ANGVA2U Info aims to share information, data, and news related to low carbon, carbon neutral, and zero carbon fuels towards Net Zero Emissions target and limiting earth temperature rise to 1.5 ^{0}C by the year 2100. These information, news, and insights, are shared in good faith, without any guarantee of accuracies. ANGVA members are advised to use these information, news, and insights, prudently and at their own risks.
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1.0 Introduction

This newsletter aims to keep members abreast with the latest news on NGVs, Renewable Natural Gas (RNG) / Biomethane, Renewable Fuels, and other related news. Members can contact ANGVA Secretariat if they have any questions and comments related to this newsletter.

ANGVA Secretariat would like to highlight that as of 1st July 2025 the ban on the operation of natural gas vehicles (NGVs) on Malaysian roads came into effect. All NGV refueling stations in Malaysia, which were operated solely by Petronas, the national oil and gas company, had also ceased operation as of 1st July 2025. The announcement of the ban was reported in ANGVA2U issue 07, 9th Nov 2024 in item 2.1.1. The news is republished below as a recap for members:

Malaysia
End of the road for NGV vehicles from July 2025
4th November 2024. By Amalia Azmi

All natural gas vehicles (NGVs) will no longer be allowed on the road or be registered effective July 1 next year, Transport Minister Anthony Loke said. - NSTP/ASYRAF HAMZAH

KUALA LUMPUR: All natural gas vehicles (NGVs) will no longer be allowed on the road or be registered effective July 1 next year, Transport Minister Anthony Loke said.

This decision, he said, was made by the cabinet on Oct 2 after taking into consideration the safety of NGVs and other road users.

Loke said the supply of NGVs across the country will be phased out beginning Oct 1, and by the second quarter of 2025, there will be no retail supply of NGVs available in the market.

"All dual-fuel vehicle registration information will be automatically changed to use petrol only, to prevent revenue leakage to the government.

"This is also to ensure the owner of the vehicle involved is charged to the motor vehicle licence fee according to the rate set to the class of vehicles powered by petrol," he said at a press conference on the direction of NGV vehicles here today.

Loke said records showed that modifications and installations of NGV vehicles were made between 1995 and 2014 and many of these vehicles were nearing the end of their NGV tank lifespan and require replacement.

"NGV tanks have a safe usage period of around 15 years and if not replaced, they become unsafe to use and may fail to function at any time, posing risks of injury, death and significant property damage," he said.

Loke said some users had modified their vehicles using cooking gas cylinders (LPG), which is extremely dangerous and has previously resulted in accidents and explosions. He said LPG cylinders operate at about 7 bar (100 pounds per square inch), whereas NGV tanks can withstand pressures of up to 220 bar (3,200 psi).

He said replacing these components can be costly, exceeding RM7,000 per vehicle and NGV replacement parts, particularly tanks, are either unavailable or very difficult to obtain in the local market.

"From observations and feedback received, some vehicle owners have used parts from previously used tanks or unapproved modifications, including using LPG tanks. Such issues ultimately pose safety risks, injuries or fatalities to all users or owners of the affected vehicles," he said.

Loke said there were two categories of vehicles affected by this ban: petrol-powered vehicles modified for dual-fuel use and imported vehicles specifically designed to operate solely on NGV (mono-fuel).

He said according to Road Transport Department records over the past three years, there are approximately 44,383 active NGV vehicles registered.

This includes 9,509 taxis and rental cars, 32,137 private vehicles, 2,150 buses and lorries and 587 machinery units.

He said the number of NGV-powered vehicles was quite small, at just 0.2 per cent of the total registered motor vehicles in Malaysia, excluding motorcycles.
Source: *https://www.nst.com.my/news/nation/2024/11/1129388/end-road-ngv-vehicles-july-2025*

Malaysia stands as the only country in the world that banned NGVs due to safety issues specifically due to unapproved modifications and continuing operation of expired CNG cylinders. CNG cylinders have 15 years life and upon expiry dates these expired cylinders must not be allowed to be used as per the requirement of Malaysian standards and Malaysian Road Transport Regulations. The unapproved modifications and expired CNG cylinders continued to be operated on Malaysian roads as there were no enforcement by the relevant authorities especially the Road Transport Department and users chose to ignore the safety requirements. ANGVA and the Malaysian NGV Installers Association (MANGVI) had for many years highlighted these situations to the users and authorities that such illegal operations could result in serious and fatal accidents especially considering that many of the CNG cylinders had been in operation for more than 15 years. It seemed that the Malaysian Government had at last took action to prevent such safety incidents from happening by banning the use of NGVs in Malaysia effective 1st July 2025, instead of conducting inspections and enforcing the requirements.

Ironically, Malaysia is now actively promoting the use of hydrogen for the transport sector besides the use of batteries. It should be noted that hydrogen also need to be stored at very high pressure in cylinders. Hydrogen is stored at 10,000 psig (~700 bar) onboard passenger cars and at 5,000 psig (~350bar) onboard buses. CNG is stored at 3000 psig (~ 200 bar) onboard vehicles. Onboard vehicle hydrogen cylinders also have expiry life of 15 – 20 years, similar to CNG cylinders.

As it is now, approximately 44,383 NGVs in Malaysia had dismantled their CNG kits and reverted to the use of fossil gasoline and diesel, this is a backward step in term of reducing air pollution and carbon footprint from using much cleaner fossil natural gas as compared to fossil gasoline and diesel.

The ban had also effectively shut the opportunity for the use of Biomethane / Renewable Natural Gas in the form of bioCNG and BioLNG for the transport sector which is a hard to abate sector when it comes to reducing air pollution and carbon footprint. BioCNG and BioLNG are carbon neutral fuels that are produced from upgraded biogas generated from wastes and are drop-in fuels for existing NGVs utilizing the same infrastructure as the supply and utilization of fossil CNG and LNG for the transport sector.

There are many good lessons to be learnt from the NGV program in Malaysia especially for countries that are embarking and expanding the use of NGVs.

2.0 Natural Gas – Low Carbon Fuel

2.1 India

240 diesel buses to be fuelled by CNG, MTC puts pedal to metal to save cost

2nd August 2025. By B Anbuselvan

Part of plan to have 1,000 CNG buses; pact signed with firms to develop infra, supply gas

To support this transition, MTC has signed Memorandums of Understanding (MoUs) with two city gas distribution companies -- Think Gas and Torrent Gas. Photo | Express

CHENNAI: Metropolitan Transport Corporation (MTC) will convert 240 of its diesel-run buses into compressed natural gas (CNG) vehicles as part of the transport department's initiative to convert 1,000 buses into CNG vehicles.

Of these, 120 will be assigned to the Ambattur depot, while the remaining are designated for the upcoming Varatharajapuram depot near Mudichur along Outer Ring Road, which is yet to be constructed. Both depots will operate exclusively with CNG-powered buses.

