

ANGVA2U Info 1/2018. 19th Jul'18. (for ANGVA members only)

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1.0 Introduction

One of the objectives of the Asia Pacific Natural Gas Vehicles Association (ANGVA) is to collect, analyze and disseminate information related to the use of natural gas as a clean fuel for vehicles. ANGVA would like to provide such services through this ANGVA2U Info where information, data and news related to NGV are collected and share with ANGVA members periodically. However, these information, data, and news are collected and shared in good faith, without any guarantees of accuracy. Members are advice to use these information and data prudently and at their own risks.

2.0 NGV Statistics

ANGVA Secretariat regularly received request from members for latest statistics on natural gas vehicles, refueling stations, gas consumption, fuel prices, etc. Unfortunately such information are difficult to collect as many countries did not published these figures and some did not even collect and keep such information. ANGVA does not collect its own statistics.

ANGVA uses statistics published by the International Association of Natural Gas Vehicles (IANGV) through NGV Global (www.ngvglobal.org) and by Altfuels Communication Group through NGV Journal (www.ngvjournal.com). These statistics were combined and amended as deemed necessary based on information available to ANGVA. It is hope that in future ANGVA members in their respective countries would be able to provide a more accurate and up-to-date statistics to ANGVA.

2.1 World Natural Gas Vehicles Population

| SUMMARY DATA | | | |
|-------------------------------------|----------------|--------------------|---------|
| Updated: 6 th July 2018 | | | |
| World Natural Gas Vehicles: | 26,163,564 | | |
| World Natural Gas Fueling Stations: | 31,046 | | |
| NGV POPULATION: TOP TEN COUNTRIES | | | |
| Country | NGV Population | Refueling Stations | Remarks |
| China | 6,080,000 | 8,400 | Jan '18 |
| Iran | 4,502,000 | 2,400 | Nov '17 |
| India | 3,090,139 | 1,424 | Jun '18 |
| Pakistan | 3,000,000 | 3,416 | Nov '16 |
| Argentina | 2,185,000 | 2,014 | Oct '16 |
| Brazil | 1,859,300 | 1,805 | Nov '15 |
| Italy | 1,004,982 | 1,219 | Mar '18 |
| Uzbekistan | 815,000 | 651 | Jun '13 |
| Colombia | 571,668 | 813 | Mar '18 |
| Thailand | 474,486 | 502 | Jul '16 |

(Source: IANGV / NGV Global)

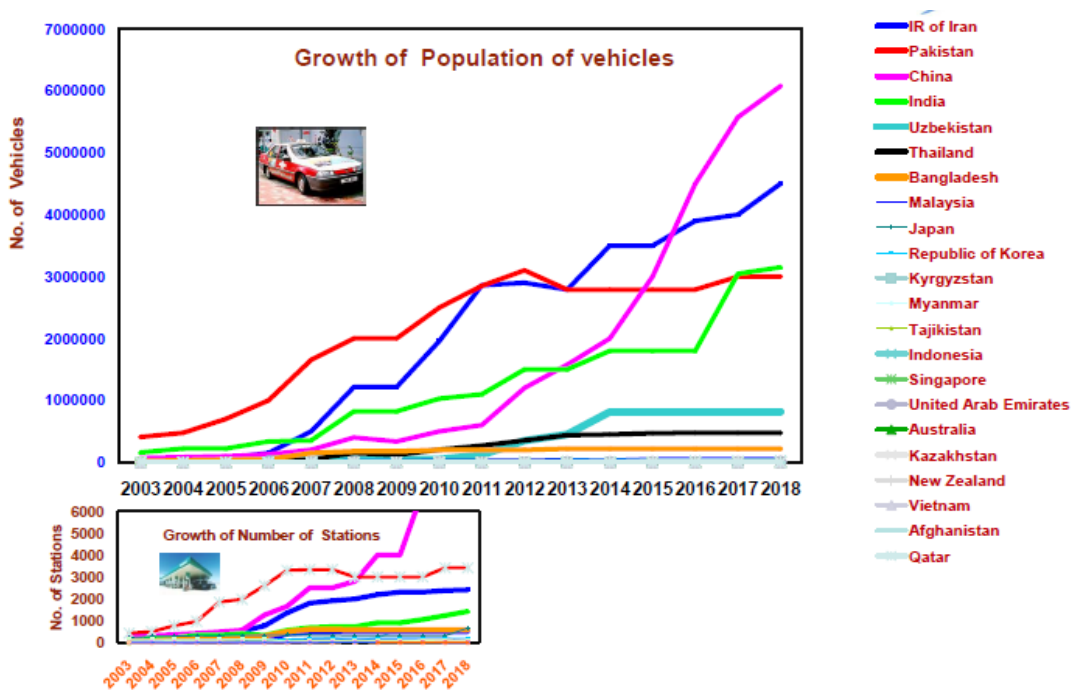
2.2 Asia Pacific Natural Gas Vehicles Population

