, trucks, buses and other hydrogen-powered systems, as well as 10,000 hydrogen refueling stations, globally over the next 10 years.

That means around a 250-fold increase over the next decade, as the current number of fuel cell vehicles, forklifts, trains and ships is estimated to be around 40,000 globally, said Yoshinori Furukawa, director general of New Energy and Industrial Technology Development Organization’s advanced battery and hydrogen technology department. That comprises about 10,800 FCVs across Japan, the United States and Germany, 3,000 fuel cell buses and trucks in China, and about 25,100 forklifts in Japan and the U.S., he added.

Economy minister Isshu Sugawara acknowledged the goal is challenging. He added that, given that the International Energy Agency says the next 10 years will be critical to weaning the global economy off fossil fuels, Japan is taking the initiative to spur hydrogen usage and is working on the world’s first demonstration project to liquefy hydrogen from brown coal, which will be mined in Australia and transported to Japan for domestic use. Carbon capture and storage technology will be used for the project.

“The fact that Japan could host this conference in the country for two years in a row is one indication that Japan is taking a leadership role in this sector,” Sugawara told reporters after the ministerial meeting. “Cost reduction is a common challenge for nations. By working together on research and development and technical standardization, the scale-up will hopefully lead to lower costs.”

He added that the Netherlands, which has indicated its willingness to host the Hydrogen Energy Ministerial meeting in the future, pledged to work hard to accomplish the goal.

There was no breakdown of goals by country for those who participated in the event, but the figures were set based on each country's projections, said Toshiyuki Shirai, director of the hydrogen and fuel cell strategy office at the Agency for Natural Resources and Energy.

Only a select group of automakers currently manufacture FCVs, including Toyota Motor Corp., Honda Motor Co. and Hyundai Motor Co. Toyota has sold 10,000 units of its Mirai FCV since its launch in 2014 and plans to raise annual production capacity by 10 times to 30,000 units, Toyota Chairman Takeshi Uchiyamada told the conference.

Japan has a domestic goal of introducing 800,000 FCVs and 900 hydrogen refueling stations by 2030, under a strategic road map revised in March. Under that plan, it will also seek to reduce the price difference between FCVs and hybrid vehicles to ¥700,000 from ¥3 million now.

Sugawara also signed a memorandum of cooperation with Australia's Minister for Resources Matt Canavan on carbon recycling on Wednesday.

Source: <https://www.japantimes.co.jp/news/2019/09/25/business/ministers-delegates-pledge-introduce-10-million-fuel-cell-vehicles-globally-10-years-japan-conference/#.XYyDhFUza1s>

2.3 Korea

Insight: Hydrogen hurdles - a deadly blast hampers South Korea's big fuel cell car bet

By Hyunjoo Jin and Jane Chung. Reuters. September 25, 2019



A cutaway display of a Hyundai NEXO fuel cell car is shown at the Las Vegas Convention Center during the 2018 CES in Las Vegas

SEOUL (Reuters) - Aiming to cash in on a major push by South Korea to promote fuel cell vehicles, Sung Won-young opened a hydrogen refuelling station in the city of Ulsan last September. Just one year on, he's thinking about closing it down.

Sung's new hydrogen station is one of five in Ulsan, home to Hyundai Motor Co's <005380.KS> main plants and roughly 1,100 fuel cell cars - the most of any South Korean city.

The government paid the 3 billion won (\$2.5 million) cost - six times more than fast charging equipment for battery electric cars - and the two pumps, located next to Sung's gasoline stand, see a steady flow of Hyundai Nexu SUVs daily.

Even so, Sung hasn't been able to turn a profit, hamstrung as the equipment can only refuel a limited number of cars each day and by the government's decision to set retail hydrogen prices low to bring consumers on board.

"All hydrogen stations will have no choice but to shut down unless the government subsidises operating costs," Sung, 32, told Reuters. "Otherwise, this place will just become a 3 billion won chunk of steel."

If those impediments to commercial viability were not enough, a fatal hydrogen storage tank explosion this year has spurred protests against the government and Hyundai's ambitious campaign to promote the zero-emissions fuel.

Calling hydrogen power the "future bread and butter" of Asia's No. 4 economy, President Moon Jae-in has declared himself an ambassador for the technology and targeted 850,000 fuel cell vehicles (FCVs) on South Korean roads by 2030.

