# BLUE FUEL

Gazprom Export Global Newsletter

2020/ Issue 54




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# To Our Readers

The spring 2020 will no doubt be remembered as the time when the COVID-19 pandemic broke the usual course of life of the whole mankind. Industries and economies were suddenly facing unprecedented existential challenges.

The energy industry has not been an exception either. The unusually warm weather of the early months of the year, coupled with a drop in demand and oil price crash added gravity to the gas market, which was already fighting with low prices and oversupply. Still, for the gas companies there was and there is a job to do: provide safe and secure supplies, energy and heat for the millions of people all over the world.
In this issue, we have made an attempt to collect views on the current situation of the energy and related markets, its dynamics and forecasts given by various industries, players, as well as experts.

Also, we provide an overview of how gas companies of Europe have met the crisis and did their best and even beyond that, adapting to the new reality, maintaining safe uninterrupted supplies, while fighting against the pandemic and protecting their teams. The gas industry proves it can face the crisis and perform well. And it is in the crisis times when the reliability and stability of the whole system (or its absence) becomes evident.

The reliability of the gas industry has been built upon long-term investment into the infrastructure. That is another major highlight of this issue. Earlier this year, the TurkStream



Source: Gazprom

trunk pipeline started operations, linking directly Russia and Turkey, and allowing to supply up to 32 bcm through its two strings. In the current Blue Fuel issue, we are glad to host the contribution by Katya Yafimava and Jack Sharples of Oxford Institute for Energy Studies who examine the impact of this new corridor on the market, its infrastructure and regulatory aspects, and its potential implications for the gas flows. In another guest contribution, a renowned international expert on energy and geopolitics Mr Mehmet Ogutcu touches upon a broader aspect of partnership between Russia and Turkey in energy and beyond.

Though unobvious, there is a common thread between these two very different stories. In any crises and turbulences of the past, we learned that partnerships always bring the right solution. This is how the best commercial results are achieved during peaceful times; and this is the only way to cope with global challenges. Partnership and cooperation are the values that never change and always matter. The long road to the new normal lies ahead all of us – walking it together makes it easier.





# TurkStream: a (Developing) Success Story[1]

**by Jack Sharples and Katja Yafimava**



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TurkStream, which was initiated in December 2014 and launched in January 2020, is part of Gazprom's transit-diversification strategy and reflects its desire – supported by the Russian government – to develop a new direct export route for delivering Russian gas to southern Europe and western Turkey, without having to transit it across Ukraine. The construction of TurkStream has enabled Gazprom to eliminate Ukraine's transit monopoly over Russian gas exports to western Turkey, Bulgaria, Greece and North Macedonia. While TurkStream itself has been completed, with its first string already supplying gas to western Turkey and its second string – to Bulgaria, Greece and North Macedonia, further development of onshore pipeline connections in Bulgaria, Serbia, and Hungary is necessary for enabling direct supplies to Serbia, Hungary and potentially Austria[2].

### TurkStream: Origins, Timeline, and Regulatory Framework

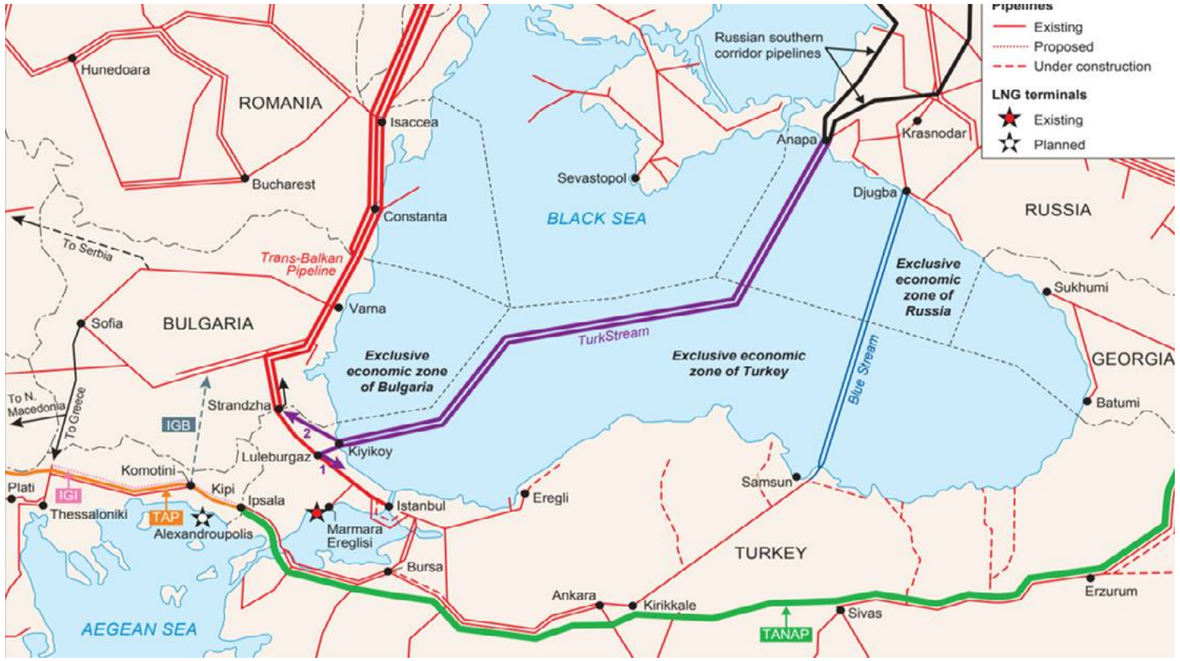
TurkStream consists of two offshore parallel pipelines (15.75 bcma each), connecting the Beregovaya compressor station near Anapa on the Russian coast of the Black Sea with the receiving terminal at Kiyikoy on the Turkish coast of the Black Sea as well as two onshore pipelines. The first onshore pipeline connects the terminal with the Turkish gas transmission system at Luleburgaz and the second onshore pipeline proceeds from the terminal further onwards on Turkish territory up to the Bulgarian border (Figure 1). Different options for the route of the second onshore pipeline have been considered during the TurkStream development. One option – which was eventually chosen – was to connect the terminal with Bulgaria, whereas another option was to connect the terminal with Greece[3].

*1. This article relies heavily on Pirani, Sharples, Yafimava, Yermakov, 'Implications of the Russia-Ukraine gas transit deal for alternative pipeline routes and the Ukrainian and European markets', Section 2, OIES Energy Insight 65, March 2020, https://www.oxfordenergy.org/publications/implications-of-the-russia-ukraine-gas-transit-deal-for-alternative-pipeline-routes-and-the-ukrainian-and-european-markets/?v=79cba1185463*

*2. The impact of the new post 2019 Ukraine transit agreement on Gazprom's utilisation of other (non-Ukrainian) export routes towards Europe (including TurkStream) was analysed in Pirani, Sharples, Yafimava, Yermakov, 'Implications of the Russia-Ukraine gas transit deal for alternative pipeline routes and the Ukrainian and European markets'.*

*3. Interestingly, Gazprom Export's website still refers to Ipsala – Kipi at the Greek-Turkish border as the delivery point for European consumers. Notably, Ipsala – Kipi is also an Interconnection Point where TANAP connects with TAP.*

## Figure 1: TurkStream Pipelines




Source: OIES

TurkStream is a scaled-down descendant of South Stream, a four-string (15.75 bcma each) pipeline system that was designed to connect Russia with Bulgaria via the Black Sea. In 2014, the European Commission (EC) initiated an infringement procedure against Bulgaria on the grounds that its intergovernmental agreement (IGA) on South Stream with Russia was incompatible with the EU energy acquis and alleged irregularities in procurement procedures, resulting in Bulgaria halting construction on its territory in June 2014. Bulgaria also failed to provide its regulatory approvals for an onshore section of South Stream. For these reasons the project was judged too risky to proceed and in December 2014, the Russian president, Vladimir Putin, and the Gazprom CEO, Alexei Miller, announced that South Stream was cancelled and that the Turkish Stream project was initiated[4].

*4. Yafimava, 'Building new gas transportation infrastructure in the EU: what are the rules of the game?', OIES Paper (NG134), July 2018. It can also be argued that the cancellation of South Stream has provided an impetus to the development of Nord Stream 2.*

Although TurkStream only made glacial progress during 2015, being marred by various regulatory and commercial disagreements, and put on hold altogether by Russia in 2016 due to a sharp deterioration of political and security relationship with Turkey[5], it was re-activated and proceeded swiftly, once both countries had reconciled their differences in August 2016[6], with several permits (re)issued in September 2016 and the Russian-Turkish IGA signed in October 2016. Construction began in mid-2017, and was completed at the end of 2019, ahead of the official launch at the beginning of January 2020. The first string of TurkStream is being used for gas supplies to western Turkey whereas the second string – to Bulgaria, Greece and North Macedonia.

