Global LNG – The Changing Dynamics

Contents

Letter from the Executive Director 3
Gas Statistics - Domestic and International 5
Know Your Industry Leader: Suresh Manglani, Chief Executive Officer, Adani Total Gas Limited 9
Feature Story 11
News Briefs: National & International News 17
Members’ Column 27

Please send your feedback to: 0120 - 4222849 Email: naturalgasindia.ngs@gmail.com Website: ngsindia.org
25 Eco-Friendly Years of Fuelling the Mahanagar

Thank You

CNG Customers

Thank You

PNG Customers

Customer Care Services

MGL Connect Mobile App

Enquiry / Feedback on MGL Website & Social Media

Walk-in Centers

In-house Call Center

CNG Fuel Card

1995-2020
Even though the world economy had begun to recover in early 2022 with the receding global pandemic, the unforeseen Russia-Ukraine conflict created turmoil, significantly impacting the energy markets around the world. This conflict coincided with a tight global oil and gas market and heightened price volatility. Perhaps the situation has hit European nations the most with far reaching impact on developing economies like India. The medium to long term impact of such geo-political situation could lead to a paradigm shift in the energy policies of countries across the world once the war is over.

In this scenario, came western sanctions on Russia. However, given the EU’s dependence on Russian NG and Oil they are now searching for enhancing use of alternative sources. One of the options is to increase LNG imports. For doing that, EU countries will not only need to build infrastructure facilities but also find the supply source on sustainable basis and many steps will be needed including signing long-term contracts for gas & also help producers secure financing. Many oil majors, like Shell, ExxonMobil & BP have decided to abandon their stake in Russian operations besides the halting of approval for Nord-Stream2 which could have both short & long term implications. Further, with the removal of some Russian banks from SWIFT international payment system, trade in Russian cargoes will become more difficult and risky. So over time, western buyers are likely to shift away from Russian supplies. This could boost investments in renewables.

On the supply side, Qatar and the USA might be able to spare LNG and allies such as Japan & South Korea might also be able to divert some of their excess shipments. But completely replacing Russian gas would be very expensive & time consuming and might prove physically impossible. There is also emerging debate about whether African countries, having some of the world’s deepest gas reserves, can step in to fill the gap. Tanzania with 6th largest reserves in Africa could step in & develop infrastructure to export to Europe. Nigeria has been talking of building a trans-Sahara pipeline to take gas to Algeria and further to Europe but it is still in the conceptual stage. Yet, it can get a boost with push from Europe. It is also possible that Iran could emerge as a potential long term LNG supply source provided the western sanctions are lifted.

India’s economic recovery from COVID-19 has been progressing well with good growth but relentlessly high oil and gas prices can derail the growth. There will be huge challenges to our economy with rising energy prices, as India relies heavily on imports of oil and gas. Clearly, the crude oil imports at above $100/bbl will be a concern. Similarly, on the gas front, spot prices have gone through the ceiling. However, with a significant portion of our supply on long term basis with price either linked to crude oil or the Henry Hub, we are better protected.

In the present situation, competitive sourcing is very crucial & therefore, the Russian offer at a discounted price was welcome and Indian Oil Corporation & Russia have signed a purchase deal for 3 million barrels of crude oil. However, boosting oil purchase from Russia would require addressing the key issues like the availability of ships, insurance cover for imports & the oil blends, as per the configuration of Indian refineries.

Keeping the ongoing developments in view, this issue of GSR comes with a comprehensive article on Global LNG-The Changing Dynamics.

While we should remain aware & alert about the happenings in the environment, it is more important to think about response i.e. how can we act to contribute in our domain. In line with this, NGS is continuously endeavouring to achieve its objective of emerging as the voice of the Gas Industry & catalysing the development of the industry. Our efforts are aimed at continual communication, collaboration & cooperation with and among the Members/Stakeholders & to provide inputs into sectoral policy for the benefit of all concerned. The Society is also making continuous efforts to enable exchange of ideas and best practices within the sector. In this direction, NGS is coming out with regular publications like daily updates on its Website, LinkedIn, Facebook etc. Our publications like Fortnightly Snapshot, Monthly Production Report and Quarterly Gas Statistics Review (GSR) are being welcomed by the readers. In order to keep the audience updated with the latest happenings and the areas of contemporary relevance, special features on such topics were published in the recent issues of GSR.

From October 2021 issue, a new section “Know Your Industry Leader” has been introduced in GSR in which detailed profile of renowned industry leaders is published. In addition, the brief profiles of leaders from organisations like PNGRB, BPCL, EIL, GAIL, HPCL, IOC, OIL, ONGC, PLL, IGL, MGL, ATGL, IGX, IOAGPL, Think Gas, etc. were published in the January 2022 issue of GSR.

In the spirit of collaborative working, NGS and India Smart Grid Forum (ISGF) have jointly promoted India CGD Forum (ICGDF) to create a platform between the CGD companies & electricity distribution companies (DISCOMs). Programs like Distribution Utility Meet (DUM 2021) and India Smart Utility Week (ISUW 2022) were jointly organized with sessions on ‘Smart Metering’ & ‘Implementation of National Gas Grid’.

It is heartening to note that the Membership base of NGS has started growing. We extend a warm welcome to ECIL and Secure Meters as the new Members. A few more organisations are likely to become Members of NGS, soon.

In line with the focus on industry level exchange of knowledge and experience, NGS organized Seminar on Safety in CGD Industry and the Conference on O&M of NG Transmission Pipelines and CGD Networks. As a key takeaway from the recently held O&M conference, the idea of industry level knowledge and experience sharing forum has emerged. Accordingly, an initiative ‘जाननुभव प्रसार संघायता’ (Gyananubhav Prawah Sahyatra-GPS) has been taken up. The idea is to draw the representatives from various Member entities and organize visit to the installations/facilities of ‘one industry at a time’ for exchange of ideas & best practices being followed there. In this context, a concept paper on GPS has been prepared and shared with all the Members and their suggestions have been invited. The initiative will be launched, shortly.

We firmly believe that learning and improvement are continuous processes. Therefore, we seek your valuable feedback/comments and suggestions on this publication as well as other initiatives undertaken by NGS (naturalgasindia.ngs@gmail.com), so as to make improvements wherever required, add value and move ahead in pursuit of serving the best interest of Natural Gas Sector.

I, on behalf of NGS and on my own behalf, take this opportunity to extend my best wishes to all on the occasion of the festivities (New Year - Vikram Samvat 2079, Gudi Padwa, Chaitra Navaratri, Navreh, Ugadi, Cheti Chand, Bihu, Baisakhi, Vishu, Puthandu, etc).
ENVISIONING GREENER INDIA FOR FUTURE GENERATIONS

LNG is environment friendly green fuel.

Petronet LNG Ltd. is supplying approximately 40% of the total gas demand of the country.

Petronet LNG Limited
World Trade Centre, 1st Floor, Babar Road, Barakhamba Lane, New Delhi-110001 (INDIA)  
www.petroneinting.in
Gas Production/Consumption/Imports (mmcmd)

TREND IN GAS PRODUCTION/CONSUMPTION/IMPORTS (MMSCMD)

| Source: PPAC, NGS Research |

In ‘000 MT | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | Apr 20-Jan 21 | Apr 21-Jan 22 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG</td>
<td>21608</td>
<td>23342</td>
<td>24907</td>
<td>26330</td>
<td>27558</td>
<td>25302</td>
<td>25856</td>
</tr>
<tr>
<td>Naphtha</td>
<td>13241</td>
<td>12889</td>
<td>14131</td>
<td>14268</td>
<td>14100</td>
<td>12821</td>
<td>13142</td>
</tr>
<tr>
<td>MS</td>
<td>23765</td>
<td>26174</td>
<td>28284</td>
<td>29975</td>
<td>27969</td>
<td>25229</td>
<td>27942</td>
</tr>
<tr>
<td>HSD</td>
<td>76027</td>
<td>81073</td>
<td>83528</td>
<td>82602</td>
<td>72713</td>
<td>65488</td>
<td>68982</td>
</tr>
<tr>
<td>FO &amp; LSHS</td>
<td>7150</td>
<td>6721</td>
<td>6564</td>
<td>6302</td>
<td>5586</td>
<td>5080</td>
<td>5636</td>
</tr>
<tr>
<td>Petroleum coke</td>
<td>23964</td>
<td>25657</td>
<td>21346</td>
<td>21708</td>
<td>15605</td>
<td>14322</td>
<td>12763</td>
</tr>
</tbody>
</table>

Source: PPAC, NGS Research

Growth in gas consumption in second half of 2021 was driven by increase in domestic production. Prevailing high LNG spot prices resulted in lower LNG imports. Among sectors driving gas consumption, CGD has taken a second spot growing its share to almost 20% from 17% few years back.

Total gas consumption (Apr 21-Jan 22): 164.06 mmcmd
Total RLNG consumption: 82.66 mmcmd
Total domestic gas consumption: 81.39 mmcmd

SECTOR-WISE GAS CONSUMPTION OF DOMESTIC GAS AND RLNG (APR 21-JAN 2022)

TREND IN CONSUMPTION OF PETROLEUM PRODUCTS

<table>
<thead>
<tr>
<th>In ‘000 MT</th>
<th>2016-17</th>
<th>2017-18</th>
<th>2018-19</th>
<th>2019-20</th>
<th>2020-21</th>
<th>Apr 20-Feb 21</th>
<th>Apr 21-Feb 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG</td>
<td>21608</td>
<td>23342</td>
<td>24907</td>
<td>26330</td>
<td>27558</td>
<td>25302</td>
<td>25856</td>
</tr>
<tr>
<td>Naphtha</td>
<td>13241</td>
<td>12889</td>
<td>14131</td>
<td>14268</td>
<td>14100</td>
<td>12821</td>
<td>13142</td>
</tr>
<tr>
<td>MS</td>
<td>23765</td>
<td>26174</td>
<td>28284</td>
<td>29975</td>
<td>27969</td>
<td>25229</td>
<td>27942</td>
</tr>
<tr>
<td>HSD</td>
<td>76027</td>
<td>81073</td>
<td>83528</td>
<td>82602</td>
<td>72713</td>
<td>65488</td>
<td>68982</td>
</tr>
<tr>
<td>FO &amp; LSHS</td>
<td>7150</td>
<td>6721</td>
<td>6564</td>
<td>6302</td>
<td>5586</td>
<td>5080</td>
<td>5636</td>
</tr>
<tr>
<td>Petroleum coke</td>
<td>23964</td>
<td>25657</td>
<td>21346</td>
<td>21708</td>
<td>15605</td>
<td>14322</td>
<td>12763</td>
</tr>
</tbody>
</table>

Source: PPAC, NGS Research
Since mid-January 2022, the geopolitical risk related to Russia’s further invasion of Ukraine has contributed to higher and more volatile crude oil prices. Russia is the third-largest petroleum and liquid fuels producer in the world, after the US and Saudi Arabia. It is also a major exporter of crude oil. The uptrend in European gas prices started in end of December because of less supply of pipeline gas by Russia and it got further exacerbated with the Russian invasion of Ukraine.