That's no mean feat given fewer than 3,000 have been sold so far. Japan, also a big proponent of FCVs and with an auto market three times larger, plans 800,000 in the same timeframe.

The challenges of building out refuelling infrastructure in South Korea underscore the long and uphill battle FCVs face to widespread adoption at a time when electric cars are stealing much of the green car limelight.

And for the government and Hyundai, the only automaker selling a fuel cell car in the country, it is an expensive project with no guarantee of success.

Moon is set to spend \$1.8 billion in central government funds to subsidise car sales and to build refuelling stations for the five years to 2022 at current subsidy levels, Reuters calculations show.

Subsidies cut Nexo's price by half to about 35 million won (\$29,300) and sales of the model, launched in March 2018, have surged this year. In contrast, Japanese subsidies fund one third of Toyota Motor Corp's <7203.T> Mirai FCV, bringing its price to around \$46,200.

Some critics argue Hyundai is the main beneficiary of the government's ardent backing, but the automaker also has much at stake. With its suppliers, it plans to invest \$6.5 billion by 2030 on hydrogen R&D and facilities.

"There are risks that come with the need to make large-scale investments in building (hydrogen car) production facilities, securing supply channels and establishing sales networks," Hyundai said in an e-mailed statement.

HIGH PRESSURE

In May, a hydrogen storage tank at a government research project in the rural city of Gangneung exploded. It destroyed a complex about half the size of a soccer field, killing two and injuring six. A preliminary investigation found the blast was caused by a spark after oxygen found its way into the tank.

"One victim was blown away by pressure and then killed after being hit by rock," said Kong Gikwang, a lawyer who represents the family of one of the two who died in a lawsuit against the research complex.

One month later, there was an explosion at a hydrogen refuelling station in Norway. This week, a hydrogen gas leak and subsequent fire at a South Korean chemical plant caused three workers to suffer burns.

Such safety concerns have fuelled protests by South Korean resident groups worried about hydrogen facilities being built in their areas.

Kim Jong-ho, who began a month-long hunger strike against a planned fuel cell power plant in the port city of Incheon two days before the Gangneung blast, said the explosion refocused attention from pollution risks of hydrogen production to safety. Incheon has since agreed to review the safety and environmental impact of the plant.

Potential station operators have also gotten cold feet since the explosions.

Pyeongtaek city in April picked two gasoline stand operators to run hydrogen stands but within three months, both decided to bow out, forcing the city to restart its search.

"At first, I had great interest. But once I looked closely, I realised the government was pushing for something that can't make profits," one of the prospective operators said, asking not to be identified.

"And I couldn't live worrying about whether there would be an explosion."

To counter such fears, the government is holding briefings for residents, while Hyundai said it is working to convince consumers of hydrogen's safety with information promoted through Youtube and social media.

'VALLEY OF DEATH'

Despite government plans for 114 hydrogen stations - key for the widespread adoption of FCVs - to be built by end-2019, only 29 have been completed. Difficulties in gaining funds from local governments or businesses meant to help shoulder half the costs, delays in finding sites and opposition from residents have also hobbled efforts.

Those constructing the stations know they are in for a slog.

"There will be a period of going through the valley of death," Yoo Jong-soo, CEO of a consortium which has been tasked with building 100 stations but which does not expect to make money until 2025, said in a June presentation.

The consortium, which includes Hyundai, has also called on the government to subsidise operating costs for hydrogen stands. Such a move is under consideration, an industry ministry official told Reuters, declining to be identified as the plan has not been finalised.

"This will only increase the burden for taxpayers who have to pay for the government's hydrogen society splurge," said Ryu Yen-hwa, a former Hyundai Motor engineer and auto analyst who believes FCVs do not make commercial sense.

Just last month, Moon's administration announced it would more than double spending on the 'hydrogen economy' to over 500 billion won next year.

That includes 359 billion won on FCVs and refuelling stations, up 52% from this year and a huge leap from the 29.8 billion won spent in 2018.

DRIVER FRUSTRATIONS

Hyundai, which touts the Nexo as an "air purifier on the road", is banking on Seoul's aggressive targets to help it achieve economies of scale and bring down costs.