Asia Pacific Region – NGV Population

| No. | Country | Total Vehicles | No. of Stations | Remarks |
|-----------------|----------------------|-------------------|-----------------|----------|
| 1 | China | 6,080,000 | 8,400 | Jan '18 |
| 2 | IR of Iran | 4,502,000 | 2,400 | Nov '17 |
| 3 | India | 3,150,138 | 1,424 | Jun '18 |
| 4 | Pakistan | 3,000,000 | 3,416 | Nov '16 |
| 5 | Uzbekistan | 815,000 | 651 | Jun '13 |
| 6 | Thailand | 474,486 | 502 | Jul '16 |
| 7 | Bangladesh | 220,000 | 585 | Apr '13 |
| 8 | Malaysia | 74,000 | 102 | Jun '18 |
| 9 | Japan | 47,158 | 660 | Mar '18 |
| 10 | Korea | 39,326 | 198 | May '18 |
| 11 | Myanmar | 28,297 | 46 | May '16 |
| 12 | Indonesia | 15,500 | 103 | Dec '17 |
| 13 | Tajikistan | 10,600 | 53 | Dec '07 |
| 14 | Kyrgyzstan | 6,000 | 6 | Dec '07 |
| 15 | United Arab Emirates | 9,220 | 28 | Mar '18 |
| 16 | Australia | 3,110 | 52 | June '13 |
| 17 | Singapore | 1,013 | 1 | Jan '18 |
| 18 | Kazakhstan | 1,800 | 2 | Dec '12 |
| 19 | Afghanistan | 1,701 | 2 | Aug '13 |
| 20 | Vietnam | 462 | 7 | July '12 |
| 21 | New Zealand | 65 | 3 | Dec '12 |
| 22 | Qatar | 76 | 1 | Sept '13 |
| (Source: ANGVA) | | 18,479,952 | 18,644 | |

2.3 Growth of NGV Population in the Asia Pacific Region

There are twenty-two (22) countries in the Asia Pacific Region at various stages of NGV growth and development.



3.0 NGV Markets in Asia Pacific

The growth of NGV markets in the Asia Pacific region and worldwide had slowed down as result of many countries focusing more on Electric Vehicles (EVs) and Fuel Cell Hydrogen Vehicles (FCVs). However, ANOVA believes EVs and FCVs will take a much longer time to be widely used as there are still issues of vehicle costs and charging infrastructure development. Hence, in the meantime the development and promotion of NGVs must be continued as the transport sector is a major contributor to air pollution and carbon emissions (climate change), and is also a major consumer of oil in the form of gasoline and diesel (energy supply and security issues).