Source: NGS Research, PPAC, EIA, LNG Journal
**GAS STATISTICS REVIEW**

### CNG / PNG

**State-wise Number of CNG Stations and PNG connections (as on 31.12.2021 (P))**

India had over 3700 CNG stations and 8.7 million PNG connections (in domestic, commercial and industrial category) at the end of the year 2021.

#### Gas statistics - Domestic and international

| CNG / PNG | Source: PPAC, PNGRB; *Others-APGDC, HEPL, IGGL, IMC, Consortium of H-Energy |

#### Common Carrier Gas pipeline network (as of 30.09.2021)

<table>
<thead>
<tr>
<th>Length in km &amp; Capacity in mmcmd</th>
<th>GAIL</th>
<th>GSPL</th>
<th>PIL</th>
<th>IOC</th>
<th>AGCL</th>
<th>RGPL</th>
<th>GGL</th>
<th>DFPL</th>
<th>ONGC</th>
<th>GIGL</th>
<th>GITL</th>
<th>Others*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Length Capacity</td>
<td>8918</td>
<td>171.5</td>
<td>2700</td>
<td>43</td>
<td>1459</td>
<td>85</td>
<td>143</td>
<td>20</td>
<td>107</td>
<td>2.4</td>
<td>304</td>
<td>3.5</td>
<td>73</td>
</tr>
<tr>
<td>Partially commissioned Length Capacity</td>
<td>4543</td>
<td>166</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total operational Length Capacity</td>
<td>13461</td>
<td>2700</td>
<td>1459</td>
<td>309</td>
<td>107</td>
<td>304</td>
<td>73</td>
<td>42</td>
<td>441</td>
<td>365</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under Construction Length Capacity</td>
<td>5973</td>
<td>23.2</td>
<td>100</td>
<td>3</td>
<td>1265</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Length</td>
<td>19434</td>
<td>2800</td>
<td>1459</td>
<td>1574</td>
<td>107</td>
<td>304</td>
<td>73</td>
<td>42</td>
<td>24</td>
<td>2332</td>
<td>1811</td>
<td>3550</td>
<td>33510</td>
</tr>
</tbody>
</table>

#### Existing LNG Terminals

<table>
<thead>
<tr>
<th>Location</th>
<th>Promoters</th>
<th>Capacity (mmtpa) on 1.2.2022</th>
<th>Cap. Utilisation (Apr- Dec 21) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dahej</td>
<td>Petronet LNG</td>
<td>17.5</td>
<td>90</td>
</tr>
<tr>
<td>Hazira</td>
<td>Shell Energy</td>
<td>5.2</td>
<td>57.2</td>
</tr>
<tr>
<td>Dabhol*</td>
<td>Konkan LNG</td>
<td>5</td>
<td>71.8</td>
</tr>
<tr>
<td>Kochi</td>
<td>Petronet LNG</td>
<td>5</td>
<td>21.4</td>
</tr>
<tr>
<td>Mundra</td>
<td>GSPC LNG</td>
<td>5</td>
<td>19.9</td>
</tr>
<tr>
<td>Ennore</td>
<td>Indian Oil LNG</td>
<td>5</td>
<td>14</td>
</tr>
</tbody>
</table>

#### CGD Growth over the years

* *Latest data not available for CGC vehicles*
**STATE-WISE CGD SALES IN VOLUME (APRIL-SEPTEMBER 2021) (IN SCMD)**

During the period April-September 2021, out of total gas sales of 30 mmscmd in the CGD sector, about 13 mmscmd of gas was sold as CNG while almost 17 mmscmd was sold as piped natural gas, largely going to the industrial segment. While Delhi still leads in CNG supplies, it is Gujarat which is clearly the frontrunner in total gas consumption in CGD sector because of the gas popularity in its industrial sector, driven by well-laid gas infrastructure in the state.

<table>
<thead>
<tr>
<th>State(s) / Union Territory</th>
<th>CNG</th>
<th>Domestic</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>63458</td>
<td>24660</td>
<td>2077</td>
<td>36145</td>
<td>126340</td>
</tr>
<tr>
<td>Andhra Pradesh, Karnataka and Tamil Nadu</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Assam</td>
<td>158</td>
<td>34494</td>
<td>17389</td>
<td>569855</td>
<td>621897</td>
</tr>
<tr>
<td>Bihar</td>
<td>38087</td>
<td>1389</td>
<td>88</td>
<td>141</td>
<td>39704</td>
</tr>
<tr>
<td>Chandigarh, Haryana, Punjab &amp; Himachal Pradesh</td>
<td>87648</td>
<td>8913</td>
<td>2122</td>
<td>6668</td>
<td>105352</td>
</tr>
<tr>
<td>Dadra &amp; Nagar Haveli</td>
<td>11339</td>
<td>2046</td>
<td>529</td>
<td>73819</td>
<td>87732</td>
</tr>
<tr>
<td>Daman and Diu</td>
<td>8973</td>
<td>839</td>
<td>684</td>
<td>9659</td>
<td>20156</td>
</tr>
<tr>
<td>Delhi</td>
<td>3523143</td>
<td>299209</td>
<td>84973</td>
<td>144175</td>
<td>4051500</td>
</tr>
<tr>
<td>Goa</td>
<td>1633</td>
<td>267</td>
<td>106</td>
<td>19634</td>
<td>21639</td>
</tr>
<tr>
<td>Gujarat</td>
<td>3282514</td>
<td>1067626</td>
<td>152204</td>
<td>9277896</td>
<td>13780240</td>
</tr>
<tr>
<td>Gujarat &amp; UT of Daman and Diu</td>
<td>11538</td>
<td>20</td>
<td>7</td>
<td>0</td>
<td>11565</td>
</tr>
<tr>
<td>Haryana</td>
<td>1006660</td>
<td>51729</td>
<td>17582</td>
<td>633243</td>
<td>1709214</td>
</tr>
<tr>
<td>Haryana &amp; Himachal Pradesh</td>
<td>2266</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2266</td>
</tr>
<tr>
<td>Haryana &amp; Punjab</td>
<td>17497</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17497</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>189</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>189</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>10571</td>
<td>731</td>
<td>0</td>
<td>0</td>
<td>11303</td>
</tr>
<tr>
<td>Karnataka</td>
<td>26130</td>
<td>27567</td>
<td>9423</td>
<td>278761</td>
<td>341880</td>
</tr>
<tr>
<td>Kerala</td>
<td>28390</td>
<td>1977</td>
<td>898</td>
<td>13723</td>
<td>44988</td>
</tr>
<tr>
<td>Kerala &amp; Puducherry</td>
<td>130</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>130</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>128759</td>
<td>38970</td>
<td>3167</td>
<td>95841</td>
<td>266738</td>
</tr>
<tr>
<td>Madhya Pradesh &amp; Rajasthan</td>
<td>5743</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5743</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>2659421</td>
<td>559758</td>
<td>148689</td>
<td>642393</td>
<td>4010262</td>
</tr>
<tr>
<td>Maharashtra &amp; Gujarat</td>
<td>13481</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13481</td>
</tr>
<tr>
<td>Odisha</td>
<td>10488</td>
<td>776</td>
<td>0</td>
<td>0</td>
<td>11264</td>
</tr>
<tr>
<td>Puducherry (UT) &amp; Tamil Nadu</td>
<td>51</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Punjab</td>
<td>121888</td>
<td>6052</td>
<td>2524</td>
<td>137263</td>
<td>267727</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>104268</td>
<td>1838</td>
<td>823</td>
<td>8545</td>
<td>115474</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>692</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>692</td>
</tr>
<tr>
<td>Telangana</td>
<td>51701</td>
<td>36584</td>
<td>498</td>
<td>70947</td>
<td>159729</td>
</tr>
<tr>
<td>Tripura</td>
<td>68069</td>
<td>38828</td>
<td>6436</td>
<td>19230</td>
<td>132563</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>1849141</td>
<td>240504</td>
<td>38088</td>
<td>2105380</td>
<td>4233113</td>
</tr>
<tr>
<td>Uttar Pradesh &amp; Uttarakhand</td>
<td>5633</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5633</td>
</tr>
<tr>
<td>Uttar Pradesh &amp; Madhya Pradesh</td>
<td>48760</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>48760</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>38784</td>
<td>11363</td>
<td>761</td>
<td>63360</td>
<td>114268</td>
</tr>
<tr>
<td>West Bengal</td>
<td>10866</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10866</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>13238071</strong></td>
<td><strong>2456140</strong></td>
<td><strong>489067</strong></td>
<td><strong>14206677</strong></td>
<td><strong>30389956</strong></td>
</tr>
</tbody>
</table>

**Inputs based on the information submitted by CGD entities - subject to revisions, if any.**

Categorizations of data under Commercial and Industrial sectors- as per the respective policies of individual CGD entities *Sales of SCMD (SCM per day) calculated based on sale for period April 2021 to September 2021**
seasoned professional with 32 years of varied experience in diversified businesses. Shri. Suresh Manglani is currently the Chief Executive Officer of Adani Total Gas Limited. Prior to joining Adani, Manglani was working with Reliance Industries Limited as Senior Vice President & Head of Commercial of its petroleum retail business. He started his career with Kelvinator (now Whirlpool India) and subsequently worked with GAIL (India) Limited, Mahanagar Gas Limited and then Reliance Industries and India Gas Solutions (a JV of RIL and BP).

Manglani specialises in forming and successfully running joint ventures, stakeholder management, conceptualising, negotiating, forming & successfully running retail businesses such as City Gas Distribution and Petroleum Retailing. He worked at the apex level for over 19 years with MNCs’ joint ventures. His vast experience in the domain of City Gas Distribution, Gas Marketing, RLNG Business and Petroleum Retail businesses enables him to speak on these subjects with great conviction and the ability to put forward a vision of the future in the most lucid manner. “I love to bring innovation in the business and constantly think about what could drive further growth”, says Manglani.