To support this transition, MTC has signed Memorandums of Understanding (MoUs) with two city gas distribution companies -- Think Gas and Torrent Gas. Think Gas will develop the necessary CNG infrastructure at the Varatharajapuram depot, while Torrent Gas will handle CNG supply at the Ambattur depot. Each company is also responsible for establishing refuelling facilities within the respective depots.

T Prabhushankar, Managing Director of MTC, told TNIE that under the MoUs, the price of CNG will be fixed at a 6% discount on the diesel landing cost. "For example, if diesel is priced at Rs 90.65 per litre, the corresponding landing cost would be Rs 85.20. This figure will serve as the base rate for purchasing CNG for the first six years of the 15-year agreement. As a result, MTC will be able to procure CNG at a rate lower than the retail market price," he explained.

The CNG refuelling stations will include two segments: one exclusively for MTC's use and the other as a retail station for highway and road users. MTC will earn rental income from leasing land to the gas suppliers. Tenders for the construction of the Varatharajapuram depot are expected to be issued soon, Prabhushankar added.

A pilot study conducted by Pallavan Transport Consultancy Services (PTCS), the technical wing of the transport department, revealed that three retrofitted MTC buses running on CNG achieved savings of Rs 2.9 to Rs 3.5 per kilometre compared to diesel. The initiative, originally conceived by former transport secretary K Phanindra Reddy (who retired on Thursday), aims to significantly reduce operational costs, which have contributed to mounting debts across transport undertakings.

A broader study involving 40 CNG-converted buses across eight transport corporations showed CNG buses achieving fuel efficiency of 6.1 to 7.1 km per kg, compared to 4.21 to 5.96 km per litre for diesel buses.

According to official estimates, the cost of converting a diesel bus to run on CNG ranges between Rs 7 lakh and Rs 8 lakh. Mofussil buses are expected to recover this investment within 9 to 10 months, while town buses may take 13 to 14 months. Only buses with a remaining operational life of five to seven years will be eligible for conversion.
Source: *https://www.newindianexpress.com/cities/chennai/2025/Aug/02/240-diesel-buses-to-be-fuelled-by-cng-mtc-puts-pedal-to-metal-to-save-cost*

2.2 India

Adani Total Gas to build 1800 CNG stations in 7-10 years

27th June 2025. By Kalpana Pathak, ET Bureau.

Synopsis

The company has thus far completed laying 10,888 Inch-Km of steel pipeline, adding 1,951 Inch-Km line in FY 2022-23. Its CNG station footprint increased to 460 following the addition of 126 during the last year. Out of 460 CNG stations, 87 were Company Owned Dealer Operated (CODO) and Dealer Owned Dealer Operated.

Image used for representative purpose

Adani Total Gas Ltd (ATGL), a joint venture between Adani Group and TotalEnergies, plans to build over 1,800 CNG stations in the next 7-10 years, said Suresh P Manglani, CEO, ATGL, in the company's annual report for FY23.

"ATGL is spreading its footprints pan-India. Added to this number are 19 GAs with our JV- Indian Oil Adani Gas Private Limited (IOAGPL), we now have a presence in 124 districts," Manglani added.

The company has thus far completed laying 10,888 Inch-Km of steel pipeline, adding 1,951 Inch-Km line in FY 2022-23. Its CNG station footprint increased to 460 following the addition of 126 during the last year. Out of 460 CNG stations, 87 were Company Owned Dealer Operated (CODO) and Dealer Owned Dealer Operated.

In addition to scaling its core business of gas distribution, the company is also diversifying its offerings to – CNG, CBG and EV charging.

"The time is coming when we will have widened our portfolio of service to a range of clean fuels that addresses different applications for different consumers, reinforcing our positioning as a one-stop comprehensive service provider," added Manglani.

To this effect, ATGL has formed a wholly owned subsidiary, Adani TotalEnergies E-mobility Limited (ATEL). Presently, ATEEL is engaged in setting up EV charging infrastructure for 2W, 3W, and 4W (including bus) at various locations across the country.

Another wholly owned subsidiary Adani TotalEnergies Biomass Limited (ATBL) will tap into India's huge potential of bio-mass derived energy.

ATEBL is currently building one of India's largest Compressed Biogas (CBG) plants at Barsana near Mathura in UP with eventual 600 TPD feedstock processing capacity.

"In addition to utilizing agricultural and livestock waste as feedstock, the company is also actively seeking opportunities in the Municipal Solid Waste (MSW) segment to expand its CBG production footprint," Manglani added.

CBG is suitable for transportation and utilization in the CGD network and fits seamlessly in the ATGL's existing CGD play. ATGL has commissioned its first CBG station at Varanasi.

ATGL said it is also in the process of moving all its businesses from applications to a single platform called SOUL.

"It is a Digital Business Platform catering, inter alia, to all aspects of our CGD, EV and our Biomass business. a. Connecting all our businesses with SOUL will lead to transformational efficiencies, enhancing business KPIs and optimising cost on a continual basis setting newer benchmarks for the industry," said Manglani.

Source: *https://economictimes.indiatimes.com/industry/energy/oil-gas/adani-total-gas-to-build-1800-cng-stations-in-7-10-years/articleshow/101297002.cms?from=mdr*

2.3 Vietnam

Ho Chi Minh City to fully transition to electric and CNG buses by 2030

30th July 2025. By VNA.

An electric bus in Ho Chi Minh City in 2024. Photo by VnExpress/Gia Minh

Ho Chi Minh City is accelerating its push for greener public transport with a plan to convert all buses to electric or green energy by 2030 as part of a broader effort to reduce emissions and promote sustainable urban mobility.

According to the city's roadmap, beginning in 2025, all newly launched bus routes will be required to use clean fuels such as electricity or compressed natural gas (CNG). The transition will culminate in a full conversion of the entire bus fleet by 2030.

Starting Aug. 1, the city will launch 37 new subsidized bus routes operated by newly-selected companies. Of the 600 buses on these routes, nearly 300 will run on electricity or CNG, pushing the share of clean-energy buses in the city's fleet to nearly 50%.

The city is operating a bus network of more than 2,200 vehicles, with around 700 using electric or CNG, while the rest still rely on gasoline or diesel.

The HCMC Institute for Development Studies (HIDS) has also completed a plan to convert motorbikes used by delivery workers and ride-hailing drivers to electric alternatives. The goal is to convert 80% of the estimated 400,000 motorbikes in this segment - equivalent to 320,000 vehicles - by 2027, with the remainders to follow in 2028. Based on this plan, HIDS has recommended a ban on gasoline-powered motorcycles in app-based ride-hailing services starting in 2029. Both the public buses and ride-hailing sectors are covered under the city's master plan for controlling vehicle emissions, overseen by the Department of Construction.