Turkish Stream is underpinned by the Russian-Turkish IGA, which provides for the construction of two offshore and onshore pipelines, as described above. Notably, as neither Russia nor Turkey are EU member states, the issue of the IGA's compatibility with the acquis – which contributed towards derailing South Stream – is irrelevant. Notably, the IGA does not specify a border (or borders) where the second onshore pipeline would arrive, and only states that the pipeline will proceed from the receiving terminal further onwards on Turkish territory up to the Turkish border with neighbouring countries[7]. Given that TurkStream was developed with a view to supplying Turkey and south east Europe, geography suggested that its second onshore pipeline could proceed from the terminal either up to the Turkish-Bulgarian border at the Strandzha – Malkoclar Interconnection Point (IP), or up to the Turkish-Greek border at the Kipi – Ipsala IP. Although both IPs were under consideration, the decision was made to build the pipeline from Kiyikoy to the Turkish-Bulgarian border, where a new IP – Strandzha 2 – has been created[8], in addition to the already existing Strandzha IP. (Strandzha IP is the Trans Balkan pipeline crossing point between Bulgaria and Turkey).

*5. Yafimava, 'The revived Turkish Stream: what, where, and when?', Oxford Energy Forum, Issue 107, November 2016.*

*6. 'Russian-Turkish IGA', Russian Ministry for Foreign Affairs, https://www.mid.ru/ru/foreign_policy/international_contracts/2_contract/-/storage-viewer/bilateral/page-39/51663*

*7. 'Russian-Turkish IGA'.*

*8. In January 2019 Bulgartransgaz made an FID on the expansion of its transmission system to accommodate gas to be delivered through the second string of Turkish Stream, see 'TurkStream extension set to shift SE European gas dynamics', Platts European Gas Daily, 12 February 2019.*




From there gas is transported through a new short pipeline – built by Bulgartransgaz – to the Strandzha compressor station. Although it would have been possible to transport the TurkStream gas to the Bulgarian border through the existing pipeline on the Turkish territory which is owned by the Turkish (100% state-owned) company BOTAS and was historically used for transporting Russian gas to the Bulgarian-Turkish border via the Trans Balkan pipeline, the decision was made to build a new pipeline – owned by Gazprom and BOTAS on a parity basis.

The terms for the construction of the second onshore pipeline connecting the receiving terminal with Turkey's neighbouring countries are not defined in the IGA but are set out in a separate protocol[9]. This protocol established additional conditions in respect of the second onshore pipeline and – together with the IGA – constitutes its regulatory framework. The protocol – whose signature was made a pre-condition for the pipeline construction – was signed by the Turkish government and Gazprom, the latter transferring its rights and obligations to a new company, responsible for the second onshore pipeline from the moment when such new company was established.

According to the IGA, Gazprom was to build and own the entire offshore part of TurkStream i.e. two pipelines under the Black Sea. The first onshore TurkStream pipeline, connecting the receiving terminal with the Turkish transmission system (for supplies to the Turkish market) was built and paid for by BOTAS. The second onshore pipeline, connecting the receiving terminal with the Turkish-Bulgarian border at Strandzha 2 (for supplies to south east Europe) was built by a Gazprom-BOTAS JV, established under the protocol, each company having a 50% share.

*9. Unlike the IGA, the protocol does not appear to be publicly available.*



Construction of both TurkStream offshore pipelines, the receiving terminal and two onshore connecting pipelines was completed by the end of 2019. From the beginning of January 2020, Russian gas started to flow to Turkey through the first string of TurkStream, and to Bulgaria, Greece, and North Macedonia (the latter two via Bulgaria) through the second[10]. The official launch ceremony was held on January 8, 2020. Under the IGA, the delivery point for Russian gas supplies to western Turkey has been changed from the Strandzha – Malkoclar IP on the Turkish-Bulgarian border to the Kiyikoy receiving terminal on the Turkish Black Sea coast, thus allowing the re-routing of gas supplies, which have been previously supplied through the Trans Balkan pipeline (crossing Romania and Bulgaria), away from Ukraine[11]. On January 27, 2020, Gazprom announced that it had already delivered 1 bcm of gas via TurkStream, of which 54% went to Turkey and 46% was delivered to the Turkish-Bulgarian border[12].

**Pipelines Enabling the TurkStream Gas to Reach Serbia, Hungary and Austria: Timeline and Regulatory Framework**

At present, there are no further connections beyond Bulgaria towards Serbia, Hungary, and Austria that would enable supplies of Russian gas to these countries through the second string of TurkStream. The construction contract for the Bulgarian section (from its border with Turkey to its border with Serbia) was awarded in September 2019, with a deadline of 615 days (May 26, 2021) for completion[13]. In December 2019, President Putin met with his Serbian counterpart, Aleksandar Vučić, and stated that 90% of the Serbian section had been laid, although the compressor stations had not yet been built[14]. According to Gastrans (51% Gazprom,

*10. The pipelaying for TurkStream took 15 months and was completed ahead of schedule in November 2018; the construction of the receiving terminal near the Kiyikoy settlement in Turkey was finished in 2019. See: 'TurkStream gas pipeline officially launched in grand ceremony', Gazprom press release, 8 January 2020, https://www.gazprom.com/press/news/2020/january/article497324/*

*11. Moldova and Romania continue to be supplied via Ukraine.*

*12. 'First billion cubic meters of gas supplied via TurkStream', Gazprom press release, 27 January 2020, https://www.gazprom.com/press/news/2020/january/article498525/*

*13.'Bulgartransgaz, Arkad Engineering sign deal to extend Bulgarian TurkStream gas line', Platts, 18 September 2019*

*14. 'News conference following Russian-Serbian talks', President of Russia press release, 4 December 2019, http://en.kremlin.ru/events/president/transcripts/62240*



49% Srbijagas), the Serbian section (from its border with Bulgaria to its border with Hungary) will be complete by November 2020[15]. In November 2019, the Hungarian TSO, FGSZ, suggested that the Bulgarian and Serbian sections would enter into commercial operation at full capacity on October 1, 2021[16].

The onward pipeline connections of TurkStream will have 19.9 bcma of entry capacity at the Turkey-Bulgaria border and 13.9 bcm of export capacity from Bulgaria into Serbia. Bulgaria refers to its section as "Balkan Stream" whereas Serbia refers to its section as "New Gas Transmission Pipeline" (NGTP). Capacity at the Serbia-Hungary border is planned to be 10.1 bcma. These capacities could entirely re-route supplies that Hungary and Serbia currently receive via Ukraine[17].

The outlook for these connections on the territories of EU countries – Bulgaria and Hungary – and on the territory of Energy Community Treaty (EnCT) country – Serbia – always seemed more uncertain than the outlook for TurkStream itself, due to the fact that their progress was dependent on Gazprom's and relevant TSOs' ability to develop these pipelines in line with the EU and EnCT acquis[18]. While this is certainly possible, it is more difficult, not in the least because the EC has not been supportive – and arguably has been hostile – to the development of any new pipelines delivering Russian gas to Europe as these could potentially result in lower transit across Ukraine, and did not shy away from politicising the acquis to place constraints limiting Gazprom's ability to utilise its new export pipelines[19].

The Hungarian and Bulgarian TSOs plan to develop their pipeline connections with Serbia, and the Hungarian TSO potentially with Austria[20], under the incremental capacity procedure, stipulated in the Capacity Allocation Mechanism Network Code (CAM NC), rather than apply for an exemption under Article 36 of the Third Gas Directive. The incremental capacity procedure established auctions as a default allocation mechanism, while also allowing an Alternative Allocation Mechanism (AAM) to be used[21]. While CAM NC did not specify the nature of the AAM – and left it to the TSOs to design and the NRAs to approve – it prescribed that at least 10% and up to 20% of the technical capacity at each cross-border IP must be reserved for short term bookings. CAM NC also stipulated that if an auction is used, at least 10% of capacity must be reserved for short term bookings while setting no upper limit. Under the CAM NC incremental capacity procedure, the NRAs and TSOs have a significant degree of discretion in respect of incremental capacity projects, with little role for the EC.