Adani has got licenses for 52 GAs in 125 districts today, a big leap from just four GAs four years ago when Manglani joined the company. “When I joined Adani it was a very small set-up and now has become a dominant player in India in the CGD sector. I have been working with multinationals and it was an enriching experience welcoming Total as our joint venture partner in India”, says Manglani.

According to him, one of the most notable achievements in his professional career includes single-handedly setting up Mahanagar Gas Ltd. (MGL), the city distribution company in Mumbai and one of the oldest and primary city gas distribution companies in India. He takes pride in the fact that MGL is a household name today. “When I moved to Mahanagar Gas, I was the single point of contact for my company. From concept to negotiating, developing the entire application and finally incorporating the company, I enjoyed every phase”, shares Manglani.

Suresh is very positive about gas in India. “I’m quite optimistic that India will see huge upside in the gas economy. The government is continuously developing policies in line with its vision to increase the gas share to 15% in the energy mix. It has brought almost the entire

**Additional Responsibilities**

- Director on the Board of Indian Oil Adani Gas Private Limited (IOAGPL), a 50:50 JV between Adani Total Gas and IOCL
- Director in Total Adani Fuel Marketing Private Limited, a 50:50 JV between Adani and TotalEnergies.
- Chairman of Smartmeters Technologies Private Limited, a 50:50 JV between Adani Total Gas Limited and GSEC Limited.
- Director on the Board of Association of CGD Entities Company.
- Co-Chair of the National Council on Hydrocarbon and Petrochemical of ASSOCHAM
- Member of the CII National Committee on Hydrocarbons.
country under the CGD domain by covering almost 96% of the population”.

But he thinks much more needs to be done if gas has to be made the fuel of the future. “The government needs to look at how to increase the allocation of APM gas. Stability in gas prices is another area that demands government’s attention. Another challenge is faster permissions, approvals and clearances for projects. Also, if India has a CGD or Gas Act just like it has an Electricity Act, there would be clearly laid out rights and responsibilities”.

A cost accountant by profession, Suresh has educational degrees of M.COM, LLB, ACMA, FCS. But getting here wasn’t easy for him. Coming from a big joint business family in Rajasthan, it would be difficult for him to study surrounded by so many people in the house. So he would rush to the nearby temple to study peacefully. “I chose a professional career over my family business and God has been really kind to me. I feel very satisfied today. I have come a long way and I feel if I can travel the journey from a temple to corporate it is truly a lesson for all the aspirers to keep looking out for possibilities even in their hardest of times”.

Suresh has two daughters Riya and Moksha. Riya is currently working with Ernst & Young in Mumbai and Moksha is in her third year of medicine. His wife Taruna is a homemaker and also enjoys fashion designing. When asked about his favourite activity in leisure time, when he is not working, he says “Work is my hobby. I don’t remember when I took any leave last time. I feel responsible since someone else has trusted my shoulders to do the work. Any time that I get away from work I like to spend with my daughters and wife”. Suresh also likes to read books and watch some comedy movies or laughter shows.

“Work is my hobby. I don’t remember when I took any leave last time.”
While most of the sectors were hit by the pandemic, comparatively gas did well. According to BP, LNG demand growth significantly outpaced other fossil fuels such as coal and oil even in the pandemic-afflicted 2020. While LNG demand increased 0.8% year-on-year in 2020, demand for coal and oil plummeted 3.8% and 9.4%, respectively. However, while demand remained strong in 2021 too, prices were volatile, from record lows during the initial Covid-19 recession to record highs in latter part of 2021. The high prices were supported by the recovery of the global economy in 2021, soaring LNG demand in China and extreme weather events in Europe amid tight supply.

As we attempt to capture the events surrounding the energy scene, we see major changes in the global LNG map taking shape. The recent Russia-Ukraine turmoil has the potential to significantly change the world energy dynamics especially with respect to gas/LNG supplies from Russia to Europe and its impact elsewhere on the supply options.

**US and China Taking Lead**

For long, Japan and Qatar have maintained the titles of being the world’s biggest LNG importer and exporter respectively. This is

<table>
<thead>
<tr>
<th>Exporter</th>
<th>Loaded supply</th>
<th>Importer</th>
<th>Delivered imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>83.0</td>
<td>China (Mainland)</td>
<td>81.4</td>
</tr>
<tr>
<td>Qatar</td>
<td>81.3</td>
<td>Japan</td>
<td>75.0</td>
</tr>
<tr>
<td>United States</td>
<td>73.6</td>
<td>South Korea</td>
<td>46.4</td>
</tr>
<tr>
<td>Russia</td>
<td>30.8</td>
<td>India</td>
<td>24.8</td>
</tr>
<tr>
<td>Malaysia</td>
<td>25.8</td>
<td>Taiwan</td>
<td>20.1</td>
</tr>
<tr>
<td>Nigeria</td>
<td>17.9</td>
<td>Spain</td>
<td>14.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>14.9</td>
<td>France</td>
<td>12.5</td>
</tr>
<tr>
<td>Algeria</td>
<td>12.3</td>
<td>United Kingdom</td>
<td>11.3</td>
</tr>
<tr>
<td>Oman</td>
<td>10.8</td>
<td>Turkey</td>
<td>10.4</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>8.5</td>
<td>Pakistan</td>
<td>9.1</td>
</tr>
<tr>
<td>Trinidad</td>
<td>7.3</td>
<td>Brazil</td>
<td>7.5</td>
</tr>
<tr>
<td>Egypt</td>
<td>6.9</td>
<td>Italy</td>
<td>6.9</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>6.3</td>
<td>Thailand</td>
<td>6.6</td>
</tr>
<tr>
<td>Brunei</td>
<td>5.7</td>
<td>Netherlands</td>
<td>5.9</td>
</tr>
<tr>
<td>Angola</td>
<td>4.0</td>
<td>Kuwait</td>
<td>5.9</td>
</tr>
<tr>
<td>Other</td>
<td>7.2</td>
<td>Other</td>
<td>44.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>396.3</strong></td>
<td><strong>Total</strong></td>
<td><strong>381.9</strong></td>
</tr>
</tbody>
</table>

The recent Russia-Ukraine turmoil has the potential to significantly change the world energy dynamics especially with respect to gas/LNG supplies from Russia to Europe and its impact elsewhere on the supply options.
US witnessed the largest growth in LNG supply in 2021, adding 25 million metric tonnes (MMt) (52% increase) amid continued buildup of liquefaction capacity as well as the ramping up of output from plants turned down the previous year. China has already overtaken Japan to become the world’s largest gas importer and the USA is soon poised to become the largest LNG exporter in 2022 from a position of being a net importer just a few years back.

US witnessed the largest growth in LNG supply in 2021, adding 25 million metric tonnes (MMt) (52% increase) amid continued buildup of liquefaction capacity as well as the ramping up of output from plants turned down the previous year. Average utilisation for US plants climbed from 43% in the third quarter of 2020 to 98% in third quarter of 2021. As such the US emerged as the third-largest LNG exporter (at 73.6 MMt) just behind Australia (83.0 MMt) and Qatar (81.3 MMt) for the full year of 2021 and is poised to claim the top spot in 2022.

Meanwhile, Mainland China climbed to the top of the LNG importing list of countries. Chinese imports reached 81 MMt in 2021 (increase of 12.3 MMt or 18%), overtaking Japan where imports were flat year-over-year at 75 MMt. This marks the first time since the early 1970s that Japan has not been the world’s largest LNG importer. Some historical change. What is noteworthy here is that China has developed a huge appetite for LNG even though its transnational pipeline gas imports have increased significantly together with its domestic production.

**Strong Global Demand**

2021 was a year of strong gas demand backed by economic recovery post pandemic. Given strong demand in Asia and South America and the early price arbitrage between NE Asia and Europe, European LNG deliveries fell by 9% (7 MMt) in 2021 to 77.2 MMt leading to lower European LNG imports. Besides LNG, pipeline gas supplies from Russia were also lower which led to depleting gas storage reserves in Europe which are currently at their lowest in years with winter demand not yet over. Gas storage across Europe is well below the 10-year average, with levels currently around 30% of storage capacity, according to Gas Infrastructure Europe data.

The need to replenish natural gas inventories in Europe could spur growth in 2022. Already we have been witnessing a surge in LNG price for deliveries into Europe. LNG inflows to emerging Asia may also expand, driven by post-pandemic demand recovery, domestic production declines and planned import capacity additions. It is likely that India’s LNG imports will return to pre-COVID levels after a dip in 2021. Recent new entrants/potential entrants to the LNG importing family in Asia, like, Bangladesh, Philippines, Thailand, Vietnam, Myanmar and Pakistan are likely to put additional pressure on supplies. Import growth in the Middle East during 2022 is also expected, enabled in part by Kuwait’s new Al-Zour terminal, while in Africa imports are set to be fuelled by the emergence of new importing countries -- Ghana, South Africa and Senegal.

China’s LNG imports is expected to increase in 2022, driven by economic recovery, sizable regasification capacity growth and a push for coal-to-gas switching to improve air quality. Bangladesh could also see robust growth as domestic gas output slips and it continues a switch from oil and coal. However, price-sensitivity in south Asian countries including Thailand could make them watchful in their use of gas given high import prices.

**Inadequate Supply**

On the supply side, LNG markets were tightened in 2021 by supply disruptions and surge in demand, disruptions caused both by LNG capacity outages and upstream underperformance. Though LNG supplies

---

### Gas storage in European Countries

**Selected countries, actual storage in terawatt-hours**

<table>
<thead>
<tr>
<th>Country</th>
<th>Actual Storage (TWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>77.52 TWh</td>
</tr>
<tr>
<td>Germany</td>
<td>73.28 TWh</td>
</tr>
<tr>
<td>Netherlands</td>
<td>31.88 TWh</td>
</tr>
<tr>
<td>France</td>
<td>31.61 TWh</td>
</tr>
<tr>
<td>Poland</td>
<td>20.68 TWh</td>
</tr>
<tr>
<td>Spain</td>
<td>19.88 TWh</td>
</tr>
<tr>
<td>UK</td>
<td>8.21 TWh</td>
</tr>
</tbody>
</table>

Latest data: 15 February 2022
Source: Gas Infrastructure Europe
increased overall but throughout 2021, plants across the Atlantic and Pacific Basins faced unexpected outages and gas feedstock shortfalls from maturing production, dragging down average global utilization below the previous five-year average. About half of the LNG volumes lost to unplanned outages in 2021 (excluding the long-term disruption in Yemen) were due to upstream issues limiting feed gas availability, with the most severe incidents occurring in Nigeria, Trinidad and Tobago, and Malaysia.