In the first phase, the city is focused on developing policies, infrastructure, and incentives to support the shift. Key measures include expanding the electric bus fleet and building a citywide network of charging stations. After the administrative merger of Ho Chi Minh City, Binh Duong and Ba Ria–Vung Tau provinces, the municipal Department of Construction revises the plan to reflect the new, expanded urban area, with submission to the municipal People's Council expected in the fourth quarter of 2025.

The second phase will provide financial support for replacing old vehicles and offer incentives to switch to electric vehicles. The city is also studying traffic zoning options that would give priority access to electric and green-energy vehicles in central areas, as well as in outlying districts like Can Gio and Con Dao.

Charging infrastructure – a key enabler

Before the merger, HCMC managed over 9.6 million vehicles, including 8.6 million motorbikes and more than 1 million cars. The post-mergence city is projected to have over 11 million vehicles. Besides policy incentives, the development of a robust charging infrastructure is seen as essential to accelerating the transition. According to Dr. Le Thanh Hai, Director of HIDS's Economic Consulting Center, the city's current charging network is fragmented and mostly driven by small private investments. No major public infrastructure projects have been launched so far.

High-powered DC fast chargers (up to 350kW) also risk overloading the local power grid during peak hours. In addition, the city lacks adequate parking and depot facilities to support electric vehicle adoption. HIDS has proposed building 3,000 charging and battery-swapping stations by 2028, prioritizing locations such as petrol stations, public parking lots, shopping malls, and parks.

In parallel, the Public Transport Management Center under the Department of Construction is working with partners to install 19 large charging stations at existing bus terminals. These facilities will serve nearly 700 electric buses operating on 47 subsidized routes, with full deployment expected by 2027. The project has a total investment of about VND400 billion (US$15.7 million).

The municipal Department of Industry and Trade has pledged to work with the electricity sector to ensure a stable power supply for charging stations and to upgrade power infrastructure in areas at risk of overload.

Source: *https://e.vnexpress.net/news/news/traffic/ho-chi-minh-city-to-fully-transition-to-electric-and-cng-buses-by-2030-4921010.html*

2.4 Nigeria

FG attracts $791.49m CNG investments in two months – Report

31st July 2025. By Damilola Aina

Nigeria's drive to deepen the adoption of Compressed Natural Gas as an alternative transport fuel has taken a further step, with the Federal Government attracting over $791.49m in investments between May and June 2025, The PUNCH reports.

It has also ramped up its push for compressed natural gas adoption in the transport sector, mobilising over $980m in investments and deploying more than 100,000 CNG kits within 12 months as part of the Presidential CNG Initiative.

This was disclosed in a document obtained from the Presidential Initiative on Compressed Natural Gas Secretariat on Wednesday in Abuja.

"Between May and June 2025 alone, we mobilised over $791.49m in private sector investments into the CNG ecosystem, covering infrastructure, conversion kits, logistics, and platforms. This surge reflects growing investor confidence in Nigeria's clean energy transition and the bankability of the PCNGI model."

"This sharp rise in investment is a direct result of renewed investor confidence, stronger policy direction, and proof of concept seen in the ongoing nationwide deployment," it said.

The document revealed that over 1,440 vehicles have so far been converted across 20 states, with 807 CNG-powered buses and over 5,000 tricycles procured to deepen clean energy adoption and reduce transportation costs.

The Federal Government also **plans to facilitate the conversion of one million vehicles and train at least 25,000 autogas technicians by 2027**, with 250,000 new bi-fuel vehicles expected to hit the roads within that period.

Describing fuel subsidy as an "albatross", the PCNGI noted that Nigeria had spent about N1tn on petrol subsidies in 2023, despite sitting on vast gas reserves.

According to the secretariat, "Nigeria continues to subsidise the importation of over 75 million litres of petrol daily despite producing 1.2 million barrels of crude oil per day. The country is sitting on a wealth of natural gas that must be harnessed for sustainable mobility."

So far, 65 mother refuelling stations and 300 new conversion centres have been deployed nationwide, with 260 in advanced development, while 175 daughter stations are under construction, 30 of which are now operational.

The initiative, which operates under the Office of the Special Adviser to the President on Energy, is being powered by partnerships with state governments, private investors, and financiers such as NIPCO Gas and the Ministry of Finance.

Breakdown of recent procurement activities shows that out of 23,845 CNG kits ordered in 2023, 17,346 have been received while 16,672 have already been deployed. In 2024, 27,100 kits and 53,000 cylinders are already in supplier warehouses awaiting delivery. In total, 125,000 vehicle conversions are being targeted this year alone.

A total of 5,213 tricycles and 531 petrol-CNG buses were ordered, with 391 buses and all tricycles already received. Similarly, 40 electric buses have also been delivered.

PCNGI is currently active in 20 states with another 11 expected to join the national gas mobility footprint within the next six to nine months. The initiative targets 1,000 auto-gas conversion workshops by 2027, with a capacity to convert 250,000 vehicles annually and create over 300,000 indirect jobs.

"The goal is not only cleaner, cheaper fuel but also economic empowerment," the secretariat stated. "Already, over 5,500 conversion technicians have been trained, and over five incentive programmes have been launched, including fare reduction, refuelling on-lend, and consumer subsidy models."

In its economic impact outlook, PCNGI projects a CO_2 emissions reduction of over 57 per cent and cumulative fuel cost savings of more than N500bn if fully implemented.

The report also flagged infrastructure and gas availability as key challenges but noted that "proactive planning, strong teams, rapid response, and clear policy direction" have mitigated early risks.

"Only one incident during adoption is too much," it warned. "Safeguards must be guided by strict quality control, technology-based monitoring, and effective enforcement."

With global natural gas vehicle penetration led by China, Iran, and India, the federal government is banking on CNG to revolutionise mass transit, inter-city and intra-city transportation, and reduce the impact of fuel deregulation.

Already, standards for refuelling, engine compatibility, and vehicle conversions have been launched with the Standards Organisation of Nigeria, while the Nigeria Gas Vehicle Monitoring System is under development.
Source: *https://punchng.com/fg-attracts-791-49m-cng-investments-in-two-months-report/#google_vignette*

2.5 Nigeria

Nigeria: Motorists queue 10 hours for CNG, want infrastructure expansion

4th August 2025. By Benjamin Umuteme

The initial euphoria that greeted the introduction of the Presidential Initiative on Compressed Natural Gas (Pi-CNG) seems to be fizzling out with Nigerians from all walks of life divided on its impact.

In August 2023, President Bola Ahmed Tinubu approved the establishment of the Presidential CNG Initiative (Pi-CNG), expected to cut down energy and transportation costs and ease the

impact of fuel subsidy removal on Nigerians. But two years after it was launched, many motorists who spoke with Blueprint on the benefits as well as the challenges posed to them by the initiative, even as they faulted the implementation.