In the Asia Pacific region, NGV markets in countries like China, India, Iran, Indonesia, Thailand, Myanmar, and Vietnam are still growing with China and India at the forefront. In China and India, there are push towards the use of LNG for road vehicles such as buses and trucks. Worldwide, China has the largest number of LNG vehicles and refueling stations with 350,000 LNG vehicles (255,000 LNG trucks) and 3100 LNG stations by the end of 2017. India has just starting to introduce LNG for the transport sector.

3.1 Selected news on NGVs in Asia Pacific

3.1.1 Vietnam

Gazprom, PetroVietnam talk gas cooperation. 6th July 2018



Russian giant Gazprom and the Vietnam Oil and Gas Group (PetroVietnam) discussed a range of joint efforts including a small-scale LNG production complex at a meeting in Moscow.

Gazprom's chief Alexey Miller discussed the matters with PetroVietnam's chairman Tran Sy Thanh.

The two leaders reviewed the progress of the joint project for the construction of a small-scale LNG production complex, which would produce LNG for the NGV market, and a network of CNG filling stations.

To date, marketing studies and a feasibility report had been completed for the project.

The parties discussed a wide range of joint efforts, including geological exploration and hydrocarbon production in Vietnam, as well as the prospects of joint projects in gas-fired power generation, the use of gas as a vehicle fuel, and staff training, Gazprom said in its statement.

It was noted that the Moc Tinh and Hai Thach fields were expected to produce 2 billion cubic meters of gas (target level) in 2018.

Source: https://www.lngworldnews.com/gazprom-petrovietnam-talk-gas-cooperation/?utm_source=emark&utm_medium=email&utm_campaign=daily-update-lng-world-news-2018-07-06&uid=46966

3.1.2 India

GAIL starts commercial ops at 2 CNG stations in Varanasi. 16th July 2018

GAIL (India) announced that the Prime Minister Narendra Modi on July 14, 2018 dedicated to the Nation the Varanasi City Gas Distribution (CGD) network which will supply environment friendly natural gas to households, transport sector and industries in the city.

The Varanasi CGD network, which is being implemented by GAIL (India) at a cost of Rs 7.55 billion (0.11USD billion), will cover 1,535 sq. km. and cater to a population of 36.76 lakhs (3.676 millions). Two Compressed Natural Gas (CNG) stations have started commercial operations while another 18 will be set up in the coming years. Overall, 20,000 vehicles are expected to use CNG in the city.

Besides, Piped Natural Gas (PNG) connection work for 8,000 houses has been completed which are expected to be connected by March 2019. About 1 lakh (100,000) households are likely to be covered in the project.

Source: <http://www.myiris.com/news/sector/gail-starts-commercial-ops-at-2-cng-stations-in-varanasi/20180716105622199>

Note: Prices of automotive fuels varies in different part of India due to local taxes. In the city of Chandigarh, CNG is available for Rs 47.8 per kg (0.696 USD), petrol for Rs 73.97 (1.078 USD) per litre, and diesel for Rs 66.55 (0.970 USD) per litre.

3.1.3 Bangladesh

Microbus gas cylinder explosion kills 3 in Tangail. 17th July 2018



Three members of the same family have been killed in a microbus gas cylinder explosion in Tangail. Three policemen, including a police sub-inspector (part of the passengers of the microbus), were also injured in the blast along with the microbus driver.

Tangail Sadar police station Officer-in-Charge Sayedur Rahman, and fire service Senior

Station Officer Abdur Razzak, confirmed the matter to the Dhaka Tribune, saying the incident occurred in the early hours of Tuesday.

The deceased are Jannatul Ferdous Bonnya, 19; her uncle Sirajul Islam, 60; and her cousin Faruq, 42. They hailed from Sonargaon area of Narayanganj.

The microbus refilled with CNG from a gas station in Narayanganj and headed towards the Sonargaon area.

The vehicle hit a huge bump while crossing a speed-breaker near the Kumudini College intersection—causing its gas cylinder to explode. The microbus quickly became engulfed in flames, burning Bonnya, Sirajul and Faruq to death in a matter of minutes.