LNG supply growth in 2022 is expected to remain strong. Almost 25 mtpa of liquefaction capacity is expected to start operations, led by the US, but projects in Indonesia and Mozambique could be delayed. The commercial start of Sabine Pass train 6 and the Calcasieu Pass terminal (both ahead of schedule) are likely to be the main contributors to US LNG production in 2022. BP’s Tangguh train 3 in Indonesia and Eni’s Coral South floating LNG off the coast of Mozambique are still struggling and are likely to be delayed. Gazprom’s Portovaya (1.5 mtpa) project may have to navigate many hurdles before it is completed and operational.

However, the adequacy of gas supplies could still remain a concern on a combination of many LNG project delays, the relatively small number of new LNG FIDs in 2020-2021, and a structural decline in upstream spending since the early 2010s. Disruptions or supply issues at certain global plants could cap LNG growth and help keep the market tight. Projects that were initially targeting full capacity in coming years, including LNG Canada, Mozambique LNG and Golden Pass in the US could see delays. Unplanned LNG export outages could continue as some providers still have issues to resolve. Equinor’s Hammerfest facility in Norway (4.2 mtpa) has been offline since September 2020 due to a fire, and may not return until second half of 2022. Shell’s Prelude floating facility of 3.6 MMTPA is likely to remain closed till Q1 2022. Utilisation in Atlantic LNG in Trinidad and Tobago may stay pressured, with higher output hinging on successful restructuring negotiations and execution on gas backfill projects. LNG export growth at Pertamina’s Bontang LNG in Indonesia and Petronas’ Bintulu project in Malaysia could be hindered by upstream constraints.

In the current war situation, there may be high chances of gas supplies cut-off during a military conflict or in retaliation for sanctions recently imposed by the US, EU and UK on Russian banks, some companies and individuals. This may dent the European gas storage levels further and Europe may need to depend on relatively higher priced US LNG which will further boost US exports. European gas prices have already responded by increasing following the sanctions.

However, if the Russian taps are totally runed off, other exporting countries such as US and Qatar may not be able to fill the gap fully due to a lack of free short-term capacity. Further, though Europe still has the capacity to process or regasify the imported liquid gas, it would be difficult to deliver it to end-users as the distribution infrastructure is not tailored for a significant shift to LNG. Russia sends gas to Europe through several main pipelines - such as Nord Stream 1, Yamal-Europe and Brotherhood. The gas is collected in regional storage hubs, and then distributed across the continent. Russia has insisted that the opening of the new
In recent decades, demand for gas in some regions like Asia and the Middle East has risen sharply. This has knock-on effects on the market for LNG, which makes up about a quarter of Europe’s imports.

Nord Stream 2 gas pipeline from Russia to Germany would help to calm Europe’s energy crunch. The pipe, which runs under the Baltic Sea, was finished late last year but has yet to receive its operating license from Germany. However, in current situation the approval procedures for the Nord Stream 2 pipeline have been halted. The project faced resistance from the US and several European countries including Poland and Ukraine, and could further increase Russia’s leverage over the continent and reduce transit fees earned by Ukraine for gas to pass through existing pipelines. Consequently, the Swiss-based company, Nord Stream2 AG, was one of the first targets of major sanctions against Russia and was proof of Germany’s commitment to hit Russia economically, despite the damage it would cause to itself. Now, the project lies in tatters after costing billions and reaping no benefits.

That said, overall, Russian gas exports to Europe have been decreasing over the last couple of years - down 32% in February this year compared to February 2020.

In recent decades, demand for gas in some regions like Asia and the Middle East has risen sharply. This has knock-on effects on the market for LNG, which makes up about a quarter of Europe’s imports. When demand for LNG is high, supplies tend to be diverted to Asia to take advantage of rising prices. In addition, Russia has been expanding its gas exports to China via transnational pipelines, and in June inaugurated a gas processing plant in the far east of the country, which is expected to become one of the biggest in the world.

**High LNG Prices**

The combination of demand growth and supply issues led to the extremely tight gas market situation that prevailed throughout the final months of 2021. This was especially the case in Europe, where limited Russian pipeline supply flexibility and below average underground storage inventory levels prompted additional anxiety from the start of the heating season.

The tightness in the market led to LNG prices lurching from record lows under $2 per mmBtu in 2020 to record highs of $56 in October 2021. Spot LNG prices in Asia spiked to nearly $30 per million British thermal units (MMBtu) for a few weeks in January 2021 during extreme cold weather and transportation challenges before settling back to normal ranges in the first half of the year. However, by August both Asian and European spot LNG prices climbed well above their oil price equivalent and remained above it for the rest of the year. Prices ended December 2021 at $40/MMBtu — more than double the previous peaks achieved in the several years following Japan’s 2011 nuclear crisis. Prices have been lower recently. Mild temperatures, together with higher LNG inflow, moderated European prices at the start of 2022, but every new sign of colder weather or tighter supply quickly prompts price increases. Despite rising prices, Asian LNG demand has continued to increase as most supply is priced at legacy oil-
indexed contracts, currently trading at half the value of Asian LNG spot prices.

Weather patterns, physical, commercial and geopolitical factors will affect the prices going forward. European storage inventories would be low soon and though prices may come down as the winter is through the requirements to refill storage facilities will be high.

However, the longer term implications (of the Russia-Ukraine war) for global energy could be profound. On the surface it may seem virtually impossible for the world to get by without Russia which produces 10% of global crude oil and supplies 40% of Europe’s natural gas. However, in the medium to long term, buyers will likely try to shift away from Russian supplies, especially those in Western countries. Russian LNG and pipeline natural gas may be hard to replace in the short or even the medium term but it will surely start the process of exploring alternatives to Russian supply. The Russian-Ukraine war is a wake-up call to western capitals and is likely to force them to re-visit their coal and nuclear generation options. Renewables could receive a boost including battery storage. It may also bring about a paradigm shift in Russia’s energy exports with an eastern twist.

**Long term contracts seeing a surge – mitigating volatility in price and managing risks**

Long-term contract signings rebounded to an all-time high in 2021 after a pause in 2020. Over 65 million metric tons per annum (MMtpa) of firm, long-term contracts were signed in 2021, surpassing the previous record of 61 MMtpa in 2013. Asia accounted for 85% of global contracts signed, with China leading the pack. Mainland China was the largest specified end-market, with Chinese buyers signing around 25 MMtpa of firm long-term deals in around a dozen multi-decade contracts with overseas suppliers that will see the country double its imports from the US. Among sellers, signings were roughly evenly split between the US, Russia, Qatar and portfolio suppliers (although many of the latter are likely to source volumes from US projects). Three new LNG projects in the US – which would increase the country’s production capacity by a third – are set to begin construction in 2022.

While spot prices remain high, long-term contracted LNG is still a relatively good deal. The Japan-Korea Marker, the spot Asian benchmark, jumped 23% to $59.67 per MMBtu on March 3, 2022 according to S&P Global Platts because of the historic rally in European gas prices. Long-term contracts which are usually either linked to the oil price, or in the case of the US, the Henry Hub gas price. Oil indexation in long-term LNG contracts was on a declining trend for the past 10 years, a consequence of increased availability of uncontracted supply, more recently from Qatar, and reduced appetite for long-term contracts in favour of more spot exposure. However, long term contracts provide cushion against volatile spot LNG price.

Going forward, the contracting activity is expected to remain strong with Chinese buyers again expected to lead the way and account for most of new long-term contracts signed. On the other hand, despite high spot prices, long-term contracting for Japan is anticipated to continue softening in the face of energy transition uncertainties and greater confidence in the
trading capabilities of the major buyers. Hybrid and Henry Hub-linked contract are expected to remain in vogue in 2022 due to the price benefits of Henry Hub contracts and availability of new US supply. In contrast, fewer long-term JKM-linked deals are expected as buyers remain fearful of the associated price volatility.

**Risks Going Forward**

The volatility and absolute level of LNG prices would give project developers and governments cause to rethink their plans, especially in countries where there are affordability issues. India is one such market – and in 2021 the country’s LNG imports fell for the first time since 2013. Other emerging markets like Vietnam, Pakistan and Bangladesh also imported less LNG as prices remained high. Going forward, in Asia, the rationale to switch from coal to gas may diminish, as if spot LNG prices remain high they will translate into higher oil-indexed contract prices.

Hundreds of billions being spent on LNG facilities also represents significant risk. According to a survey by IEEFA in December 2021 only a fraction of planned LNG terminals and new gas power plants were likely to be built across five key emerging markets, as a result of ongoing market conditions. Bangladesh, the Philippines and Vietnam are likely to see just 34%, 27% and 20% of their announced gas power capacity realised, respectively, showed the analysis, which considered factors like the initial valuation of projects, the credit risk appetite in the lending sector, as well as the ongoing price volatility. That could delay LNG boom.

Increasing investment in renewables and batteries world over may take the focus away from gas and the gas demand may suffer because of that. Several developments act against LNG case, such as the announcement from the new German government in November 2021 that renewables would account for 80% of the electricity mix by 2030 to the fact that more than 90% of the world’s economy is now operating under a net-zero pledge. The growth of renewables and Net zero has gone from a rich country fad to a global trend in the second half of 2021. One country that has already signalled a definitive move away from LNG is Japan In July 2021, updated government targets showed the country aiming to produce 20% of its power from natural gas in 2030, down from a previous target of 37% set in 2019. The government also announced it wants to increase generation from renewables from 18% in 2019 to 36–38% in 2030.

With the start of Yamal LNG plant in 2017, Russia now holds a greater share of global LNG capacity. In 2021, besides pipeline gas Russian LNG was the third largest supplier into Europe, behind the US and Qatar. According to ICIS LNG Edge, just over 18% of Europe’s LNG was supplied from Yamal in 2021. While Russian pipeline gas volumes have fallen, this has in effect been offset by strong Russian LNG. Not only pipeline gas but also Russian LNG is embedded in the European market. Therefore, the war could have huge implications for the European energy market especially the gas markets.
Bharat Petroleum to invest Rs. 4000 cr for development of CGD network

Union Minister Dr. Bhagwat Karad declared in March that Bharat Petroleum Corporation Limited (BPCL) has launched a gas distribution network in Aurangabad and Ahmednagar districts of Maharashtra and will invest ₹4,000(approx.) crore for the completion of the project.