In 2024, the federal government activated its Compressed Natural Gas (CNG) Conversion Incentive Programme in eight states, which were Oyo, Lagos, Ogun, Edo, Delta, Kogi, the Federal Capital Territory (FCT), and Nasarawa states.

The government later launched a N2.5 billion credit scheme to promote vehicle conversions to Compressed Natural Gas (CNG) and support local production of conversion kits, aiming to reduce energy and transportation costs nationwide.

Blueprint reports that since its take-off, the CNG policy has been dogged with several complaints concerning persistent issues which include: infrastructure deficits, regional inequality, slow progress, safety risks, high conversion costs, lack of coordination, non-availability of promised CNG vehicles, and logistical challenges.

…Short-lived joy

Philip Clement, a journalist said when he converted his car to CNG he was very happy that he was at least reducing the amount spent on fuel for his car, adding however that this is not the case considering the present reality.

He said: “Honestly, when I converted my car to CNG, I was happy that at least I could save some money from the high cost of petrol, which rose from N187 per litre to almost N1, 000 or even at a time over N1, 000, before it reduced to N945 or so. So, I was happy, but I converted in January this year, that’s about seven months now. And in January, throughout, I didn’t experience any problem with filling my gas, until late February, when people started converting in bulk.

“You know, the initial idea was for the government to subsidise, to give the kits free to commercial taxi drivers. But, because of the nature of Nigeria, the commercial taxi drivers started selling it, they started selling slots. Naturally, CNG conversion was supposed to be N1.1 million. “But commercial taxi drivers, the government gave the kits for free, started selling them at N300,000, N250,000, in fact, some as low as N150,000. So, because of that, many people rushed in and embraced the scheme.

“Of course, Nigerians, when we see cheap things, we rush. So, that’s how people started converting, so many people started converting. And then, because of that, we now have a surge in conversion, which is not commensurate with the filling centres.”

'… It's beneficial, but…'

For Ifeanyi Onuba, also a media practitioner, the stress of buying gas is now more than the benefits. Onuba said: "I have a Jeep but the way it is, I may not even convert. The stress of buying gas is more than the benefit. "There is NNPC in that Dutse-Bwari axis but you have to spend six hours minimum before you can get gas. Cars sleep at the filling stations just to buy gas. It's not worth the trouble."

Another user, Gabriel Kuma, told Blueprint that converting one's car to CNG is good for motorists. Blueprint award debt resolution. He noted that with CNG, motorists would spend less on fuel compared to the use of petrol. According to him, the only thing is that you have to change your plugs every two months or it will start giving you issues. "For instance, I was able to get N1,200 gas last Saturday and on Sunday, it took me to my church in Wuse 2, from there I went to Jabi Park to pick up some stuff, and I proceeded to Katampe extension and returned to my house in Kubwa. The next day, which was a Monday, I left Kubwa to Katampe extension from there to Area 1 before I now switched to petrol. I would have spent over N22, 000 to buy petrol for those two days," he said.

…The blessing

For some commercial drivers, however, CNG conversion has been a blessing due to their returns on a daily basis. According to them, they now spend less on fuelling their vehicles while daily they continue to smile home.

According to Kunle, the conversion to CNG for him has been a blessing. He said his take-home has witnessed a significant increase, adding that there is no regret resigning from his N70, 000 monthly work to take up driving. "Where I used to work, I was paid N70,000 but thanks to the use of a CNG powered car, the amount I received after 30 days of work is what I get daily. When asked why his charges are still high, Kunle explained that "it is not only gas that we use, there is still maintenance of the vehicle that is still very expensive."

…Frustrations

On the stressful side of getting the CNG, some of those who spoke to this newspaper lamented the long man hours spent queuing for the product.

Speaking to this reporter in pidgin English, a Bwari resident, Chukwuma, said: "Wahala for who dey wait for CNG! We dey spend 6-7 hours queuing for gas that barely lasts 4 hours, only to repeat the cycle again. Some people fit lose their cool o, fights break out over ₦3,500 worth of CNG gas. Fathers and husbands dey sleep at CNG stations, exposed to mosquitoes and whatnot, just to get that gas. Na God fit help us for this country."

"Someone told me he only spends Sunday with his family, from Monday to Saturday is at CNG stations," he further added.

Another user, Philip, corroborated Chukwuma's position, citing some examples. He said: "I'll give you an example, on Sunday; I went to that CNG filling station in Wuse Zone One. I even missed

church. I was thinking I could buy and go for a second mass. I went at 6 a.m. You cannot believe my brother, before I got the CNG, it was 4 p.m. I spent ten solid hours on the queue, from 6 a.m. to 4 p.m., before I got there. When we went there, they said, at 9 a.m., they said, a truck is coming; we waited for that truck till 2 p.m. before it came.

"And when it came, it started discharging before it dispensed. It was discharged for an hour and 30 minutes. By 4pm it started dispensing and because I was among the first people on the queue, I was among the first people that got. "The people that came behind me, I'm sure that they will get CNG by 6. That's 12 solid hours on the queue. So, imagine many hours lost.

"Do you know that even at 6 a.m. that I came; there were people already in front of me. People are sleeping in CNG station as if it is their house now because of scarcity. So, the thing is tiring." Continuing, he said: "There is what they call chua-chua. People will just come and pay N2, 000, N3, 000. And these people have spent many hours on the queue.

"In fact, on Sunday, people almost exchanged physical blows because of that. How can I come out at 6 a.m. and be on the queue for almost 10 hours and somebody will just drive in because he has N2, 000 to give? "But because we want to be law-abiding, we follow the queue. But the system is so corrupt that people will just drive in, pay money and get it, which is not fair."

Challenges

Speaking further on the challenges, Chukuma said: "The other challenge is availability. As it stands, NIPCO is the sole provider of gas. And because other oil marketers see them as competitors, they are not too keen to patronize NIPCO. The good thing is that the agreement with NIPCO will expire by next month (August), as it stands, other marketers will be able to take the gas for onward supply to consumers. Many of them already have space for CNG. What they are waiting for is the license from the Pi-CNG committee."

…On the way out

On the way out, Philip said: "You know, the issue is that the government has no single hand in CNG. It is a pure private investment. So, the only way the government can come in is to provide an enabling environment for investors to come and invest in CNG and then certify safety. So, if you are setting up a CNG facility in your station, before you start operation, the government will come and check to ensure safety and all.

"So, the government has no investment in it, because of that, it has little or nothing to do about it because how can you go and tell a private investor what to do with his money or how to do it, that is the issue. "If the government had invested in it, that is where we would now hold the government to account. But the government doesn't want to put a naira in it. They only allow private investment in CNG."

…Short-term solution

As a short-term solution, Phillip urged the government to drive the process by expanding the infrastructure to ensure product availability at all times.