It aims to cut the cost of a hydrogen car before subsidies to 50 million won once annual FCV production reaches 35,000. It hopes to make 40,000 per year by 2022, compared with plans for 11,000 next year.

In the meantime, however, the constraints around refuelling and the limited number of stations are causing much frustration.

Hydrogen stand operator Sung said while refuelling itself takes about 5-7 minutes, the next driver must wait another 20 minutes before sufficient pressure builds in the storage tank to supply the hydrogen or the car's tank will not be full.

That means he can only service about 100 fuel cell cars a day, compared to up to 1,000 at his gasoline stand. Many drivers can also not be bothered to wait 20 minutes and leave without a full tank.

Choi Gyu-ho, who bought his Nexo to take advantage of low fuel prices, also noted that a lack of stations elsewhere made it hard to leave Ulsan.

"It is very inconvenient. I feel anxious when I drive out of the city," he said.

(\$1 = 1,194 won)

Source: <https://finance.yahoo.com/news/insight-hydrogen-hurdles-deadly-blast-230522489.html>

2.4 India

CNG produced from mutton, fish waste will run buses soon, says Nitin Gadkari

By Bhupendra Soni. Edited by Sanchita Jain@sanchitajain96. 23rd September 2019.



Reiterating the government's stand of replacing fossil fuels with alternative sources of energy, Union Minister for Road Transport and Highways Nitin Gadkari on Monday said that buses will soon run on Compressed Natural Gas (CNG) produced by processing stubble and food waste.

New Delhi: Reiterating the government's stand of replacing fossil fuels with alternative sources of energy, Union Minister for Road Transport and Highways Nitin Gadkari on Monday said that buses will soon run on Compressed Natural Gas (CNG) produced by processing stubble and food waste.

The senior Union Minister said that work to convert stubble, which is usually burnt after the crops are harvested, into CNG has already been initiated in Ludhiana. Further, the process to convert the food waste such as mutton, fish, fruits, and vegetables into Bio-CNG will be launched in Maharashtra in the next two months. The CNG thus produced by separating methanol and carbon dioxide (CO₂) will be used as fuel for buses.

Gadkari, who is also in charge of Ministry of Micro, Small and Medium Enterprises (MSME), said that the ministry has given a green flag to finance the plant in Ludhiana where stubble will be converted into CNG.

Source:<https://zeenews.india.com/india/cng-produced-from-mutton-fish-waste-to-run-buses-soon-says-nitin-gadkari-2236386.html>

2.5 India

IGL Took Piped Gas To Record 2 Lakh Homes, Added 54 CNG Stations In 2018-19

By The Times of India. 25th September 2019.



Indraprastha Gas Limited (IGL) has rolled out more than two lakh new PNG (piped natural gas) connections and expanded its CNG (compressed natural gas) network to 500 stations by setting up 54 new outlets in 2018-19, company chairman Gajendra Singh told shareholders on Monday.

Singh, who is also director (marketing) of state-run gas utility GAIL, said the company will invest Rs 1,170 crore in 2019-20 to build new CNG stations and create pipeline

infrastructure in its present and prospective markets.

The rapid network expansion pushed by company MD ES Ranganathan has made IGL the largest CNG retailer in the country and raised its total installed compression capacity to over 84 lakh kg per day. Simply put, higher compression capacity means the company can fill more vehicles in lesser time.

CNG sale to industrial and commercial customers too grew 13% during the last financial year under the watch of director (commercial) Amit Garg.

Source:<http://energyinfra.com/igl-took-piped-gas-to-record-2-lakh-homes-added-54-cng-stations-in-2018-19/>

2.6 Myanmar

Yangon to make efforts to open new CNG fuelling station

By Chan Mya Htwe. *The Myanmar Times*. 23rd September 2019.



A submission for the government to acquire land for a new CNG fuelling station in Yangon will be submitted. Phoe Wa /The Myanmar Times

A submission for the government to acquire land for a new compressed natural gas (CNG) fuelling station in Yangon Region will be submitted in the coming budget year, said Yangon Region Minister for Agriculture, Livestock, Forestry and Energy U Han Tun during the siting of the Regional Hluttaw (assembly) on Thursday.

The Submission will also be sent to the Ministry of Electricity and Energy, U Han Tun said in response to a question from Mayangone township MP U Yan Shin on whether there is plan to build more CNG filling stations in the region for the convenience of users of CNG-powered vehicles.