IGL receives LoI from PNGRB for Banda, Chitrakoot and Mahoba

Indraprastha Gas Limited has received a letter of Intent (LoI) from the Petroleum and Natural Gas Regulatory Board (PNGRB) for grant of authorization to the company for the development of CGD network in the geographical area of Banda, Chitrakoot and Mahoba in the state of Uttar Pradesh.

GAIL starts India’s first project of mixing hydrogen into CGD network

GAIL (India) Limited has begun India’s maiden project of mixing hydrogen into the natural gas system at Indore, MP. This is a first-of-its-kind project in the country. GAIL has already obtained the necessary regulatory permissions to commence the project.

Adani Total Gas Ltd to invest ₹20,000cr in city gas distribution

Adani Total Gas has won licenses to expand its CGD network to 14 new GAs in the recently concluded 11th round of CGD bidding by the PNGRB in January. After winning a bid to supply gas to 14 additional cities, declared it would invest ₹20,000 crore in the city gas sector in the next eight years.

Indian Oil Corporation to invest ₹7,000 cr

Indian Oil Corporation (IOC) announced that it will invest over ₹7,000 crore in setting up CGD networks in the cities for which it has secured a license in the latest bidding round. In the

Natural Gas Society (NGS) organised a conference, sponsored by GAIL on O&M Activities (Natural Gas Trunk Pipelines and CGD Networks) on February 23 & 24 (in virtual mode). The Welcome address was delivered by Sh. D V Shastry, ED, NGS. Sh. S P Manglani, CEO, ATGL, delivered the Keynote address & the conference was inaugurated by Sh. Manoj Jain, CMD, GAIL (India) Ltd. Key persons from various organizations like Torrent Gas, Think Gas, PIL, GAIL Gas, IGL, MNGL, ATGL, MGL, BGL, etc were present during the inaugural sessions & thereafter. One of the highlights of the O&M Conference was a leadership forum panel discussion which was chaired by Shri M V Iyer, Director (BD)/Mktg., GAIL. Industry leaders from ATGL, IGL, PIL, Torrent, Think Gas & MNGL, etc expressed their views in the Forum. More than 450 participants from across the Oil and Gas/CGD industry were present. The Industry leaders and experts shared their rich knowledge and vast experience on various O&M topics.

PM Modi inaugurates Asia’s biggest bio-CNG plant in Indore

Hon’ble Prime Minister Sh. Narendra Modi inaugurated Asia’s largest bio-CNG plant in Indore district of MP in February, saying efforts were being made under the Swachh Bharat-2 campaign to remove piles of garbage from vast chunks of land in several cities and turn them into green zones.
GAS STATISTICS REVIEW

NEWS BRIEF

11th round of CGD bidding, IOC got 9 licenses to retail CNG to automobiles and piped cooking gas to households.

NDMC signs MoU with IGL for a compressed biogas plant, CNG stns

North Delhi Municipal Corporation signed a memorandum of understanding with Indraprastha Gas Limited (IGL) for setting up a compressed biogas plant and integrated CBG-CNG fuel station at three acres of land in Ghogha dairy.

Project of supplying piped cooking gas to houses launched in Latur, Maharashtra

The project of supplying cooking gas through pipeline has been launched in Latur city of Maharashtra’s Marathwada region by the local civic body. 101 houses in the city are being supplied piped cooking gas on a pilot basis. The project, which has been initiated by the Latur Municipal Corporation, is being rolled out by Ashoka Gas (Unison Enviro Pvt Ltd).

GAIL begins laying pipeline along Samruddhi Expressway

All districts of Vidarbha would get natural gas easily for domestic, industrial and vehicular usage as GAIL has started to lay a gas pipeline along Nagpur-Mumbai super communication expressway, popularly known as Samruddhi Mahamarg. Already, PNGRB has floated tenders for the allotment of licenses for CGB.

MNGL starts trial operations at LNG-CNG conversion plant

The Maharashtra Natural Gas Ltd (MNGL) has started trial operation of its LNG-CNG conversion plant at Pathardi, after getting all the necessary permissions. The trials of the LNG processing plant started and around 18,000 kg CNG was produced on the first day.

GAIL India to connect Srinagar to the gas grid; complete Mumbai-Nagpur line by 2023

GAIL India Ltd plans to lay a pipe-

Nagpur Mayor Sh. Dayashankar Tiwari announced that Nagpur Municipal Corporation (NMC) will produce bio-CNG and also green hydrogen from 1,050 metric tonnes (MT) of garbage without any capital expenditure, or operation and maintenance cost.

GAIL (India)’s new Director (Projects) takes charge

GAIL (India) announced that Sh. Deepak Gupta has assumed charge as Director (Projects) of the company.

Former oil secretary Sh. Tarun Kapoor to be new oil regulator

Former oil secretary Sh. Tarun Kapoor has been selected to be chairman of the Petroleum and Natural Gas Regulatory Board (PNGRB).

Sh. Rajarshi Gupta to be the new OVL head

Sh. Rajarshi Gupta would be the new head of ONGC Videsh Ltd, the overseas investment arm of India’s top oil and gas producer ONGC.

Sh. Sanjay Kumar takes over as the new MD of IGL

Executive director of GAIL, Sh. Sanjay Kumar, has taken over as the managing director of Indraprastha Gas Limited (IGL).

11th round of CGD bidding, IOC got 9 licenses to retail CNG to automobiles and piped cooking gas to households.

NDMC signs MoU with IGL for a compressed biogas plant, CNG stns

North Delhi Municipal Corporation signed a memorandum of understanding with Indraprastha Gas Limited (IGL) for setting up a compressed biogas plant and integrated CBG-CNG fuel station at three acres of land in Ghogha dairy.

Project of supplying piped cooking gas to houses launched in Latur, Maharashtra

The project of supplying cooking gas through pipeline has been launched in Latur city of Maharashtra’s Marathwada region by the local civic body. 101 houses in the city are being supplied piped cooking gas on a pilot basis. The project, which has been initiated by the Latur Municipal Corporation, is being rolled out by Ashoka Gas (Unison Enviro Pvt Ltd).

GAIL begins laying pipeline along Samruddhi Expressway

All districts of Vidarbha would get natural gas easily for domestic, industrial and vehicular usage as GAIL has started to lay a gas pipeline along Nagpur-Mumbai super communication expressway, popularly known as Samruddhi Mahamarg. Already, PNGRB has floated tenders for the allotment of licenses for CGB.

MNGL starts trial operations at LNG-CNG conversion plant

The Maharashtra Natural Gas Ltd (MNGL) has started trial operation of its LNG-CNG conversion plant at Pathardi, after getting all the necessary permissions. The trials of the LNG processing plant started and around 18,000 kg CNG was produced on the first day.

GAIL India to connect Srinagar to the gas grid; complete Mumbai-Nagpur line by 2023

GAIL India Ltd plans to lay a pipe-

Nagpur Municipal Corporation to produce bio-CNG, green hydrogen from garbage

GAIL (India)’s new Director (Projects) takes charge

GAIL (India) announced that Sh. Deepak Gupta has assumed charge as Director (Projects) of the company.

Former oil secretary Sh. Tarun Kapoor to be new oil regulator

Former oil secretary Sh. Tarun Kapoor has been selected to be chairman of the Petroleum and Natural Gas Regulatory Board (PNGRB).

Sh. Rajarshi Gupta to be the new OVL head

Sh. Rajarshi Gupta would be the new head of ONGC Videsh Ltd, the overseas investment arm of India’s top oil and gas producer ONGC.

Sh. Sanjay Kumar takes over as the new MD of IGL

Executive director of GAIL, Sh. Sanjay Kumar, has taken over as the managing director of Indraprastha Gas Limited (IGL).
line to Srinagar to take the natural gas to the Kashmir Valley as it doubles down on efforts to expand infrastructure to helm the government vision of a gas-based economy. GAIL will by May 2023 complete a 700-km pipeline from Mumbai to Nagpur.

Reliance Industries Ltd. has sold natural gas produced from a coalfield in Madhya Pradesh for over $23 to firms, including GAIL, GSPC and Shell. Reliance sold 0.65 million standard cubic meters per day (mmscmd) of gas from its coal-bed methane (CBM) block SP-(West)-CBM-2001/1 at a $8.28 per million British thermal unit premium over prevailing Brent crude oil prices.

The share of natural gas in primary energy mix rises to 6.7% in 2021

The share of natural gas in the country’s primary energy mix has risen from 6.3% in 2020 to 6.7% in 2021.

Indian gas production up 20%

India’s natural gas production during December was 2.89bn m3, up 19.5% year/year. Cumulative natural gas production during the nine months of the 2021-2022 financial year was 25.67bn m3, up 21.5% yr/yr.

Policy Matters/Gas Pricing/Others

Gas under the administrative price mechanism costs has been increased 110.3% more from $2.9 to $6.1 per million metric British thermal unit (mmBtu). Price of natural gas produced from discoveries in deep water, ultra-deepwater, and high-pressure/temperature (also known as gas from difficult fields) has been increased by 61.8% from $6.6 to $9.92 mmBtu for the period of April-September 2022.

NMPML to deploy 15 new city buses

The Nashik Mahanagar Parivahan Mahamandal Ltd (NMPML) the transport wing of the Nashik Municipal Corporation (NMC) deployed 15 more CNG buses which will be supplied through an additional supply of CNG from Maharashtra Natural Gas Ltd (MNGL).

Vedanta seeks minimum $19 for gas from the Gujarat block

Vedanta Ltd is seeking a minimum USD 19 price for natural gas produced from a field off CB/OS-2 block located in Suvale, Surat district of Gujarat, as it looks to cash in on the recent surge in global energy prices. The firm called for bids for the sale of 0.25 million standard cubic meters/day of gas.

MGL, IGL, Gujarat Gas hike CNG prices

Maharashtra Gas Ltd. (MGL), Indraprastha Gas Ltd. (IGL), and Gujarat Gas have all hiked the price of CNG following the doubling of domestic natural gas prices. While MGL also hiked the PNG price by 5/ scm to 41/scm, IGL and Gujarat Gas have kept PNG prices unchanged. The price of CNG was raised by Rs 7 per kg to Rs 67 per kg in Mumbai by MGL; IGL raised it by Rs 2.5/kg to Rs 66.61/kg. Gujarat Gas hiked the CNG rates by Rs 6.5/kg to Rs 76.98/kg.