He said: “The short-term solution is, although we don’t have so many filling centres, the government should ensure that there is always availability of gas.

“In other states, they don’t suffer from gas like the way we suffer in Abuja and it’s in Ajaokuta here that they go to pick the CNG that they go to load the CNG. So, they should make it available. Once they make it available, this issue will be a thing of the past.

“While the government should keep encouraging private investors to come and sink in their money, to open more centers, NIPCO, NNPCL, Mobil and Shafa are currently doing that. We understand Bovas and others are coming to the system. So, if we have more, AA Rano and others come into the sector, I bet you in the short term that the man-hours people like myself spend on the queue, will be reduced.

“So, even with the unavailability, Nigerians are still making life difficult for others by coming and just cutting corners. So, the short-term solution is availability, availability, availability. If only there will be availability, for instance, if a truck has been exhausted, another one will come immediately, we will not have this issue.”
Source: *https://blueprint.ng/nigeria-motorists-queue-10-hours-for-cng-want-infrastructure-expansion/*

2.6 Tanzania

Over 5,000 three-wheelers converted to use CNG

4th August 2025. By ANNE ROBI in Lindi

LINDI: MORE than 5,000 three wheeled motorised vehicles in Tanzania have been converted to use Compressed Natural Gas (CNG) as an alternative to petrol or diesel, according to the Tanzania Petroleum Development Corporation (TPDC).

The announcement was made by Senior Community Development Officer at TPDC, Mr Ally Mluge during the ongoing Nane Nane 2025 exhibition for the Southern Zone in Lindi Region.

“To date, over 5,000 three-wheeled vehicles are running on CNG instead of petrol or diesel,” Mr Mluge said, noting the growing shift towards cleaner and more cost-effective fuel solutions.

He added that TPDC has developed eight CNG filling stations across the country, including the largest ‘mother station’ in Dar es Salaam, which was launched in May 2025.

The facility has the capacity to refuel up to 1,200 vehicles per day and is expected to significantly reduce fuel costs and ease congestion at other filling stations.

In a related development, Mr Mluge noted that approximately 1,512 households in Dar es Salaam, Lindi and Mtwara have been connected to natural gas for clean cooking purposes. In addition, 57 industries are now using natural gas as a clean energy source.

TPDC is also implementing a project in the Mnazi Mmoja area of Lindi to distribute clean cooking gas to 470 households in Lindi and 570 households in Mkuranga District, Coast Region.

Furthermore, Mr Mluge said that TPDC, in collaboration with the Rural Energy Agency (REA), is supporting the National Clean Cooking Strategy.

The strategy aims to connect 80 per cent of Tanzanian households to clean cooking solutions by the year 2034.

"TPDC is fully committed to the National Clean Cooking Strategy and is working closely with REA to promote the adoption of clean cooking technologies across households, institutions and commercial users," he said.

Lindi District Commissioner, Ms Victoria Mwanziva, praised TPDC's efforts in expanding access to clean cooking energy. She noted that the initiative has reduced reliance on polluting fuels and helped mitigate the negative impacts of traditional cooking methods.

"We truly appreciate TPDC's efforts, especially their public awareness campaigns which are playing a crucial role in encouraging communities to adopt clean energy solutions," she said.
Source: *//dailynews.co.tz/over-5000-three-wheelers-converted-to-use-cng/*

2.7 Russia

MAZ to supply 20 CNG-powered buses to Russia's Krasnoyarsk Territory

28th June 2025.

Minsk Automobile Plant (MAZ) will deliver compressed natural gas (CNG)-powered buses to Russia's Krasnoyarsk Territory, the company's press service told BelTA.

The shipment includes 10 MAZ-203 buses for Norilsk and 10 MAZ-203 buses for Achinsk.

The deal follows an April visit by a delegation from Achinsk to MAZ, during which the plant and Achinsk authorities signed a framework agreement on potential bus deliveries. Negotiations revealed particular interest in MAZ's CNG-powered vehicles, including buses and municipal waste collection equipment.

The MAZ-203 is an urban bus configurable with CNG engines. These vehicles are widely deployed across urban communities and are recognized for their fuel efficiency and reduced environmental impact.
Source: *https://zviazda.by/en/news/maz-to-supply-20-cng-powered-buses-to-russia-s-krasnoyarsk-territory/*

2.8 Spain – Liquefied Natural Gas (LNG)

HAM Group reveals new LNG station in Spain

30th July 2025.

The strategic site along the N-232 in Navarra strengthens the company's position in sustainable transport fuel.

HAM Group has inaugurated a new LNG refueling station in Castejón, Navarra, located in the La Sardá Industrial Park, a key route that stretches across Spain from Castellón to the province of Burgos.

The new facility features a mobile LNG unit equipped with one dispenser and a hose designed specifically for trucks and heavy-duty vehicles. Open 24 hours a day, 365 days a year, the station allows for fast and secure refueling using credit or debit cards, as well as the HAM Card, a professional-use payment option exclusive to companies and self-employed drivers.

To ensure reliability, the station is remotely monitored and includes 24-hour technical assistance, guaranteeing smooth operation and rapid response to any incidents.

With this latest opening, HAM remains a local leader in comprehensive LNG, CNG, and biomethane solutions for both transport and industrial applications.

Currently, HAM Group operates a network of over 150 service stations offering biomethane, liquefied natural gas (LNG), and compressed natural gas (CNG) across major Spanish and European transport routes, reinforcing its role in the transition to cleaner mobility solutions.
Source: *https://www.mobilityplaza.org/news/42123*

3.0 Biomethane / Renewable Natural Gas (RNG) – Carbon Neutral Fuel

3.1 United States of America

How Renewable Natural Gas Is Driving the Future of U.S. Transportation

30th July 2025.

Jorge Herrera, CEO, Nopetro Energy

Jorge Herrera, CEO, Nopetro Energy

There is a boom happening in the energy field, a scalable, clean and cost-effective solution that's already reshaping how America moves: renewable natural gas (RNG). RNG is a fuel source produced from waste materials, compatible with any natural gas engine, no adjustments required.

Other alternatives like electric and hydrogen require significant new capital investment without generating a positive return on investment. And even when in place, the short life and heavy weight of batteries limit their range and hauling capacity. RNG, on the other hand, is effective and ready now. RNG-powered trucks can utilize existing infrastructure and thanks to innovations in engine technology, can accommodate long-distance, heavy-duty trucking. Natural gas trucks today can travel greater than 1,000 miles on a single fill.

The Growing Demand

RNG production in the U.S. has increased 400% since 2018, with 44% more projects coming online in 2025 alone. While in large part thanks to its high performance and compatibility with existing infrastructure, it also helps that natural gas and RNG have been favored by the current presidential administration. A recent Executive Order prioritizes natural gas as part of the country's clean energy infrastructure strategy, and additional proposed bipartisan legislation like the Renewable Natural Gas Incentive Act of 2025 is supporting the future of RNG.