As CAM NC was not yet a part of the EnCT acquis at the time, its incremental capacity procedure was not applicable in Serbia. The Serbian TSO decided to develop its connections with Bulgaria and Hungary under the exemption procedure, stipulated in Art. 36 of the Third Gas Directive (itself a part of the EnCT acquis)[22]. It has applied for and was granted an exemption by the Serbian NRA. The Energy Community Secretariat, while not rejecting the exemption altogether, has requested several amendments. In particular, it recommended Transportgas Srbija to be unbundled and certified as the TSO in respect of domestic gas system currently operated by Srbijagas.

*15. Gastrans, 'About the project', https://gastrans.rs/about-the-project/?lang=en [Accessed 26 February 2020].*

*16. FGSZ, 'Information day on the Serbian Hungarian interconnector project', https://fgsz.hu/file/documents/1/1525/fgsz_srhu_os_info_day_presentation_20191129.pdf. See page 5. [Accessed 26 February 2020].*

*17. See: '2019 - 2028 Ten-Year Network Development Plan of Bulgartransgaz EAD', Bulgartransgaz, 23 April 2019 (https://www.bulgartransgaz.bg/files/useruploads/files/amd/tyndp%202017/TYNDP%202019-2028%20EN.pdf) and 'Ruling deposition', Energy Agency of the Republic of Serbia (AERS), 5 March 2019 (https://www.aers.rs/FILES/AktiAERS/Izuzeca/Eng/2019-03-05%20Exemption%20Act%20Ruling-Disposition_EN.pdf).*

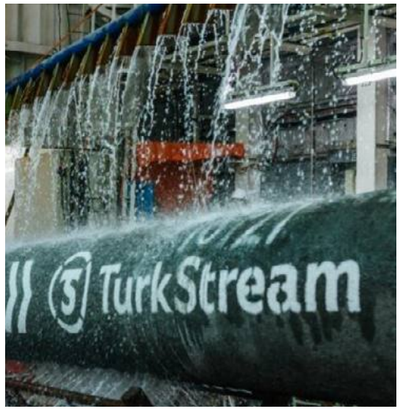
*18. Yafimava, 'The revived Turkish Stream: what, where, and when?', Oxford Energy Forum, Issue 107, November 2016.*

*19. The 2009 OPAL exemption and the 2019 amendment of the Third Gas Directive are examples of such politicisation.*

*20. 'Draft project proposal for incremental capacity between the entry-exit systems of Hungary ('HU') and the Austrian Market Area East ('AT')', FGSZ, 14 January 2020, https://fgsz.hu/file/documents/1/1599/publish_art_27_huat_draft_project_proposal.pdf*

*21. If it is reasonable to conclude that an auction is not suitable, and that the project involves more than two entry–exit systems and bids with a duration of more than one year (namely long-term) are requested.*

*22. The decision to make CAM NC a part of the EnCT acquis was made in late 2018, with 28 August 2019 and 28 February 2020 being set as transposition and implementation deadlines respectively.*



Source: TurkStream

Also, while agreeing with the exemption from third party access (TPA) for 70% of capacity at the Serbia-Bulgaria border and for 75% of capacity at the Serbia-Hungary border, it recommended there should be no TPA exemption in respect of the remaining 30% and 25% respectively, with this capacity to be auctioned and third parties would also be able to participate[23].

Despite the Secretariat's criticism and recommendation of amendments[24], the Serbian NRA preserved its original exemption. Unlike the EC, which has the power to amend, and even deny, an exemption granted by a member state's NRA, the Secretariat can only express an opinion which is not binding and the Serbian NRA is under no obligation to amend its exemption accordingly[25]. Nonetheless, despite being not legally binding, the Secretariat's heavily caveated opinion is an indication that the onshore pipeline connections on EU and EnCT territory enabling gas deliveries via Turk Stream might face further regulatory queries, either from the Secretariat or from the EC. But these queries are unlikely to result in significant changes and delays, and it is reasonable to assume that with some further fine-tuning of capacity allocation issues between the relevant NRAs, these connections will be completed and gas from the second string of Turk Stream will start flowing through Bulgaria in the early to mid-2020s. In the event of any unforeseen obstacles, it is also possible that this gas could flow via the Trans Adriatic Pipeline (TAP), which is currently undergoing an open season process to expand its capacity and is expected to finalise its legally binding stage at the end of 2020[26].

*23. 'Opinion 1/2019 on the exemption of the Gastrans natural gas pipeline project from certain requirements under Directive 2009/73/EC by the Energy Agency of the Republic of Serbia', Energy Community Secretariat publication, 1 February 2019, https://www.energy-community.org/dam/jcr:dbeac342-80e3-47bb-950e-c0cc61c6a914/ECS_Opinion_119_Gastrans.pdf. Notably, these caps recommended by the Secretariat are higher than the maximum cap of 20% that could be imposed on a project if it is carried out under the EU CAM Network Code under alternative allocation mechanism (AAM). It remains to be seen which caps the Hungarian and Bulgarian regulators decide to require for their interconnection sides with Serbia i.e. whether they will match those required by the Secretariat or not. Notably, CAM Network Code already applies in both Hungary and Bulgaria (and hence they could use AAM) but their regulators have a right not to apply CAM Network Code on the borders with non-EU countries.*

*24. Opinion 1/2019', Energy Community Secretariat publication, 1 February 2019*

*25. Serbia did not have an option of developing these connections under the incremental capacity procedure as the CAM NC is not yet applicable there.*

*26. European Gas Conference, Vienna, January 2020.*





## The TurkStream's Impact on Gas Flows[27]

The launch of the TurkStream pipeline in January 2020 has resulted in diversion of transit volumes away from Ukraine. Previously, Gazprom delivered gas to western Turkey via Ukraine, Romania, and Bulgaria, along the Trans-Balkan Pipeline. The volumes destined for western Turkey are now being delivered via TurkStream. Moreover, the launch of a new pipeline connection on the Turkey-Bulgaria border (Strandzha-2) means that volumes previously delivered to Bulgaria (as well as to Greece and North Macedonia) via the Trans-Balkan Pipeline are also now being delivered via TurkStream. Therefore, only a residual volume of exports to Romania are still made along the Trans-Balkan Pipeline.

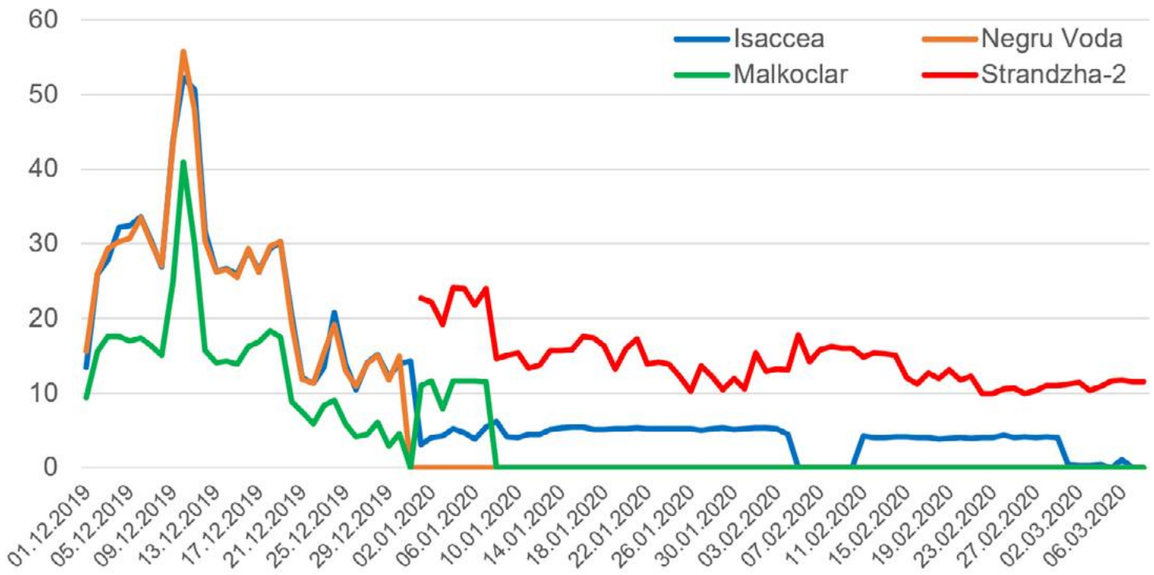
This effect is quantified by the decline in flows along the Trans-Balkan Pipeline. At Isaccea on the Ukraine-Romania border, monthly average flows fell from 24 mmcm/d in December 2019 to 5 mmcm/d in January 2020. Physical flows from Romania to Bulgaria (at Negru Voda) fell from an average of 25 mmcm/d in December 2019 to zero on 1 January 2020. Physical flows from Bulgaria to Turkey (at Malkoclar) fell from an average of 13 mmcm/d in December 2019 to zero from 8 January, the launch date of Turkish Stream. Conversely, flows from Turkey to Bulgaria jumped from zero in December 2019 to an average of 16 mmcm/d in January 2020.