CNG price rises in Ahmedabad

The recent doubling of the domestic natural gas price will make CNG dearer. Adani Total Gas Limited (ATGL) increases the price of CNG in Ahmedabad. Adani CNG’s price has surged to ₹79.59 from ₹73.09/kg.

Govt to permit retrofitting of CNG kit in petrol cars soon

The road transport ministry has issued a draft notification on January 27, for setting the emission and other norms for such retrofitting. As of now, vehicles that meet the emission norms of up to BS-IV are allowed for CNG retrofitment.

Maharashtra announces massive cut in VAT on CNG; tax to be reduced by over 10%

Maharashtra announced a drastic cut in value-added tax (VAT) on natural gas from 13.5% to 3%. The move could make CNG cheaper in Maharashtra. Effective from April 01.
**LNG Use/ LNG Development and Shipping**

**GAIL India had issued swap tender for 12 LNG cargoes for 2022**

GAIL (India) Ltd had issued a swap tender offering six LNG cargoes for loading in the US and seeking six cargoes for loading from Sabine Pass from April 16 to September 11, into India in 2022.

Also seeking six other cargoes for delivery into India’s ports of Dahej, Hazira & Dahbol from April 4 to September 12. The tender closed on February 16.

**ExxonMobil eyes more long-term gas supply deals with India**

Global energy major ExxonMobil is looking at signing more long-term gas sales deals with India as rising spot prices have added to the appeal of longer duration contracts. At present Exxon has a long-term contract to annually supply 1.5 million tonnes of LNG to Petronet LNG.

**Singapore-based LNG alliance to take FID on India LNG project**

Singapore-based LNG Alliance, together with the government of Karnataka, has proposed to develop an LNG import terminal in Mangalore, with an initial capacity of 4mn metric tons/year that could be later expanded to 8mn mt/yr in line with projected demand growth over the next 20 years. The project, with an investment of ₹2,250 crore, is likely to be launched in the next two years.

**Rawmatt Industries, GoSuperBus to convert 5,000 buses to LNG in India**

Rawmatt Industry, an alternative fuel technology provider, has joined hands with Go-SuperBus, a luxury bus travel service company, to convert 5,000 buses to LNG to curb vehicular emissions and promote green vehicles across a period of three years. The first LNG converted bus was launched by Union Minister Nitin Gadkari at Agro Vision Expo, in Nagpur.

**Electric Mobility/Hydrogen/Bio-Methane/Others**

**National Green Hydrogen mission: Green Hydrogen Policy fuelling green-hydrogen dream**

The green hydrogen policy announced by the Centre marks an important step towards realising the Panchamrit goals outlined by India at the COP26 summit. The policy focuses on providing easy access to and reducing the cost of renewable energy (RE), which currently accounts for about 60% of green hydrogen production costs. The policy also provides a stimulus to RE developers looking at scaling up their portfolios, as they plan to produce 5 MT of green hydrogen annually by 2030.

**Delhi mandates EV adoption for online cab, fleet aggregators in draft scheme**

The Delhi government has issued a draft Motor Vehicle Aggregators Scheme, 2021 in January, which has called on online passenger and commercial vehicle operators to increasingly adopt electric vehicles (EVs). According to the draft scheme, electrification targets will apply only for new cars being brought under the ambit of operators such as Uber, Olacabs & others. Older vehicles already registered under these aggregators will, for the time being, continue operating.

**No registration fee, road tax for electric, CNG vehicles in Bengal**

Bengal finance minister Sh. Chan-
news Brief

**GAS STATISTICS REVIEW**

**IGL launches EV battery-swapping station ‘Energy Cafe’**

Indraprastha Gas has partnered with Pune-based electric vehicle manufacturer Kinetic Green to launch a battery-swapping station, called Energy Cafe. The facility will replace discharged batteries of two & three-wheeler EVs with fully charged ones. Under the partnership, both these companies are looking to roll out a deep network of battery swapping stations, starting with the Delhi region.

**BPCL launches south India’s first EV fast-charging corridors**

BPCL has launched EV Fast-Charging Corridors on Chennai - Trichy - Madurai highway, with the rollout of CCS-2 DC Fast chargers of its conveniently located fuel stations along the 900 Km route on both sides of the highway.

**Doorstep services provider Humsafar to enter EV space**

Humsafar India, an app-based doorstep diesel services provider, is all set to make a foray into the growing EV-charging and battery replacement business and plans to set up its first charging stations in Delhi and Noida and is in talks with oil marketing companies (OMCs) to set up EV stations in urban areas, starting from Delhi.

**Oil India to set up 100 kW green hydrogen plant in Assam**

Oil India Ltd is setting up a 100 kW green hydrogen production unit at its Jorhat oilfield in Assam. The plant at its Pump station-3 in Jorhat will generate green hydrogen using Anion Exchange Membrane (AEM) technology.

**Japan’s Suzuki plans to invest $1.3 in India’s EV push**

Japanese multinational automobile company Suzuki has announced in March that it plans to invest an estimated 150 billion yen ($1.26 billion) to produce electric vehicles as well as batteries in India. As it accelerates long-term plans to achieve carbon neutrality.

**GAIL and IPICOL sign an MoU for the growth of clean energy projects in Odisha**

IPICOL and GAIL (India) Limited signed an MoU for cooperation in the space of Green Hydrogen, Green Ammonia etc, for the development of eco-friendly fuels in Odisha.

**Indian Oil installs more than 1,000 electric vehicle charging stations**

IndianOil is gearing up to provide EV charging facilities at 10,000 fuel stations in the next three years. It has installed more than 1,000 electric vehicle charging stations (EVCS) across the country.
Saudi Arabia discovers new natural gas fields

Saudi Arabian Oil Company Aramco has discovered a number of natural gas fields in the Empty Quarter in February, near its northern border and in the eastern region.

UK: Ohio waste-to-energy site to produce bio-CNG for OPAL Fuels stations

OPAL Fuels LLC, a vertically-integrated producer and distributor of renewable natural gas, has commenced commercial operation of a new facility to extract and capture waste methane from Rumpke Waste & Recycling’s Noble Road Landfill, transform it into biomethane and transport it through Chesapeake Utilities Corporation’s wholly-owned subsidiary Aspire Energy of Ohio.

FG seeks US funding to support the development of Nigeria’s natural gas

The Minister of State Petroleum Resources Chief Timipre Sylva has called on the US Government to provide funding support for Nigeria to develop its natural gas resources to serve as an alternative source of energy for Europe.

Norway: KN decides to buy FSRU Independence

KN, the operator of Lithuania’s only LNG import facility, has decided to acquire the FSRU Independence from Höegh LNG after its lease ends. The decision on the purchase FSRU has the most economically advantageous option.

Kosovo: HAM launches new LNG mobile service station

HAM Group has launched a new concept of mobile and transportable service station, which allows the refueling of LNG and CNG. The new mobile unit, which is called EDUX, has been developed by HAM Criogénica, together with its R&D team, who have been in charge of the design and construction, in its facilities and in those of its subsidiary Vakuum.

USA: West Virginia approves major natural gas pipeline permits

The West Virginia Department of Environmental Protection granted a permit for the construction of a pipeline that will run 300 miles and will enter Virginia. The Mountain Valley Pipeline is controversial and is opposed by environmental groups like Appalachian Voices. The project will cost between $3 billion and $6.2 billion dollars and involves many different companies, and is thought to be planned for 2022.

Africa’s first floating gas plant arrives in Mozambique

Africa’s first floating LNG plant has arrived in Mozambique in January and gas production is on track to begin in the second half of the year. The Coral South project is the first of a few planned projects which will exploit a significant gas find in the offshore Rovuma Basin.

U.S. Gain supply biogas to produce hydrogen for California transport

U.S. Gain announced in February, its renewable natural gas supply would be used as a feedstock into hydrogen production, enabling a greener fueling solution for the California transportation market.

Turkey: The first batch of pipes for the Black Sea natural gas pipeline arrive

Turkey has started delivering the
Nigeria and Equatorial Guinea have agreed on a memorandum of understanding (MoU) to bring Nigerian gas to the Punta Europa LNG terminal in Equatorial Guinea.

**U.S. becomes the largest source of LNG for EU and UK**

The United States became Europe’s largest source of LNG in 2021, accounting for 26% of all LNG imported by European Union members and the UK. In 2021, a large share of Europe’s supply of LNG originated in the United States, Qatar, and Russia. Combined, these three countries accounted for almost 70% of Europe’s total LNG imports. Exports of LNG from the United States to the EU and UK increased from 3.4 billion cubic feet per day (Bcf/d) in November 2021 to 6.5 Bcf/d in January 2022.

**Bangladesh to award LNG supply contract to Vitol**

Bangladesh awarded a contract to the Asian unit of trading house Vitol to supply a cargo of LNG for mid-March delivery at US$29.70/mmbtu. The nation of 160 million people is set to be a significant player in the global LNG market, alongside Pakistan and India. The country has two long-term contracts with Qatargas and Oman Trading International.

**Clean Energy, Enbridge will provide natural gas to UPS vehicles in Canada**

Clean Energy Fuels Corp., along with its industry partner Union Energy Solutions Limited Partnership, an unregulated affiliate of Enbridge Gas Inc., has signed an agreement to fuel United Parcel Service (UPS) Canada delivery fleet vehicles with CNG at its London, Ontario station. UPS Canada has already converted 25 package delivery vans to operate on natural gas.

**Algeria’s Sonatrach signs LNG deal with Greece’s DEPA**

Algeria signed a deal to deliver LNG cargoes to Greece’s DEPA. A long-term sale and purchase contract with DEPA has also been extended from January 01, without indicating the volumes contracted. Algeria is the top LNG supplier in the Greek market.

**USA-China: The New Superpowers In Global LNG Markets**

The United States has become the world’s largest LNG exporter. In the same vein, China has become the world's biggest LNG importer, managing to overtake Japan for the first time since the latter pioneered the industry in the 1970s. For the first time ever, the United States has become the world's largest LNG exporter, establishing itself as a bona fide natural gas superpower.

**Singapore: Woodside and Commonwealth LNG sign agreement**

Woodside Energy Trading Singapore Pte Ltd (Woodside) has signed a Heads of Agreement (HOA) with Commonwealth LNG (Commonwealth) in January to negotiate a sale and purchase agreement for the supply of LNG from the proposed Commonwealth LNG development in Cameron, Louisiana, US. The HOA contemplates the purchase by Woodside of 2 million tpy of LNG over a period of 20 years, scheduled to begin in 2Q26.