Trash Becomes Fuel

One reason the government favors RNG is because it is produced domestically. Collected methane and other harmful outputs are collected from local sources, most commonly landfills and wastewater treatment plants. Waste naturally produces methane as it decomposes and when methane is released into the atmosphere, it contributes to global warming. However, methane is also the main component of natural gas.

RNG plants are able to capture the biogas (50% methane and 50% impurities) at the source before it escapes into the atmosphere. Then, the biogas is refined into pipeline quality natural gas and injected straight into the nation's network of pipelines for distribution.

Transportation Transformation: Fueling Fleets with RNG

Heavy-duty vehicles represent approximately 23% of the GHG emissions in the U.S. As mentioned, such vehicles are difficult to electrify due to high costs, reduced payload capacity and limited range. RNG on the other hand, is able to perform similarly to traditional natural gas vehicles (NGVs) in terms of range, refueling time, and reliability. Cummins, one of the world's top engine makers, recently unveiled a 15L natural gas engine designed for Class 8 trucks. Due to its long-range, fast refueling and compatibility with existing infrastructure, natural gas is ideal for trucking, school buses, municipal fleets, and waste collection vehicles. As with all natural gas engines, the X15N is compatible with RNG, meaning that this higher level of performance can be achieved with a clean fuel source.

Using domestic RNG as opposed to gasoline or diesel to power your fleet provides a low-emissions solution and reduces our nation's dependence on foreign energy sources. RNG acts as a drop-in replacement for diesel with significantly lower lifecycle emissions. Heavy transportation and power generation carbon emissions can both be reduced by up to 400% when using RNG.

RNG is also more cost-effective than diesel and electric, generating substantial long-term savings on both fuel costs and maintenance. With RNG, organizations are not only achieving affordable and efficient energy use but also meeting sustainability goals while doing so.

Why RNG is Ready Now

Clean and renewable energy isn't just about the future, it's about the now, and RNG is making the biggest difference where it matters most: heavy-duty transportation. Producers and distributors nationwide are demonstrating how natural gas can power fleets today, generating the cost savings and environmental benefits that make RNG an efficient and reliable alternative fuel. RNG is creating new revenue streams, lowering emissions and fueling heavy-duty municipal and commercial fleets. With breakthroughs in engine technology and increased governmental support, this growing energy source is experiencing its largest boom so far. Fleet operators can explore RNG as a cost-effective way to decarbonize today.

Jorge Herrera, CEO and co-founder of Nopetro Energy, plans and directs the organization's goals, strategies and business plan execution. Since its founding, he has led the Company's rapid growth into a vertically integrated clean energy leader focused on global decarbonization through production and distribution of Compressed Natural Gas (CNG), Renewable Natural Gas (RNG), and Liquefied Natural Gas (LNG).

Source: *https://www.environmentenergyleader.com/stories/how-renewable-natural-gas-is-driving-the-future-of-us-transportation,85557*

3.2 France

WELTEC BIOPOWER to build biomethane plant for French beef producer

1st August 2025.

German manufacturer WELTEC BIOPOWER, in partnership with French company AGRIPOWER France, is constructing a biomethane plant for Elivia Group, France's second-largest beef producer.

The facility, located near Elivia's slaughterhouse in Le Lion-d'Angers, Pays de la Loire, is scheduled to go online in November 2025 and will supply renewable gas directly into the public grid.

The company, which employs 2,700 people and processes 152,000 tonnes of meat annually, said is embracing green energy as a core part of its sustainability strategy.

France is ramping up efforts to decarbonise its energy mix, with biomethane playing an increasingly pivotal role. At present, around 670 plants feed 11 TWh of biomethane into the gas grid. The national production target may soon double from 22 TWh to 44 TWh by 2030.

Long-time collaborators WELTEC BIOPOWER and AGRIPOWER say they are well-positioned to support this ambition, having already implemented 25 successful biogas projects over the past 13 years.

At the Le Lion-d'Angers site, biogas will be generated from a mixture of slaughterhouse waste, fats, sewage sludge and animal by-products. The facility is designed to process up to 85 tonnes of raw material daily - around 26,000 tonnes annually. These materials will first be hygienised using waste heat from the slaughterhouse before being fed into the digestion tanks.

Each year, approximately 2.5 million standard cubic metres of biogas will be refined into 1.7 million standard cubic metres of biomethane - enough to supply heat to about 1,600 households.

WELTEC BIOPOWER is supplying the entire process infrastructure, including a storage tank, two containerised pump stations, and two stainless steel digesters.

Each tank measures 26.87 metres in diameter, 8.80 metres in height, and holds nearly 5,000 cubic metres. Inside the digesters, agitators ensure a consistent substrate mix for efficient biogas production. The resulting digestate will be repurposed as nutrient-rich fertiliser for agricultural use.

The plant will be controlled using WELTEC CONTROL, a web-based software platform that allows Elivia staff to remotely monitor and manage operations in real time. This ensures seamless plant coordination, improved safety, and increased process efficiency.

Source: *https://www.bioenergy-news.com/news/weltec-biopower-to-build-biomethane-plant-for-french-beef-producer/*

3.3 United Kingdom

Centrica secures investment stake in Gasrec helping boost UK Bio-LNG Ambitions

30th July 2025. Media Relations. T: 01784 843000. E: media@centrica.com

Centrica has secured a minority stake in Gasrec, the UK's largest dual provider of bio-LNG (bio-Liquified Natural Gas) and bio-CNG (bio-Compressed Natural Gas) to the road transport sector,.

Gasrec says the investment will drive the next phase of its infrastructure ambitions, with plans to open a UK wide network of open-access refuelling stations supplying renewable bio-LNG for the decarbonisation of heavy goods vehicles.

Centrica is taking a 16% stake and becomes one of three major shareholders in Gasrec, alongside global integrated energy company bp and private family office 44 North.

"This investment in Gasrec enhances our collaboration with the leading company in the sector, and puts us in a strong position to energise a vital sector of the industry on its journey to net zero." Chris O'Shea, Group Chief Executive, Centrica

Chris O'Shea, Group Chief Executive, Centrica plc, said: "Demand for bio-LNG for transport is growing fast as more HGV operators make the switch – drawn by a clean, ready-to-use fuel which slashes CO2 emissions by up to 85 per cent in comparison to diesel*. This investment in Gasrec enhances our collaboration with the leading company in the sector, and puts us in a strong position to energise a vital sector of the industry on its journey to net zero."

Rob Wood, CEO of Gasrec, explains: "Bio-LNG and bio-CNG will play an increasingly important role in decarbonising road transport because it's safe, affordable, available, and proven in operation. As the number of refuelling sites across the strategic road network grows, so too will the viability of gas for more operators. Centrica is confident of this demand, and it saw Gasrec as offering the best opportunity to help it achieve its aims."