In February and March 2020, the picture changed slightly. Flows from Ukraine to Romania at Isaccea fell to 3.4 mmcm/d in February and 0.3 mmcm/d in the first week of March, while flows from Romania to Bulgaria (at Negru Voda) and from Bulgaria to Turkey (at Malkoclar) remained at zero. This suggests that Romanian imports of Russian gas via Ukraine fell at the beginning of March. Meanwhile, flows from Turkey to Bulgaria at Strandzha-2 fell from 16 mmcm/d in January to 13 mmcm/d in February and 11 mmcm/d in the first week of March.

Therefore, the volume of Ukrainian transit redirected to TurkStream is that destined for Bulgaria, Greece, North Macedonia, and western Turkey. That volume totalled 9.2 bcm in 2019 (down from 17.1 bcm in 2018 and 19.2 bcm in 2017), at a daily average of 25 mmcm/d in 2019 (down from 47 mmcm/d and 53 mmcm/d in 2018 and 2017, respectively). In other words, if all other factors are equal, the launch of Turkish Stream could cause Russian gas transit via Ukraine to decline by 9.2 bcm per year (25 mmcm/d) in 2020, compared to 2019.

*27. This text – with the update for February and March 2020 – is taken from Pirani, Sharples 'The Russia-Ukraine gas transit deal: opening a new chapter', OIES Insight 64, February 2020, https://www.oxfordenergy.org/publications/the-russia-ukraine-gas-transit-deal-opening-a-new-chapter/?v=79cba1185463*

Figure 2. Cross-border Gas Flows in South-Eastern Europe (mmcm/d)




Source: Data from ENTSOG Transparency Platform

## Conclusions

Construction and start of operation of TurkStream – together with the conclusion of the post 2019 Ukraine transit agreement for 2020-24 and anticipated finalisation of construction of Nord Stream 2 in the early 2020s – is an important building block towards the realisation of Gazprom's transit diversification strategy. This strategy is aimed at Gazprom achieving increased flexibility in choosing between different export routes by which to deliver Russian gas to Europe by means of creating a considerable surplus of Europe-bound export pipeline capacity. TurkStream, completed in late 2019 and launched in early 2020, has already allowed Gazprom to re-route its exports to western Turkey, Bulgaria, Greece and North Macedonia away from Ukraine. Further onshore connections in Bulgaria, Serbia and Hungary, enabling the second line to reach its design capacity, are under construction and could be operational in 2022; progress already made suggests this schedule is realistic.





# The TurkStream Pipelines:

## Changing Dynamics in the Turco-Russian and Southeast European Gas Trade

**by Mehmet Ogutcu**

*An internationally recognized authority on energy diplomacy, geopolitics, finance and investment, Mr Ogutcu currently chairs Global Resources Partnership, a UK strategic advisory group, serves as Chair of The Bosphorus Energy Club and The London Energy Club, and Special Envoy of The International Energy Charter. Previously, he served as Prime Minister's advisor and career diplomat in Beijing, Brussels, Paris and London. Mr Ogutcu was a principal administrator for The International Energy Agency and moved to the OECD to lead international investment. He was a director for the BG Group (formerly British Gas), now part of Shell; and sat on a number of national and international company boards as independent non-executive director. He is also a strategist in international boardrooms.*



Mehmet Ogutcu

**In the post-pandemic era, the call is for the world's energy system to be transformed completely. It has been changed before, but never as fast or fully as must happen now. Inevitably, the overall role of natural gas and the Turco-Russian gas partnership will also be duly progressed in this process. It is already happening in a path which many have failed to foresee.**

The blossoming Turkish-Russian partnership, now at unprecedented levels, has seen its ups and downs over the past two decades. Natural gas trade has traditionally served as a major backbone of the "marriage of convenience" between the two countries since 1986, starting with Russian supplies of 6 billion cubic meters (bcm) per year. This small volume was instrumental in cleaning Ankara's polluted air.




Now the TurkStream pipeline, with its two strings, is likely to further evolve the strategic gas partnership not only between Ankara and Moscow but also in expanding outreach to the South East European markets at a time when gas business may not be in good health.



Chairman of the Management Committee of Gazprom Alexey Miller and Chairman of the Board of Directors of BOTAS Mehmet Konuk signing Memorandum of Understanding to construct gas pipeline across Black Sea toward Turkey
Source: Gazprom

There are many reasons for this, emanating from both countries. For one, Turkey's new energy strategy has changed to rely more on renewables, local lignite and flexible LNG contracts[1] in its power mix. Demand has declined. LNG option has turned to be more competitive than pipeline gas. Almost all of the disadvantageous "take or pay" contracts will expire in the next six years and some even earlier while the damaging effects of the corona pandemic may also fasten the change in the dynamics of the Russian gas imports to Turkey.

*1. With demand weak amid the coronavirus pandemic, super-cooled LNG is much cheaper than gas via the pipelines, where pricing terms are largely fixed.*

There are signals that the traditional natural gas business is likely to further suffer because of an economic downturn, the corona crisis and the excess capacity in the Turkish power industry that has discriminated against natural gas.

The Russian gas supply has already been reduced from 24 bcm — or more than 50% of Turkey's gas imports — a few years ago down to 15.51 bcm at the end of 2019[2] . As of March 2020, Turkey further cut back imports from Gazprom by sevenfold year-on-year to a symbolic 206 million cubic meters[3] .

Contracts for 8 bcm/year of the Russian gas (half private importers and other half by Botas) are due to time out in 2022. They are not the only contracts running down. 79% of Turkey's total gas import contracts are up for renewal by 2026[4].

Although a significant volume was lost in trade, Turkey remains Gazprom's third-largest gas consumer among European countries after Germany (53.5 bcm) and Italy (22.1 bcm). It pays, reportedly, the highest price for gas — $ 250 to $ 280 per thousand cubic meter, while in the European Union the prices are around $ 110 - $ 120 or less[5].



Russkaya compressor station, terminal point of the Russian section of the TurkStream
Source: Gazprom

With Turkish gas demand falling, contracts to be renewed and imports still well below Turkey's current gas portfolio, Ankara has considerable potential for negotiating substantial price reductions and new sources in the next six years.

*2. https://www.dailysabah.com/business/energy/lower-lng-prices-undermine-russias-natural-gas-pipeline-exports-to-turkey*

*3. https://www.reuters.com/article/us-russia-gazprom-exports-idUSKBN22V2GH*

*4. 57.9 bcm (pipeline and long-term LNG) and 80% of its 52.2 bcm pipeline import portfolio*

*5. https://www.turkishminute.com/2020/02/14/turkeys-natural-gas-purchases-from-russia-dropped-by-35-3-pct-in-2019-report/*

Over the past few years, the Turkish government has made significant structural changes in the country's energy sector. In particular, it reduced the share of gas in power generation[6] and substituted it via the locally produced lignite and renewable resources. Nearly half of Turkey's electricity production in April 2020 was generated by hydroelectric power plants, while the share of wind tribunes (10.3%) passed that of natural gas plants (7.7%)[7].

Reducing gas for power consumption has been possible thanks to Turkey's current excess generating capacity, which has forced down power prices on Istanbul's EPIAS power market[8]. There is also a deliberate policy of bringing in more competitively priced spot LNG cargos vs pipeline gas.

The next aspiration for Turkish leaders is to pursue the national goal of becoming a natural gas trading hub, selling to third countries the excess gas from TANAP and TurkStream that Turkey will have access to. For this purpose, Turkey will insist on lifting destination clauses in the current and future contracts.

There are also two new potential sources of gas supply to Turkey — Iraq and the East Mediterranean region — but they are fraught with political, geopolitical and economic difficulty, so their materialization remains relatively remote.

***

Turkey, which ranks the world's 18th and Europe's 7th largest economy, depends on foreign imports for 98% of its gas supplies. Therefore, gas supply security is clearly a strategic matter — not only for energy security but also for national and economic security.