**Singapore: Pavilion Energy signs LNG supply deal**

Pavilion Energy Trading & Supply Pte Ltd and Zhejiang Hangjiaxin Clean Energy Co. Ltd has signed a deal for the supply of small-scale LNG from Singapore. Under the agreement, up to 0.5 million tpy of LNG will be...
Philippines: San Miguel allotting Php41.5b for Leyte LNG plant

SMC Global Power Holdings (SMCGP) invested Php41.5 billion to develop its 600-megawatt (MW) LNG combined-cycle power plant in Tabango, Leyte. The LNG plant will be housed in a 26-hectare property inside East Genesis Landholdings, Inc.’s 56.8-hectare complex located close to the island’s northwestern shore.

Germany will start construction of the country’s first two LNG import terminals

In a bid to reduce energy dependence on Russia and diversify supply sources, the German government announced in February that it will accelerate the construction of what would be the country’s first two LNG import terminals. Germany currently has no LNG receiving and regasification capacity. The planned terminal in Brunsbüttel on the North Sea coast in the state of Schleswig-Holstein is yet to receive a construction permit.

Oman in talks with Shell and TotalEnergies to develop key gas block

Shell and its partners Omani state-owned energy company OQ and Marsa LNG, a joint venture between French giant TotalEnergies and OQ signed a Block 10 concession agreement with Oman’s Ministry of Energy & Minerals in December to develop and produce natural gas. According to the concession’s agreement, Shell will hold a 53.45% operating stake, with OQ and Marsa LNG holding 13.36% and 33.19%, respectively. Block 10 is said to be strategic for Oman and is expected to bridge the gap between the nation’s gas supply and future consumption needs.

Global LNG Development

Taiwan’s CPC gets environmental okay for the new re-gas project

Taiwanese gas supplier CPC Corp. has received the Environmental Protection Agency’s approval to build a new LNG import terminal near an algal reef off the coast of Datan. CPC had announced the plan to develop the terminal in 2019 but faced resistance from environmental groups who argued that the project would harm the algal reef. Environmentalists had proposed relocating the terminal to the port of Taipei.

Russia: Gazprom strikes four-year gas deal with Turkey’s Botas

Russia’s Gazprom has signed a new four-year contract to supply Turkey’s Botas with 5.75bn m³ of gas annually from January. Its past contract with Botas expired at the end of last year and covered only 4bn m³ of annual gas supply.

Japanese LNG imports were down 12% and China 9% in Jan-Feb

Japanese LNG imports in February came in at 7.1mn metric tons, down 11.9% year/year, according to the data published by the country’s finance ministry on March 16. The imports were up 4.7% month/month, however. Chinese LNG imports in the first two months of this year came in at 12.68mn metric tons, down 8.7% year/year. Imports in January were down 6.7% yr/yr to 7.81mn mt, while February imports were down 11.8% yr/yr to 4.86mn mt. The pipeline gas imports in January-February were 7.18mn mt, up 6.3% yr/yr.

Russia: NOVATEK and EEN Natural Gas sign LNG supply agreement

PAO NOVATEK has announced that NOVATEK Gas & Power Asia Pte. Ltd., and ENN LNG (Singapore) Pte. Ltd., a subsidiary of ENN Natural Gas Co, Ltd. signed a long-term LNG sale and purchase agreement (SPA) for the LNG produced from the Arctic LNG 2 project. The SPA stipulates the supply of approximately 0.6 million tpy of LNG from the Arctic LNG 2 project for a term of 11 years. The LNG will be delivered on a DES basis to ENN’s Zoushan LNG Receiving Terminal in China.

TAP transports its first 10 bcm of natural gas from Azerbaijan to Europe

The Trans Adriatic Pipeline AG has transported a total of 10 billion cubic meters of natural gas from Azerbaijan to Europe through the Kipoi interconnection point located at the Greek-Turkish border. It is also the same point where TAP connects to the Trans Anatolian Pipeline (TANAP). Currently, 8.5 out of the 10 bcm have been delivered to Italy.

LNG from Pavilion Energy’s portfolio of natural gas and LNG will be delivered to the 1 million tpy Jiaxing LNG Terminal in Zhejiang, China.

Global LNG Development

Delivered to Hangjiaxin from 2023. LNG from Pavilion Energy’s portfolio of natural gas and LNG will be delivered to the 1 million tpy Jiaxing LNG Terminal in Zhejiang, China.
Italy’s Sorgenia, Iren ready to build a large LNG terminal

Italian energy groups Sorgenia and Iren are ready to work on a project to build a liquefied natural gas terminal in southern Italy that would be big enough to cover almost half of gas imports from Russia. The terminal, which would be built in the southern Italian port of Gioia Tauro, is designed to process 12 billion cubic metres (bcm) of LNG per year.

Texas, USA: Tellurian to begin construction on Louisiana LNG Plant

US LNG developer Tellurian Inc. will begin construction on its US$16.8 billion Driftwood LNG plant in Louisiana in April. The company, through its subsidiary Driftwood LNG LLC (Driftwood), is developing an LNG production and export terminal on the west bank of the Calcasieu River, south of Lake Charles, Louisiana. Once complete, the terminal will be able to export up 27.6 million tonnes per year (mpta) of LNG to customers worldwide.

China approves new LNG receiving terminal in Fujian province

China’s state economic planner has approved natural gas company Hanas Group’s plan to build a receiving terminal for LNG in the southeastern province of Fujian. The terminal, estimated to cost 5.26 billion yuan ($829.8 million), will have an annual receiving capacity of 5.65 million tonnes of super-chilled fuel.

China: CNOOC begins construction of 6 largest LNG storage tanks in the world

China National Offshore Oil Corp (CNOOC) has started to construct the world’s largest LNG or LNG storage tanks in Yancheng Binhai Port Industrial Park in East China’s Jiangsu province. The project includes six new ultra-large tanks with a total storage volume of 270,000 cubic meters and reach a height of 60 meters, equivalent to the height of the National Stadium or the Bird’s Nest, and can hold three Boeing 747s at the same time.

Petronas makes additional gas discovery offshore Malaysia

Malaysian oil and gas firm Petronas’ subsidiary Petronas Carigali Sdn Bhd (PCSB) has announced a gas discovery in Block SK411, offshore Malaysia, after drilling the Hadrah-1 well. The Hadrah-1 wildcat exploration well is located in the shallow waters of the Balingian province, approximately 170km northwest off the coast of Sarawak.

Malaysia’s Petronas, Sabah state launch masterplan for gas development

Malaysia’s state oil firm Petronas and the resource-rich state of Sabah launched a masterplan to develop the state’s natural gas resources, including the construction of an LNG plant. The Sabah Gas Masterplan is the result of a joint study between the state and Petronas. It entails the construction of an LNG plant with a capacity of 2 million tonnes per annum (MTPA) at the Sipitang Oil and Gas Industrial Park, which will provide opportunities for Sabah to expand its LNG distribution across the state.

Iran plans to propel LNG exports amid Russian-Ukraine war

Iran made a plan to restore schemes to enter the LNG market and propel exports. This comes as Europe is trying to reduce dependency on Russia and could therefore potentially end sanctions on the Middle Eastern country. Accordingly, government-owned natural oil and gas producer National Iranian Oil Co. has invited investors to submit proposals for building small LNG units. Europe’s benchmark gas futures hit a record 345 euros a megawatt hour. The continent is on the search for alternative gas sources.
USA: First LNG cargo from Venture Global’s Calcasieu Pass facility sails away
US LNG exporter Venture Global announced that the first cargo from its Calcasieu Pass export facility in Louisiana has sailed away.

UK: SGMF releases updated version of LNG as a marine fuel – Safety and Operational Guidelines – Bunkering
The Society for Gas as a Marine Fuel (SGMF) has released version 3.0 of its ‘LNG as a marine fuel – Safety and Operational Guidelines – Bunkering’ publication. The latest guidelines take a holistic approach and cover all aspects related to the bunkering of LNG fuel, incorporating the most recent operational experience from the design of bunkering vessels and facilities to the planning and preparation of the bunkering operations and locations, including guidance on safe bunkering operations.

Israel supplies natural gas to Lebanon
Israel supplied natural gas to Lebanon to minimize Iran’s hold over the impoverished and crisis-stricken country. Lebanon, which officially regards Israel as an enemy state, reached an agreement last year on bringing Jordanian electricity and Egyptian gas into the country via war-torn Syria, while the Shi’ite terrorist group Hezbollah is delivering fuel from its Iranian paymasters.

Chinese gas imports up 20% in 2021
China’s natural gas imports via pipeline and in the form of LNG in 2021 were 121.36mn metric tons, up 19.9% year/year. Chinese gas imports have been on an uptrend owing to robust domestic demand and recovery in economic activity post the COVID-19 pandemic.

Sinopec gets first LNG cargo under new deal with Qatar
China’s Sinopec Corp received its first cargo of LNG under a new term supply deal signed last year with Qatar Petroleum. The tanker Al Sahla, carrying 94,000 tonnes of Qatari gas, was discharged into Sinopec’s Tianjin terminal as a part of a deal signed with Qatar Petroleum for an annual supply of 2 million tonnes for 10 years.

cylinders. A lightweight cylinder with such a nanofiller will not explode and can be used in passenger cars. The study was published in Chemical Engineering Journal.

Germany: World’s first full-scale pilot plant for extracting hydrogen from natural gas pipeline
Germany-based Linde Engineering has started up a full-scale pilot plant in Dormagen to showcase how hydrogen can be separated from natural gas streams using its membrane technology. Furthermore, Abu Dhabi-based renewable energy developer Masdar has teamed up with French energy giants Engie and Totalenergies on two separate hydrogen projects and Sweden’s nuclear power company OKG signed its first contract with an external buyer to enter the hydrogen market as a producer and supplier.

Gasnam, Europe: 64 operational biomethane plants projected in Spain by 2024
In Europe, the number of biomethane plants has grown by 17% in just one year, reaching a total of 992 plants, of which 306 belong to France and 242 to Germany. Despite Spain’s obvious delay compared to European countries, there is a clear commitment by companies to the development of this green energy. Moreover, the forecasts for 2024 show 64 biomethane plants in operation, which will generate a total capacity of 2,077 GWh/year compared to the current 162 GWh/year.
Welcoming ECIL as a Member of NGS

Heartiest congratulation to Electronics Corporation of India Ltd. (ECIL) on becoming a Non Voting Member of Natural Gas Society. We take the pleasure and privilege of introducing the apex leader of ECIL (A schedule ‘A’ CPSE under the Department of Atomic Energy, Govt. of India).