This year Gasrec has already opened three new customer refuelling sites, bringing its network to 18 operational stations across Britain. Construction is currently at an advanced stage in Hams Hall for the firm's second large-scale open-access refuelling facility – located close to the M6 and M42.

Wood adds: "Gas truck registrations are on the rise because fleets trust the technology – it offers dependable performance without the drawbacks of limited range, long refuelling times, driver acceptance issues, or the steep upfront costs associated with some alternatives. At the same time, truck manufacturers are putting a renewed focus on their gas-powered models as they are key to achieving strict VECTO (Vehicle Energy Consumption Calculation Tool) targets.

"With both Centrica and bp's backing, Gasrec is in the enviable position of being able to offer fleets long-term bio-LNG or bio-CNG supply agreements, giving our customers certainty of fuel supply over multiple truck lifetimes."

Guided by its purpose of 'energising a greener, fairer future,' Centrica is strongly positioned to support Gasrec's growth ambitions in the bio-gas marketplace. It operates across the full energy value chain and is aiming to be a net zero business by 2040, and to help its customers achieve net zero by 2050.

Notes to Editors

** Low Carbon Vehicle Partnership, Innovate UK and Office for Low Emission Vehicles, Low Emission Freight & Logistics Trial (LEFT), Key Findings, November 2020. Using specific feedstocks CO2 reductions of 200% are achievable.*

About Gasrec:
Gasrec is a major fuel provider for gas-powered commercial vehicles on UK roads. It supplies, builds and operates Bio-LNG and Bio-CNG refuelling stations, enabling fleets to take advantage of a fuel which is significantly cheaper and that has lower lifecycle greenhouse gas emissions than diesel. Gasrec operates the largest bio-LNG and bio-CNG refuelling station in Europe at DIRFT (Daventry International Road Freight Terminal) refuelling up to 600 trucks per day.

For further press information please contact Dan Jones or James Keeler at Garnett Keeler PR on 020 8647 4467 or dan.jones@garnettkeeler.com / james.keeler@garnettkeeler.com
Source: *https://www.centrica.com/media-centre/news/2025/centrica-secures-investment-stake-in-gasrec-helping-boost-uk-bio-lng-ambitions/*

4.0 Hydrogen – Zero Carbon Fuel

4.1 Spain

Repsol to produce low-carbon hydrogen from biomethane at refinery — instead of planned switch to green H2

30th July 2025. By Polly Martin. Chief Reporter

The Spanish oil & gas firm says it will invest €16m to adapt its current grey H2 facilities and integrate biohydrogen into operations of the Puertollano complex

Repsol's Puertollano refineryPhoto: Alfredo Cáliz/Repsol

Repsol has announced that it will invest €16m ($18.5m) into a programme replacing natural gas as a feedstock to produce hydrogen at its Puertollano refinery with biomethane from waste.

This hydrogen will then be used to process renewable diesel in a plant that is already under construction and scheduled to start operations next year, which Repsol estimates will help to reduce the carbon footprint of the fuel compared to fossil-based diesel by up to 98%.

But with the recent news that Repsol has abandoned a large-scale green hydrogen plant in Puertollano, which would have supplied the refinery, does this mean the oil & gas firm has opted to primarily reduce emissions via biofuels over electrolytic H2?

Not quite. A spokesperson for Repsol told Hydrogen Insight that the two are "complementary", with plans to develop both biogenic and green hydrogen in parallel.

"It is true that biomethane is a quicker solution in the sense that we can use the existing steam reformers in our refineries to produce the renewable hydrogen, but at the same time we are advancing in our electrolyser projects and expect to take two FIDs [final investment decisions] this year," said the spokesperson, referring to a 100MW project in Cartagena and a 100MW facility in Bilbao.

A third FID on a 150MW green hydrogen project in Tarragona is due in mid-2026.

The two 100MW projects are pegged to supply other Repsol refineries in Spain, such as Petronor in the town of Muskiz, and the Petróleo Complex in Murcia, as well as other industrial users.

As such, it is unclear whether the Puertollano refinery will use electrolytic hydrogen alongside biogenic H2 to produce renewable fuels any time soon.

"With this investment we are going to produce hydrogen with a low-carbon footprint that we will incorporate into the production process of the 100% renewable fuels plant, increasing the decarbonisation of the entire production cycle, using the most appropriate technologies for this project and that allow us to continue advancing in the decarbonisation of our processes," said Antonio Lorenzo, director of the Puertollano complex.
Source: https://www.hydrogeninsight.com/production/repsol-to-produce-low-carbon-hydrogen-from-biomethane-at-refinery-instead-of-planned-switch-to-green-h2/2-1-1851706

4.2 China

Anhui's Third Batch of 8 Hydrogen-Powered Sanitation Vehicles Delivered in Lu'an, Marking a New Milestone of 100 mt Carbon Reduction
30th July 2025. Source: SMM

The launch ceremony for the third batch of hydrogen-powered sanitation vehicles in Anhui province was held in Jin'an District, Lu'an City. Eight 18-mt fuel cell sweeper trucks officially "took up their posts," marking the transition of hydrogen-powered sanitation vehicles in Anhui from demonstration pilots to large-scale applications.

These car models, jointly developed by Tomorrow Hydrogen Energy, Zoomlion, and Yingfeng Environment, are equipped with a 101kW high-performance fuel cell system, with hydrogen consumption per 100 kilometers below 0.8kg. They are fitted with an ultra-large 990L hydrogen storage tank, capable of rapid startup at -30℃, and have a driving range of 500 kilometers for a single operation. Integrating functions such as sweeping, curb cleaning, and spray dust suppression, they achieve "multi-functionality in one vehicle."

As a "veteran" in Anhui's hydrogen-powered sanitation sector, Lu'an City has accumulated over 40,000 kilometers of operation since launching the province's first hydrogen-powered sweeper truck in April 2023, reducing carbon emissions by over 100 mt, equivalent to the carbon sequestration capacity of an additional 100 mu of forest land. Following this batch delivery, the total number of hydrogen-powered sanitation vehicles in Jin'an District has increased to 11, covering scenarios such as main road cleaning and cross-district operations.

Compared to traditional internal combustion engine vehicles, the total life cycle cost has been reduced by over 20%, and the refueling time is only 15 minutes, addressing the driving range anxiety of BEV models.

"From single-vehicle demonstrations to batch operations, Lu'an is providing a 'Jin'an model' for hydrogen energy scenario applications across the province," industry insiders pointed out. The launch of these vehicles not only verifies the adaptability of hydrogen-powered sanitation in low-temperature and long-range scenarios but also accelerates the transformation of green hydrogen technology into the livelihood sector through collaborative innovation of "industry, academia, and research."