Source: <https://www.dhakatribune.com/bangladesh/nation/2018/07/17/gas-cylinder-explosion-kills-3-in-tangail>

4.0 Activities and Events

4.1 Activities and Events undertaken by ANGVA from Jan to June 2018

| No | Events | Location | Date |
|----|---|---|-------------------------------|
| 1 | NGV Safety Workshop Malaysia 2018. <i>(ANGVA's Event)</i> | Kuala Lumpur, Malaysia | 20 th Mar '18 |
| 2 | 35 th ANGVA Board Meeting. <i>(ANGVA's Event)</i> | Dharmawangsa Hotel, Jakarta, Indonesia. | 3 rd Apr '18 |
| 3 | NGV China 2018. <i>(ANGVA Endorsed Event. Organize by Beijing Qifa Exhibition Service Co., Ltd)</i> | Beijing, China | 10 – 12 th May '18 |
| 4 | Presentation and submission to Road Transport Department (RTD) of Malaysia document on “Guideline for Basic Inspection of Natural Gas Vehicles according to Malaysian Standard MS 1096:2011”. As per request from RTD to ANGVA. | Putrajaya, Malaysia | 11th Jul '18 |

4.2 Activities and Events to be undertaken by ANGVA from July to Dec 2018

| No | Events | Location | Date |
|----|---|---|---|
| 1 | 6 th International Conference on Production, Energy and Reliability (ICPER 2018). <i>(ANGVA Supported Event. Organize by Universiti Teknologi PETRONAS, Malaysia)</i> | Kuala Lumpur, Malaysia | 13 – 14 th Aug '18 |
| 2 | 8 th Annual LNG Transport, Handling and Storage 2018 Forum. <i>(ANGVA Supported Event. Organized by AEG).</i> | Padma Resort. Bali, Indonesia. | 4 – 7 th Sept '18 |
| 3 | Optimizing LNG and LPG Trade in Asia 2018. <i>(ANGVA Supported Event. Organized by AEG).</i> | St Regis Hotel, Bangkok, Thailand. | 11 – 12th Sept '18 Postponed to later date |
| 4 | 11 th Environmentally Sustainable Transport Regional Forum (11 th EST). <i>(Organized by United Nations Centre for Regional Development – UNCRD. ANGVA invited to participate).</i> | Ulaanbaatar, Mongolia | 2 – 5 th Oct '18 |
| 5 | 12 th Natural Gas Vehicles & Infrastructure Indonesia Forum and Exhibition. <i>(ANGVA Endorsed Event. Organized by AEG)</i> | Shang-rila Hotel, Jakarta, Indonesia | 8 – 10 th Oct '18 |
| 6 | 36 th ANGVA Board Meeting. <i>(ANGVA's Event)</i> | Shang-rila Hotel, Jakarta, Indonesia | 8 th or 9 th Oct '18 |
| 7 | International Energy Agency Advanced Motor Group (IEA AMF) 36 th Exco Meeting. <i>(Organized by IEA AMF. ANGVA invited to participate as Observer)</i> | Hotel Taj Mahal, New Delhi, India | 15 – 18 th Oct '18 |
| 8 | 5 th LNG Supply, Transport and Storage Forum 2018. <i>(ANGVA Supported Event. Organized by AEG).</i> | SMX Aura, Manila, Philippines. | 24 – 26 th Oct '18 |
| 9 | LNG Supply, Storage and Transportation South Asia Forum 2018 Forum. <i>(ANGVA Supported Event. Organized by AEG).</i> | Meridien Hotel, Dhaka, Bangladesh | 19 – 21 st Nov '18 |
| | <i>Other events and activities that ANGVA will organize, participate, support and endorse on case-to-case basis.</i> | <i>To Be Advised (TBA)</i> | <i>TBA</i> |

5.0 End

It is hope that this ANGVA2U Info provides beneficial information to ANGVA members. 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