*6. Out of April 2020's total production, 47.6% was generated by hydro plants, while 13.7% was derived from imported coal and 7.7% from natural gas power plants. The share of local coal plants in electricity generation was 14.1%. Wind plants generated 10.3% and the remaining 6.4% came from geothermal, fuel oil and biogas plants.*

*7. https://www.hurriyetdailynews.com/share-of-renewables-in-energy-generation-soars-in-turkey-154434*

*8. https://www.oxfordenergy.org/wpcms/wp-content/uploads/2018/01/Gas-Supply-Changes-in-Turkey-Insight-24.pdf*



The TurkStream launched in January 2020 by Erdogan and Putin is a relatively small component of the wider gas supply chain to the EU, representing just over 6% of such imports. Yet, seen from Moscow, this pipeline is potentially a significant addition to Russia's capabilities to export gas to Europe and Turkey. When TurkStream's second phase will be completed and operational, it would represent between 16% and 19% of Russian sales to the EU and Turkey (all other factors remaining unchanged).




Official launch ceremony on January 8, 2020. Prime Minister of Bulgaria Boyko Borissov (left), President of Russia Vladimir Putin, President of Turkey Recep Tayyip Erdogan and President of Serbia Aleksandar Vucic
Source: kremlin.ru

The offshore component of the system consists of two parallel pipelines running through the Black Sea, which enter the water near Anapa, on the Russian coast, and come ashore on the Turkish coast in the Thrace region, near the town of Kiyikoy.



While the pipeline will surely reduce transit revenues for transmission system operators significantly, including Ukraine's $3 billion earnings from transitions[9] , it will facilitate South Eastern Europe's interconnectivity through the building of a second-string capacity through Bulgaria and Serbia, paving the way for Russian gas to reach Hungary.

Additionally, TurkStream is expected to further boost Turkey's geo-strategic importance as an energy hub, coupling Ankara's ambitions in this field with Russia's drive to protect its share in the Turkish and EU natural gas market[10].

The TurkStream's other meaning is that Turkey is contributing to an essential element of Russia's multi-pronged, long-term strategy of remaining Europe's major gas supplier, while creating a "third gas corridor" in addition to the Ukrainian and Baltic Sea supply routes.

Gas from TurkStream-2 reaching the final destination of the Baumgarten physical gas trading center of Austria is unlikely to affect the markets of South East Europe, targeted by the EU-backed Southern Gas Corridor ending in Italy after the completion of the TAP linked to TANAP.

*9. Gazprom's 31.5 bcm/year TurkStream pipeline — delivering gas to Turkey through one 15.75 bcm/year string, and transiting gas to Bulgaria through the other — has provided a powerful trump card in negotiations with the EU and Ukraine in replacing the existing export line through Ukraine. Gazprom's transit contract with Ukraine expired at the end of 2019 and was extended for five years under a re-negotiated deal with the Ukrainian Gas Transmissions Systems Operator remapping how they transmit energy, making it more of a European-style system.*

*10. Historically, Russia has taken its responsibility to provide reliable gas supplies seriously and has fulfilled its contractual obligations even in times of crisis when many people feared of possible disruptions.*



However, if additional gas supplies come from Shah Deniz-3, Absheron, Ümit, Nakhchivan areas, even across the Caspian from Turkmenistan and Kazakhstan, the Kurdish region of Iraq and the Eastern Mediterranean, then there will be vigorous gas-gas competition with Russian gas pipelines. As part of a well-balanced strategy, Ankara is actively participating in and strongly supporting all pipelines projects, almost equally.

One thing is however clear: pipelines are not only to connect the producing areas with consumers, but they also create strong bonds and mutual dependencies between countries in and across which they are built, with at least 50 years of life cycle.

The US opposes the TurkStream (alongside the NordStream-2) on the grounds it would strengthen Russia's economic and political grip over Europe and also erode Ukraine's role in natural gas transit. The real intention is, however, different: opening more room for its own LNG exports to Europe and Turkey. Turkey has managed to receive at least one-third of its natural gas supply from LNG as of April 2020 and, surprisingly, 40% of this came from the US as part of a $100 billion trade target with the US.

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Turkey and Russia should prepare themselves for the new era in natural gas. The "take or pay" long-term contracts will need to be more flexible, prices adjusted accordingly to hub-based indexes, with the provision of export to third countries provided.

Declining costs and rising capacity factors of renewable energy sources, along with increased competitiveness of battery storage, will affect natural gas business. The growth in LNG supply, competitive prices, and the FSRU facilities mushrooming will likely have consequences for pipeline gas. There is also a growing anti-natural gas lobby in the context of a non-fossil fuel green future[11]. These trends will affect the course of the decades-long gas partnership between the two countries.

*11. The gas industry's challenge is to better explain the connection between infrastructure projects and a long list of public benefits: more reliable energy supply, lower energy costs, more efficient energy use, and improved safety among them.*



# Will the Pandemic Alter Our Climate Ambitions?

**by Julia Elmgren**



**Julia Elmgren,**
Carbon Trader,
Gazprom Marketing&Trading

Global emissions have taken a real beating this year. And expectedly so – with the spread of the novel coronavirus, many countries have implemented either lengthy complete lock-downs or at the very least closed schools and introduced new social distancing rules. This has led to a drastic halt not just of the production of raw materials and goods, but also of our emission-intensive, consumerist society. And because of stay at home orders, surface transport and aviation have practically ground to a standstill. Unsurprisingly these two sectors have seen the most significant change in activity since the spread of the coronavirus - down by between 50-75% since before the crisis.

Recent reports suggest global emissions as a whole are down at levels last seen in 2006. In real terms, emissions fell by about 1,000Mt over the period from January – April in 2020 compared with 2019, or 8.6%. This is good news for environmentalists, but also lends itself to another very sobering thought: We would need to maintain the same rate of annual reductions in emissions for a whole decade to have a chance of limiting global warming to 1.5 C° by 2050.





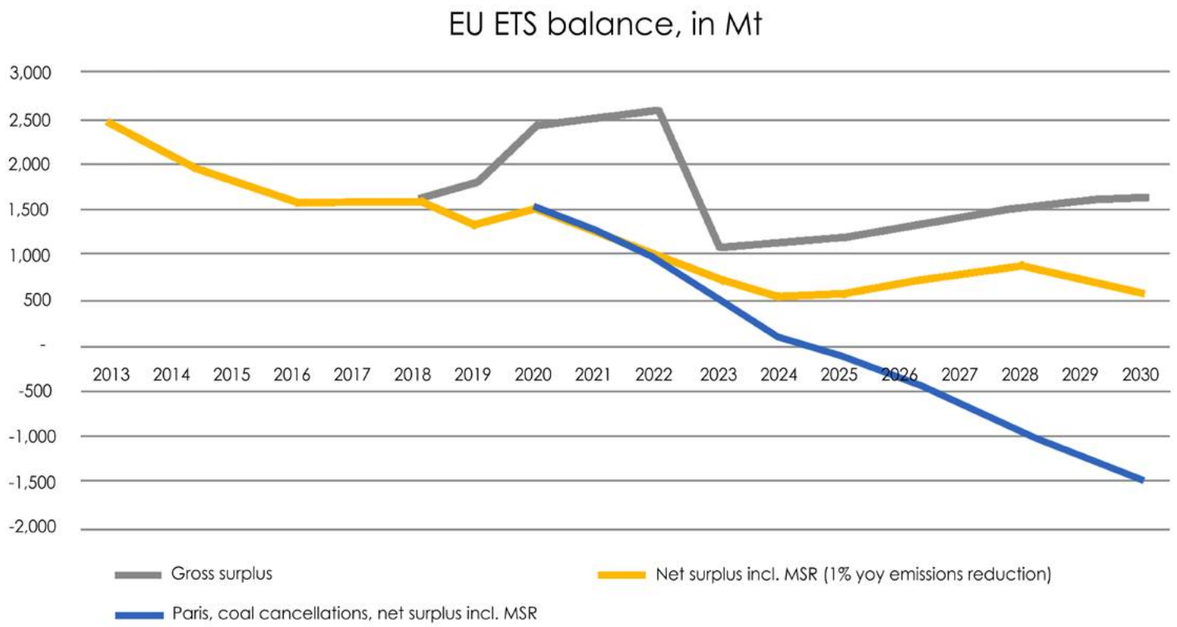
Limiting global warming to a scientifically acceptable level is, of course, the main aim of the Paris Agreement and the global talks on climate change. These talks were meant to continue at the COP26, scheduled to be held in Glasgow at the end of this year, but have now had to be postponed. Will there be enough political will to maintain the momentum on the recent climate change ambitions in the face of one of the most severe recessions we have had to face?