“We’ll continue making requests to the Ministry of Electricity and Energy to open new CNG stations and to obtain land in coming budget year for the convenience of owners of CNG vehicles when refueling and to facilitate maintenance work for CNG compressors,” said U Han Tun.

He also proposed the Yangon City Development Committee and Ministry of Electricity and Energy move the Ahlone 3 CNG station No. 029 and East Dagon 2 CNG station No. 023 to Yangon Bus Service terminals.

Myanmar Oil and Natural Gas Enterprise has expanded the availability of CNG for vehicles in 2014. Of the 41 CNG stations in Yangon, 17 of them have 38 Safe CNG Compressors from Italy and six stations are using Intermech CNG Compressors from New Zealand.

Five CNG stations are using six IMW CNG Compressors from Canada and one CNG station is using four Aspro CNG Compressors from Argentina, 17 CNG stations are using 20 L-Type Compressors and 14 ZW-Type CNG Compressors made in China.

To maintain a consistent level of knowledge for maintaining the infrastructure, maintenance groups have been sent for training courses with foreign experts as well, said U Han Tun – *Translated*.

[Source:https://www.mmtimes.com/news/yangon-make-efforts-open-new-cng-fuelling-station.html](https://www.mmtimes.com/news/yangon-make-efforts-open-new-cng-fuelling-station.html)

2.7 India

40 semi-automatic pistols hidden inside CNG cylinder seized

By Team MP25. *Millenniumpost*. 25th September 2019.



New Delhi: Delhi Police crime branch on Tuesday recovered 40 semi-automatic pistols with 20 spare magazines hidden in the CNG cylinder fitted in the boot of the car near Ghazipur vegetable market. Police have arrested one gun supplier in the case.

According to police, on September 24, accused Irshad Khan was nabbed ~~the accused~~ after a short chase in Ghazipur Vegetable Market in Bhovapur village. From the cavity of his car weapons were recovered.

Delhi Deputy Commissioner of Police (crime) G. Ram Gopal Naik (*said*) the accused Khan has disclosed that he has been supplying illegal arms to the criminals of Delhi and NCR region for the past one year.

He was procuring illegal arms from one notorious arms manufacturer presently operating from Madhya Pradesh. He revealed that he procures illegal semi-automatic pistols and supplies the same to various criminals. He has allegedly sold off more than 100 pistols in Delhi-NCR region, so far.

He said that once a weapon is sold to a criminal, then subsequent demands for more weapons are automatically generated which further fuelled this illegal trade.

DCP further revealed that in September 2016, he was arrested at IGI Airport while smuggling a Narco substance and came out of jail on November 2018. In February 2019, he was arrested for auto lifting in Delhi and Faridabad (Haryana) and remained in jail for a month.

During his stint in jail, he befriended some local gangsters and through them, he came in contact with Arms manufacturers of MP and started procuring illegal arms from them and supplying them to criminals of NCR.

Source: <http://www.millenniumpost.in/delhi/40-semi-automatic-pistols-hidden-inside-cng-cylinder-seized-376083>

3.0 ANGVA related / participated events

- i. 12th Regional Environmentally Sustainable Transport (EST) Forum in Asia, 28th – 31st October 2019, Hanoi, Vietnam. Co-organised by Government of Vietnam, Ministry of the Environment of the Government of Japan (MOE-Japan), and the United Nations Centre for Regional Development's Division for Sustainable Development Goals/ UN DESA. The Forum theme is "*Achieving Smart and Resilient Cities through Low Carbon and Intelligent Transport System*". ANGVA is participating as delegate. More information on this Forum can be viewed at: <http://www.uncrd.or.jp/index.php?menu=384>
- ii. ANGVA 2019, The 8th ANGVA International Biennial Conference & Exhibition. Jakarta, Indonesia. 25th – 27th Nov 2019. This event is taking place at the Tribata Convention Center and hosted by ANGVA and Indonesian CNG Association (APCNGI). ANGVA 2019 will be co-located with the 8th Asia Pacific Biogas Forum 2019 and Electric and Fuel Cell Vehicles Forum 2019.



For more information please contact angva@angva.org or aznita@angva.org or visit website www.angva2019.com

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