With the subsequent improvement of the hydrogen refueling station network, the large-scale effect of hydrogen-powered sanitation in Anhui is expected to be further released, injecting new momentum into the "dual carbon" goals.
Source: *https://news.metal.com/newscontent/103455291/Anhuis-Third-Batch-of-8-Hydrogen-Powered-Sanitation-Vehicles-Delivered-in-Luan-Marking-a-New-Milestone-of-100-mt-Carbon-Reduction*

5.0 Electricity – Electric Vehicles (EVs)

5.1 United States of America

Is battery electric really the best option to replace diesel in long-haul trucking?
29th July 2025. By Dmitry Serov

It is clear that zero-emission transport is urgently needed to address the widespread air quality issues in many urban communities. This is especially true for diesel-powered heavy-duty vehicles (HDVs), which have proven to have an outsized impact on air pollution and public health. In California, for example, HDVs make up just 3% of vehicles on the road but are responsible for over 50% of nitrogen oxides and diesel particulate pollution.

This has major health implications for drivers and the communities with high volumes of heavy-duty truck traffic. A 2023 FMCSA study found that particulate levels inside truck cabs and sleeper berths — especially during idling — consistently exceed clean air standards, raising risks of asthma, lung cancer, heart disease, and premature death. And that's just for the drivers behind the wheel. A 2025 CREA report estimates diesel truck emissions will lead to 307,000 premature deaths worldwide and more than $1.4 trillion in associated health costs by 2040.

There has never been more urgency to clean up trucking, but the method by which we do this continues to be debated. While Battery Electric Vehicles (BEV) have been quicker to market, there are some considerable challenges standing in the way.

Adoption in cars ≠ success in freight

Battery electric became the default zero-emission path largely because personal vehicles got there first. Light-duty EVs made early traction thanks to existing electric infrastructure, modest energy demands, and growing momentum in battery technology. The shift was accelerated by Tesla, which took a very different approach than any other EV manufacturer by reimagining how they were designed and built from the ground up. That success created a wave of confidence across the industry, leading many OEMs to assume that what worked for passenger cars would naturally scale to heavy-duty fleets.

But those assumptions did not account for critical differences. It was widely believed that battery density would continue improving at a linear pace, that charging times would keep shrinking, and that the power grid would be ready to meet rising demand. There was little scrutiny of the operational realities unique to freight — longer ranges, heavier loads, tighter duty cycles, and fewer centralized fueling locations.

Practical limitations in the field

Electrifying a fleet comes with a long list of logistical challenges. Most fleets don't own their depots, so installing chargers often means coordinating with landlords and navigating complex lease agreements. Access to sufficient power can be a major constraint, especially in older or

remote facilities, and working with utilities to upgrade service is rarely fast or straightforward. A recent report found that private charging installations for fleets often face 18–24 month lead times, and that's a conservative estimate.

Even when a site is ready, charging equipment brings its own challenges. Lead times can be long, hardware isn't always available, and once installed, it often requires frequent troubleshooting — adding to operational complexity and downtime.

Software adds another layer of difficulty. If a truck receives a firmware update but the charging station doesn't, charging can fail entirely. That kind of issue might seem minor, but it can create real delays, especially when uptime matters.

These issues are already showing up across the industry, but perhaps the most concerning issue to-date is the sheer volume of power needed to charge a battery electric HDV.

Bigger batteries = higher power demands

As trucks go electric, battery size scales with range. Today's heavy-duty EVs require massive battery packs to meet the demands of long-haul freight. While the average electric car battery ranges from 60 to 100 kWh, and can be charged at home overnight, electric trucks are in a different league entirely with larger batteries and charged at a central fleet location on the electrical distribution system.

Here's a snapshot of where the market stands:

- Freightliner eCascadia: up to 438 kWh
- Volvo VNR Electric: 565 kWh
- Kenworth T680E / Peterbilt 579EV: ~400 kWh
- Lion8 tractor: 630 kWh
- Tesla Semi (500-mi version): estimated ~850–914 kWh

These battery sizes may be necessary to deliver the range fleets expect, but they also introduce serious challenges. Larger batteries are heavier and more expensive to manufacture, and they put enormous strain on the power grid during charging. Battery-electric truck OEMs are touting megawatt charging as the solution to charging-related downtime. However, a single megawatt charger requires as much power as up to 1,000 homes at once.

The environmental footprint is also harder to ignore at this scale. Mining and refining lithium, cobalt, and other battery materials carries a significant carbon cost, along with geopolitical and ethical tradeoffs. As battery size increases, so does the upstream impact, and there's a point where the emissions avoided at the tailpipe no longer offset the emissions created during production.

That tipping point varies by use case and vehicle type, but for heavy-duty long-haul trucks, it's clear the margin is getting thinner. Battery electric isn't inherently flawed, but beyond a certain scale, it becomes harder to justify as the one-size-fits-all solution.

No one size fits all

Battery electric works well in controlled environments like ports, yard operations, and regional delivery routes that have reliable access to power. Trucks can return to base overnight, and infrastructure investments can be focused in one location. For short-haul, repeatable duty cycles with a high level of truck concentration, battery electric trucks are a better fit.

But long-haul freight is a different story. Routes often stretch hundreds of miles through remote corridors, where infrastructure is limited. Downtime cuts directly into driver productivity (and

therefore earnings), and even with megawatt charging, recharging a truck can take close to an hour. That's assuming the charger is available, functional, and capable of delivering that level of power. When drivers are capped at 11 hours of driving time per day, every minute spent stationary comes at a cost.

Hydrogen fuel cell trucks offer a practical alternative. Refueling takes less than 20 minutes (comparable to diesel) which restores uptime and route flexibility. The vehicles themselves offer the same smooth, low-vibration, and low emissions driving experience as battery electric.

From an emissions standpoint, hydrogen's impact is improving quickly. Trucks powered by 100% renewable hydrogen — known as green hydrogen — can reduce lifecycle emissions by up to 89% compared to diesel. Even when using fossil-based hydrogen, fuel cell trucks still cut emissions by up to 30% relative to diesel.

Battery electric and hydrogen both have a role to play, but we shouldn't try to force a single solution onto every use case. Long-haul freight needs speed, range, and flexibility. For many fleets, hydrogen offers the performance they need now, with emissions that will only improve over time.

Dmitry Serov is the Founder & CEO of Hyroad Energy. He has over 15 years' experience in energy investing and commodity trading. Prior to founding Hyroad, Dmitry spent 10 years as Investment Director at Vitol, the world's largest independent energy trader. Prior to Vitol, Dmitry was a private equity investment professional at First Reserve Corporation.

Source: *https://www.ccjdigital.com/alternative-power/article/15751389/batteryelectric-vs-hydrogen-trucks-which-is-right-for-freight*

End