In Europe, I think the answer is a resounding yes. Here, climate change has been at the forefront of political ambitions from the start, and despite the hard-hit that economies will endure this year, the EU has in recent weeks made it clear that it will not let climate change drop to the back of the agenda. Germany, who will shortly take over the EU presidency for the second half of this year is taking the lead in this respect - they have not only announced an increase to the carbon price in the transport and heating sectors scheme starting next year (from €10/t to €25/t) but have also joined France in calling for a floor price for the flagship EU Emissions Trading Scheme (ETS).

If we look more closely at the EU ETS, which covers emissions from the power generation and industrial sectors, emissions are expected to be down by about 150-200Mt in 2020 compared with 2019. This is a significant amount for a system that is set by relatively static annual allocation methods, and that struggled to cope with a similar sudden reduction in emission the EU experienced back in 2009. Now, however, significantly tighter emissions targets are imminent, and as a result, prices swiftly recovered from the initial shock in March and are now back to near pre-COVID-19 levels. This can to a certain extent be attributed to the introduction of the Market Stability Reserve last year, which is designed to absorb excess volume, but one can also identify the start of a significant shift in the behaviour of market participants.

In the industrial sector, the majority get their emissions allowances allocated for free, so they could easily sell any surplus in moments of distress. However, with the prospects of the tighter 50-55% emissions reduction target by 2030 as announced by the European Commission, more and more companies are now forecasting higher prices in the future and are less likely to part ways with their allowances. Many companies, especially in the emissions-intensive cement and steel sectors, have announced their internal targets to reduce emissions, and have started implementing pilot projects. This is certainly part of the reason why prices for allowances in the EU ETS have retained their relative strength.

And if there are any remaining doubts about the positive impact of the EU ETS, one must look only as far as the power




Source: Gazprom Marketing&Trading

sector, where emissions are down by roughly 30% over the last decade. This is as a result of both the expansion of renewable generation and more recently by the improved economics of natural gas power generation, encouraged by the long-term targets set by the EU and which together have displaced a large part of Europe's old coal and lignite generation fleet.

So how do we make sure that we achieve the emissions reductions over the next decades as seen in the power sector, in the wider economy without the economic chaos of a pandemic?

Compelling arguments have certainly been made to attach environmental conditions to the economic stimulus and state-provided loans – thus guiding the continent on to a more sustainable emissions trajectory whilst ensuring jobs are maintained. Encouraged by its success stories, Europe should feel confident in its chosen policy tools to combat climate change and should strengthen its climate targets, as well as roll out carbon pricing to further sectors. The world needs its climate stalwart, and Europe has never been better placed to lead the way globally to a successful implementation of the Paris Agreement.





# Gas Industry's Response to COVID-19 Challenge

COVID-19 pandemic has abruptly transformed people's lives and is still getting the humankind adapted to the new reality. During the months of the disease's peak, doctors and volunteers have fairly been declared the heroes of today. Among others, natural gas sector employees have shared the burden of maintaining normal life against the gloomy pandemic background, as well.



Source: Gazprom

In Europe, Italy's Snam was one of the pioneers who put in place measures to guarantee stable gas supply during the disease outbreak. Reportedly, a maximum security protocol was introduced so that the company ran its operation in two-week shifts. As it was then revealed by Snam CEO Marco Alvera, before the start of the shift the whole team was tested to ensure that they were COVID negative and then placed into isolated accommodation near the dispatching center, where they worked and lived safely 24/7 for fourteen days before being relieved by another shift.

Austria's OMV **has responded** to the COVID crisis with targeted measures aimed at securing stable uninterrupted supply of energy. According to Rainer Seele, Chairman of the Executive Board and CEO of OMV, employees who were critical to the business or supply security were the only ones working in the field — not from home — and they were subject to stringent safety and hygiene standards to be protected as well as all of the company's partners and customers.

Gas Infrastructure Europe (GIE) **highlighted** that EU's gas transmission operators were adapting to the way they ran their business to ensure that their staff were safe and uninterrupted supplies of gas were secured. According to Stephan Kamphues, the



President of the European Network of Transmission System Operators for Gas (ENTSOG), regional cooperation and coordination between TSOs assisted to ensure the stable flow of gas throughout the whole Europe.

In a similar context, Andreas Rau, CEO and Managing Director of NET4GAS (the Czech Republic), guaranteed that his company was fully aware of the severity of the situation and of the responsibility to ensure uninterrupted gas flows. "Our staff has fully supported changes to their work and the management reacted quickly, with the interests of the staff and customers in mind", said Rau. "Gas pipeline operators across Europe work together to keep you safe", reaffirmed GIE.

Chairman of the Executive Board of Natural Gas Distribution Companies Association of Turkey (GAZBIR) Yasar Arslan thanked the field teams who were in response of conducting continuous installation and maintenance works even in quarantined homes. He revealed that every day around 6,000 operations were performed by natural gas distribution companies in households in Turkey. "Of course, such a number of installations brings risks", said Arslan. In order to restrict the employees' contact with the citizens, wearing gloves and masks was introduced by the Association as a strict safety measure.

"Along with the entire planet, our company is fighting an invisible enemy. While we know we will come out victorious, the collective target is to do so with as few human casualties as possible". This manifesto **was published** few months earlier by the Greek Mytilineos company and might serve as a good proof of how the industry can help everyone coming victorious even out of the darkest days.





# What Makes Spot Prices So Low and Volatile?

**by Sergei Komlev**



**Sergei Komlev,**
Head of Contract Structuring and Price Formation Directorate, Gazprom Export LLC

Today's level of spot prices in Europe and Asia comes as a surprise to many. Endless price degradation, which started in November 2018 in Asia and reached Europe later on, triggered a discussion of a possibility of below zero prices on TTF and NBP. Discussion referred to prompt contracts – such as within-day or day-ahead rather than contracts further out. I, personally, rule out that possibility. Sub-zero prices are characteristic for the gas industry upstream only. Prices on Waha Hub in West Texas in the USA periodically go negative when a surplus of associated gas from the booming shale oil production outstrips regional demand. In Europe, negative prices on NBP were registered only once in 2006 and for a short period of time when new production from a huge Troll field came on stream earlier than expected.

Prices testing new lows raise another important question. These developments create an impression that gas prices overreact. How relevant is that impression? This article seeks to answer this question.

It is apparent that LNG from the first wave of liquefaction projects and not pipeline gas has to be blamed for the current oversupply. The global coronavirus pandemic came later and did not cause it, although it turned things from bad to worse and delayed a move towards a more balanced market. It is also apparent that it is not gas in the ground but excessive gas stocks in Europe that hammer hub prices.

Gazprom Export estimated that at the end of 2019 the surplus of gas in European storages compared to 2018 was 21 bcm. That surplus in relation to total European imports in 2019 (360.6 bcm) made 6%, compared to consumption in Europe 4% (559.0 bcm) and 4% compared to the global LNG supplies (500.5 bcm). Average prices month-ahead on TTF dropped by 37.7% year-on-year.

Another thing that draws attention is the apparent mismatch of the size of oversupply of LNG and their devastating effect on prices in Asia. Thus, compared to 2018, the growth of demand for LNG in Asia in 2019 (9.2 bcm) was more than enough to accommodate growth of supply in the entire LNG market outside Europe. However, LNG consumption by three largest buyers, Japan, China and South Korea, decreased by 4.2 bcm in 2019 compared to the previous year, on the back of an increase in supply, see Table. 1.

**Table 1. Geography of LNG supplies in 2018-2019, bcm**

| | 2018 | 2019 | Change |
|---|---|---|---|
| Japan | 115.5 | 107.4 | -8.1 |
| China | 74.3 | 83.4 | +9.1 |
| South Korea | 61.9 | 56.7 | -5.2 |
| Total for the top three buyers | 251.7 | 247.5 | -4.2 |
| Asia, total | 335.8 | 345.0 | +9.2 |
| Total, except Asia | 111.7 | 155.2 | +43.5 |
| Total | 447.5 | 500.2 | +52.7 |

Source: IHS Markit, SIA Energy

Even assuming that there is no single Asian market, a relatively smaller offtake by the top three buyers was sufficient for the average prices of JKM front month to plunge by 43%, from $9.75/MBTU to $5.49 /MBTU.

Although the Asian price premium, as measured by the difference between spot prices in Europe and Asia, remained positive throughout the year, it was below the level that previously made shipments to Asia more attractive than to Europe. As a result, all the growth of flexible LNG poured into the European continent.