Rear Admiral Sanjay Chaubey (Retd.) is the Chairman and Managing Director of the Electronics Corporation of India Ltd (ECIL) since July 1, 2018. Before this, he held the position of Director (Technical) in ECIL.

He is a graduate in Electrical Engineering from the National Institute of Technology, Rourkela and a postgraduate in Communication Engineering from the Indian Institute of Science, Bengaluru. He was with the Indian Navy for more than three decades and was actively involved with the commissioning of Electrical, Electronic and Control Systems in the frontline warships. During his long career with the Navy, he was associated with formulating apex level policies, undertaking indigenous technology development through R&D Centres, setting up infrastructure for life cycle support systems, Quality Assurance Processes and eco-system for the supply of defence electronic equipment. He is trained in contemporary international technologies and has successfully handled assignments in Russia and Italy. He is associated with projects of strategic importance for the nation and has closely worked with ECIL for simulators, complex mechanical systems, sensors, radiation detection systems, control and instrumentation systems.

Apart from being a highly competent technocrat, he is a very good administrator and above all, a kind-hearted human being. He has a strong people-orientation and focuses on the continual development of people capabilities through learning & development and by empowering people.

He is a visionary leader and a strategic thinker, having excellent analytical & problem-solving competencies and is a source of inspiration to his team.

Apart from being a highly competent technocrat, he is a very good administrator and above all, a kind-hearted human being. He has a strong people-orientation and truly believes that people are the most valuable assets of the organization. In alignment with this, he accords top priority to creating a positive, collaborative & conducive organizational culture and also focuses on the continual development of people capabilities through learning & development and by empowering people.

Though he takes utmost care of his people across the organization, he ensures that there is no scope for indiscipline and non-performance in the company. That is, he believes in ‘tough love’. A hard taskmaster, Shri Chaubey ‘leads from front’ and ‘leads by example’ - which is evident from the fact that his team has seen him working ‘round-the-clock’ in the factory when it comes to adhering to production targets or combatting any crisis.

Natural Gas Society extends a warm welcome to ECIL and its leader Rear Admiral Sanjay Chaubey (Retd). In the current era of ‘cyber-physical’ systems, we look forward to developing a synergy between the domain of natural gas & city gas distribution and the digital/electronics domain. Our best wishes for a long-term and mutually-beneficial professional relationship with ECIL.
Introduction

This article describes the journey of Secure Meters in the UK market for smart metering products (electricity and gas meters) and offered system solutions. More than 35 retailers in the UK have deployed Secure’s smart metering solution as per the UK specifications (SMETS - Smart Metering Equipment Technical Specification) with GPRS WAN (comms Hub) and Zigbee 2.4 GHz HAN (comms hub and gas meter). Secure’s smart metering system solution has been in operation for more than eight years in the UK market.

Background

When the company entered the UK market with its smart gas meter, only a few pre-payment systems prevailed. Most of the metering solutions were based on the legacy post-paid system, which were not even smart. Systems were working on the actual keys and cards. These cards were used to top up the gas meter and carried all the information, like a bank card that has a chip in it and keys were programmed specifically for the consumer. If the keys got misplaced by consumers, or they moved to a new property, the utility had to issue new keys to them. The cost of issuing the keys was very high since these were physical keys holding device-related information.

Secure’s smart system solution components

Deliverables of the first smart metering platform in the UK included the following components:

- GPRS 2.5G WAN, Zigbee 1.1b HAN enabled modular comms hub
- Single-phase, single-element electricity meter
- G4 diaphragm gas meter
- In Home Display unit (IHD)
- SMSO (Smart Meter System Operator) hosted services - SMSO is a server application that runs in the background. It communicates via web services at one end (utility side) and with communication hub over GPRS at another end.
- Smart Front End (SFE) - It is a web-based front-end application. Utility can use this to operate smart devices.
- Sub-contracted Communication Service Provider (CSP) services

The below architecture diagram shows different interfaces provided by Secure’s smart system solution:

- The supplier system is integrated directly with our system solution using web-based services.
SMSO acts as a bridge between the supplier business system and smart devices. Using SMSO hosted Web services, utility systems can operate smart devices.

Middleware between the utility CRM system and SMSO

Middleware between utility business systems and SMSO system provided by Secure is used to connect utility business system with SMSO to operate smart devices.

SFE (Smart Front End) provided to utilities to operate our smart meters

Secure provides Smart Front End (SFE) which has web-based client to operate smart devices.

Supplier system integrated with our system solution using CSV interface.

SFE provides file interface where requests and responses from smart devices are available at FTP location. This approach is used where supplier system is integrated with SFE system using the CSV file-based interface.

Drivers for the UK market rollout

In 2013, the UK government released an ambitious Smart Meter Implementation Program (SMIP) that aimed to install smart meters in every UK home by 2020.

Reduced costs for households and utilities, increased operational efficiency and integration of increasing flows of renewable energy into the grid, contributing to climate change objectives, were the key drivers for using smart meters.

Benefit to utilities, consumers and the energy network:

Innovations introduced by Secure (gas metering)

Pre-payment: Pre-payment allowed customers to recharge online, without going to pay points or terminals. Traditional pre-payment systems used a physical card that required to be scanned in the machine to load the top up information; our system eliminated this need. Customers had to carry the top up cards or remember the long card number when they visited the pay points, which was a hassle in itself.

Automatic meter reading and billing: Through the smart devices, suppliers can provide accurate billing information to the consumer. Consumers can tally the billing information since it is available on their smart devices. Billing system relied on the information which were directly sourced from the meters back to their business system, rather than any estimation or phone calls to customers to get meter readings. There was no need of a meter reader which substantially lowered the cost to serve.

Reduction in carbon footprints: Energy suppliers were able to train and educate the end consumer about how best they can use energy. Consumers had complete control and could see their usage and its cost. Consumer became more aware of their energy consumption, which helped them to optimise their usage. Overall, it was beneficial for the whole nation because the grid, supplier and end consumer became smarter to reduce unnecessary gas consumption.

Tariff and pricing: Energy suppliers were able to offer reduced rates during off peak hours. For peak time, like evening or a cold day, suppliers could introduce increased price so that people use energy sensibly. Intelligent energy suppliers came into the market and introduced more innovative and intelligent tariff pricing using Secure’s smart gas meter.

Calorific Value (CV) update: Using Secure’s smart gas meters, suppliers were able to keep the devices...
up-to-date with the new CV values as and when published in the market by the gas transporters and they can bill the customer up to the decimal places of accuracy. There was no estimation, no discount required at the end of the year. It benefitted the consumer as he was paying for the exact consumption, rather than overpaying monthly and getting discount at the year end.

No bulky billing system: Secure’s gas meters provided both m3 and kWh readings. It enabled suppliers to get rid of the bulky IT business system in the background. Suppliers got both m3 and kWh values from the device and the same readings were available at the consumer’s end via the in-home unit or from the meter display. Smart readings removed extensive calculation done by the suppliers’ billing system, which used to run in the background overnight to bill thousands of consumers.

Enriched feature set: Secure’s smart gas meters provided meter reading every half-an-hour, and even less than that at times. This enabled suppliers’ system to have accurate readings from the gas meters on almost real-time basis.

Challenges for a cost-effective gas metering system solution
Following cost drivers were the key requirement analysis and design focus areas to achieve this ‘lowest cost to serve’ objective:

- Reducing customer complaints for the retailer.
- Reducing the number of site visits for the retailer. One site visit can undercut a year’s worth of margin from the site.
- Reducing customer communication cost (number of calls to the call centre) without introducing customer dissatisfaction.
- Enabling better cash flow management - adjustments months after the actual purchase date were typical, leaving a huge scope of improvement.

Critical success factors
For delivering a successful smart metering rollout in the UK energy retailing landscape, below were the critical success factors:

- Supplier must not need to visit the site again before product design-life is over
- Fast and efficient installation experience for the installer, regardless of the network availability on the site; enabling maximum number of installs per day.
- Easily accessible and understandable data for the consumer to drive the call centre cost down.
- Low IT integration cost
- Low recurring operating cost:
  - Optimised and compressed WAN protocol
  - Provide end-to-end packaged solution to supplier to keep the costs down by bespoke B2B integration with supplier CRM system.

Achievements
Below are some of the areas where Secure has shown improved customer engagement in the UK smart metering market:

- New customer acquisition rate increased for the utilities due to low operating cost offered by Secure’s smart system solution. Utilities were able to offer slightly lesser prices and discounts to the consumers as compared to competitors.
- Up to 35+ utilities have Secure’s smart system devices and solution
- Increased customer retention due to superior services
- >2.7 million gas meters installed
- >3.4 million communication Hub and electricity meters installed
- Customer satisfaction index improved at all fronts
- Multiple choices for tariff options and value-added services
- The 12-key keypad on gas meters is an add-on benefit over competitors’ meters. It also acts as a backup in case the primary option (via In-home unit or WAN) fails for token transfer or data reading. By pressing different keys of the keypad, consumers can easily access various parameters on the display. Other competing meters only had one or two keys, and the consumer had to press those keys multiple times to view any specific parameter.
IGL has been energizing the lives of the capital's citizens since 1998. Bringing Natural Gas, the 'Clean Fuel' through Compressed Natural Gas (CNG) for vehicles, Piped Natural Gas (PNG) for domestic usage and industrial applications as well. In the past nearly 20 years we have come a long way.

**Highlights**
- IGL fuels world's largest fleet of CNG buses
- IGL fulfills fuel requirements of over 10,50,000 CNG vehicles including over 25,000 buses and over 6,00,000 private cars through a network of 429 CNG stations
- IGL provides energy solutions to major 5 star hotels, malls, hospitals and restaurants
- Nearly 9,00,000 households are availing the benefits of Piped Natural Gas
- IGL also supplies natural gas to industrial customers
- IGL's pipeline network spreads across Delhi, Noida, Greater Noida, Ghaziabad and Rewari
भारत की अग्रणी प्राकृतिक गैस कंपनी
एनर्जीइंजिंरिंग पॉसिबिलिटीज

देश में वेली जाने वाली प्राकृतिक गैस में 53% का योगदान
भारत में कुल प्राकृतिक गैस संचरण पाइपलाइनों के 3/4 भाग का संचालन