How these 4.2 bcm managed to make a history? Of course, we know even from the very recent history, how much hydrocarbon markets are prone to panic, but it is impossible to blame the collapse of LNG prices in Asia on panic. The arrival of new LNG was not a surprise; it made the headlines since the end of 2015. Business plans of the sponsors of the LNG plants, which relied on conservative forecasts of demand dynamics in Asia, clearly did not assume a disastrous collapse in market prices.

It is possible to speak about the next miscalculation of the industry experts with an assessment of demand with a large degree of conventionality. Of course, the demand for LNG in Japan and South Korea was below expectations, partly due to warm winter and the resumption of nuclear power plants, but, on the other hand, no one expected a surge in natural gas consumption from China. Imports of LNG from 2015 to 2019 tripled. The latest data indicates that demand for LNG has not decreased even after the outbreak of coronavirus. In January-April 2020, it amounted to 28.2 bcm and was 5% higher than in the first four months of 2019. To my mind, the overreaction of spot prices results in the two-segment composition of the regional markets.

Regional natural gas export markets in Europe and Southeast Asia have a two-segment structure. Deliveries to one, the largest segment of the market, come from the long-term contracts (LTCs). In another smaller market segment, demand is met by the spot deliveries. Prices in both segments differ from each other but are interdependent.

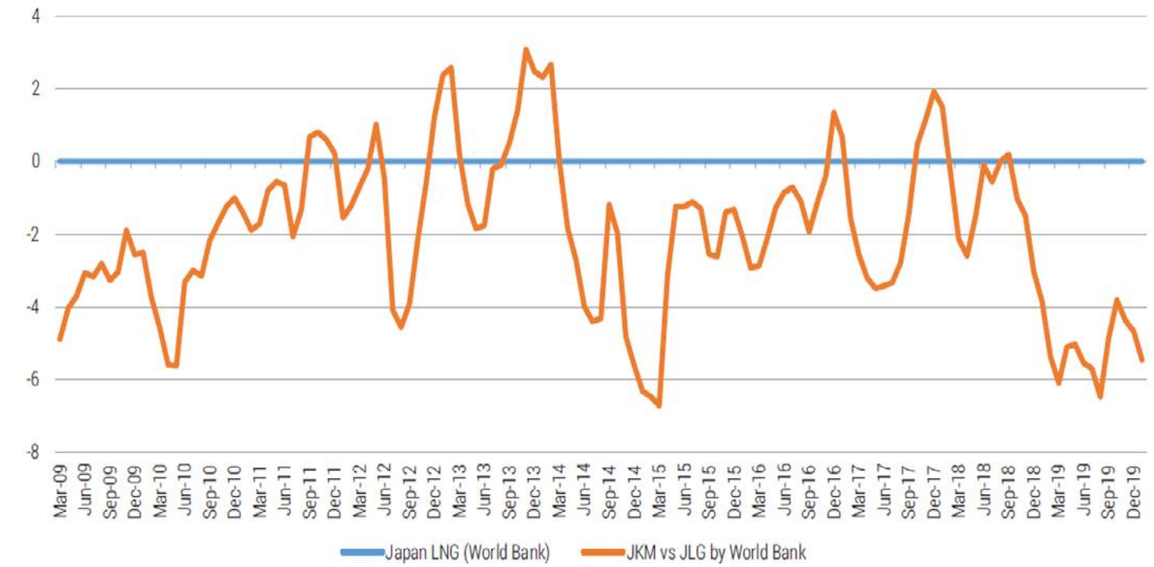
The dominance of LTCs in international trade leads to their "gravity-center" function in relation to spot prices. When regional gas market is tight, spot prices reside above the LTCs prices. When market is loose, they reside below the LTCs prices, but in any case, LTCs' prices serve as anchor prices for spot gas.

The "anchor" nature of the prices of long-term contracts relative to spot prices is manifested in the fact that they, with a certain frequency, characteristic of the state of the balance in the gas market, oscillate around the LTCs prices. "Swings" of the spot price around the contract one is shown in Figure 2.



Source: Gazprom

## Fig. 1. The Ratio of Spot Prices (JKM) to Long-Term Contract Prices (JLNG) in Japan




Source: Platts, World Bank

All other things being equal, the greater the surplus, the greater the negative spread between spot and contract prices. The greater the deficit, the greater the positive spread between spot and contract prices. The moment when spot prices cross the level of contract prices signals an emergence of the market imbalance. It should be noted that the emergence of the "anchor" price is not an exclusive feature of the international trade in natural gas. It is common to all commodity groups where long-term contracts dominate supply.

Demand in the contract segment equal to supply by definition. Taking into account that all market imbalances are concentrated in the spot or uncontracted segment of the market, its prices are overreacting to even insignificant market imbalances. This thesis can be illustrated by the following example. From the point of view of the global LNG market, 21 bcm of oversupply accounts for only 4%. However, in relation to the spread segment of demand (27% of 500.2 bcm or 135 bcm) the imbalance will be 16%. Unsurprisingly, prices in the spot segment



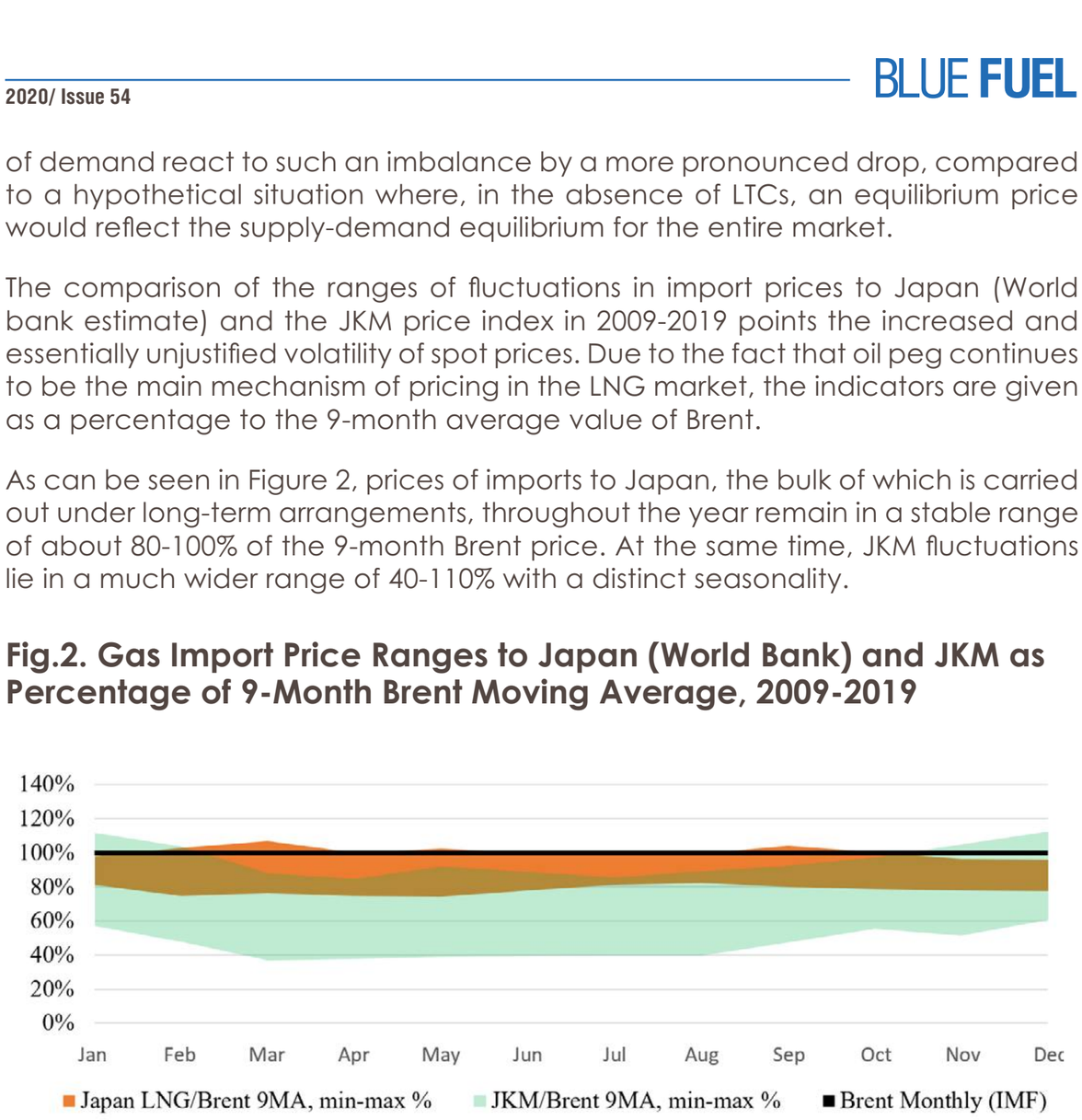


of demand react to such an imbalance by a more pronounced drop, compared to a hypothetical situation where, in the absence of LTCs, an equilibrium price would reflect the supply-demand equilibrium for the entire market.

The comparison of the ranges of fluctuations in import prices to Japan (World bank estimate) and the JKM price index in 2009-2019 points the increased and essentially unjustified volatility of spot prices. Due to the fact that oil peg continues to be the main mechanism of pricing in the LNG market, the indicators are given as a percentage to the 9-month average value of Brent.

As can be seen in Figure 2, prices of imports to Japan, the bulk of which is carried out under long-term arrangements, throughout the year remain in a stable range of about 80-100% of the 9-month Brent price. At the same time, JKM fluctuations lie in a much wider range of 40-110% with a distinct seasonality.

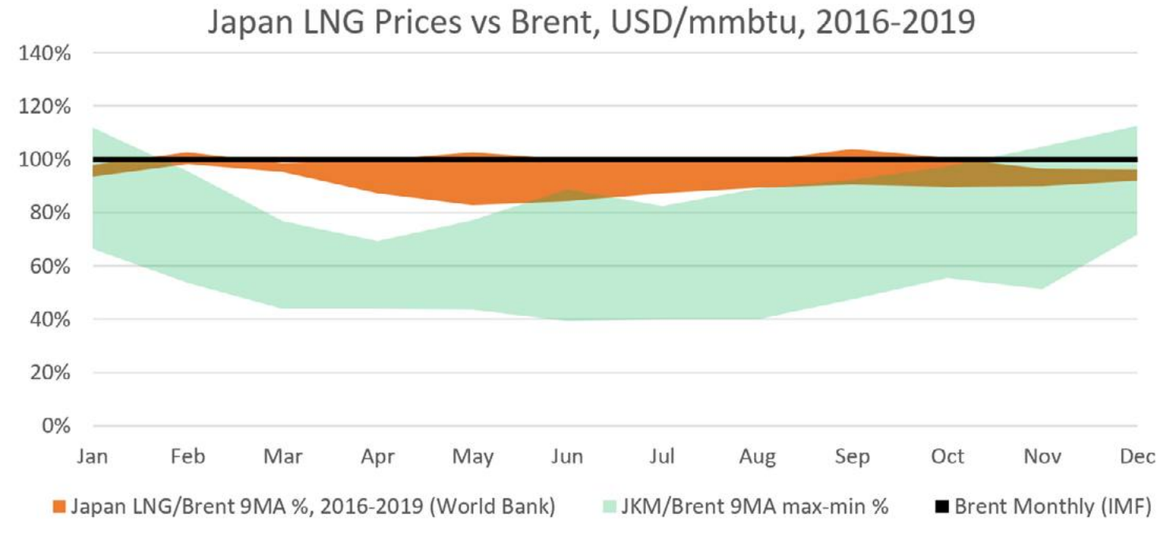
## Fig.2. Gas Import Price Ranges to Japan (World Bank) and JKM as Percentage of 9-Month Brent Moving Average, 2009-2019




Source: Platts, World Bank

Even more volatility is evident when comparing supply prices for long-term contracts to Japan and JKM index over the past 5 years: the average width of the range of fluctuations in contract prices is 12%, while for JKM it is 43%, see. Figure 5. I attribute the trend to increased volatility to the growth of the overcontracting Asian market.

**Fig. 3. Average Gas Import Price Under Contracts to Japan (World Bank) and JKM as Percentage of the 9-Month Moving Average Brent, 2015-2019**




Source: Platts, World Bank

Spot/hub prices are extremely sensitive to even minor imbalances. Suppliers of gas has to consider this live with it and develop instruments to cope with it. Unlike the oil market, there is no OPEC-type institution for a coordinated response to address the glut. It remains purely a responsibility of the individual market players. The first thing to do is to enhance volumetric flexibility of the supply by finding an optimal combination of term and spot contracts which would provide security of supply and demand on the one hand and the ability to respond to the demand swings on the other.




Source: Gazprom





# Gas Markets in Post-COVID World

**by Sergei Eremin**

**The instability of world energy markets is a consequence of not only the coronavirus, but also of a number of economic imbalances and factors.**



**Sergei Eremin,**
Professor, D.Sc. (Econ.)
Gubkin State University of Oil and Gas,
Moscow, Russian Federation

We have entered a new era. In past times, the key challenge of the energy crisis was the risk of a shortage of energy resources or high prices, today the greatest concern is the shrinking demand and low prices of the energy resources. This is a completely new paradigm that we have to live in. It requires building up a new system of economic and market balances.

Oil is experiencing the most dramatic situation. It seems that oil demand will not recover to its traditional volumes for a very long time. Maybe even never. Work, commerce and communications in the remote access mode are increasingly crowding out offline activities and reducing the mobility of people. So, the motor fuel consumption is experiencing a great decrease.

But I am sure that the natural gas consumption will remain at about the same levels, and rather, will go up. First, office workers will stay at home and use more heat and electricity. Secondly, plummeting prices is a good chance for gas to compete efficiently with renewable energy sources. Third, reducing emissions from cars will reduce the rigidity of decarbonization policies and the risks of excluding natural gas from energy balances that has been very probable lately.

Still, where everything is not so bad for the gas itself, one cannot say the same about the players of gas markets. They will face fierce competition. The winners will be only those who own the best gas assets and advanced technological competencies, and who will also be able to manage the costs of gas supply as efficiently as possible.

The latter has become a meme of recent years, especially after American LNG entered the market. The competition of costs has developed the ability of suppliers to "sunk costs" relatively painlessly. The more costs a supplier can account for as "sunk" through hedging, credit policy, contract structure, subsidies, etc., the more efficient he is.

We can expect the upcoming spill of investors from the oil sector to the gas industry. LNG seems to be the most attractive segment. Despite the crisis, this sector is growing rapidly. Today, LNG has become an effective tool of balancing the global market, i.e. quickly redirects gas flows to meet emerging demand in any part of the world.




# Gasum Expands LNG Filling Station Network to Finland, Sweden and Norway




Source: Gasum

The European Union and the Nordic countries have set a strong agenda for reducing the emissions from transport. To achieve the ambitious climate goals in transport sector and especially to reduce the amount of emissions from heavy-duty vehicle, Nordic energy company Gasum is actively developing its biogas and natural gas filling station network. "The demand for clean and affordable road fuel gas is increasing sharply all the time, and opportunities to switch to gas as a road fuel are further improved by the growing station network", Gasum says in a press release.

According to the plans of the company, Gasum is investing in the construction of around 50 gas filling stations for heavy-duty vehicles in Finland, Sweden and Norway by the beginning of the 2020s. Several filling station projects are planned to be launched in 2020 in the Helsinki Metropolitan Area, Järvenpää, Lappeenranta, Tampere, and Turku. In Sweden, Gasum is planning to open LNG filling stations in Ljungby, Tuve and Helsingborg.

"The upcoming stations will be positioned at strategically relevant locations, expanding the operating range of LNG powered trucks even further in the Nordic countries. Gasum believes LNG to be the future fuel for heavy transport. The network of LNG filling stations is growing fast all over Europe, which helps the market and the infrastructure to develop further", states the company.




Source: Gasum

"LNG and biogas are an environmentally aware solution that is in reach today to respond to the growing challenges posed by emissions in heavy-duty transport. In addition to this, using gas can provide savings in fuel costs. The choice for such fuels can also be a positive statement to customers and consumers and make a company stand out from the competition", said Markus Kaarlela, Development Manager, Traffic, Gasum.

As a key part of Gasum's strategy execution to boost growth for cleaner transport solutions across the Nordics, the company acquired Linde AG's liquefied natural gas and biogas business in Sweden and Norway on April 30, 2020. As a result, Gasum acquired LNG terminals in Sweden and Norway; 48 gas filling stations in Sweden and Norway and bunkering vessels Seagas and Kairos.

> **We are very pleased about this transaction, which is an important step for Gasum when building the Nordic gas ecosystem and responding to increasing customer demand for low-emission energy solutions.**
>
> **Johanna Lamminen,**
> CEO, Gasum.



## Germany Extends LNG and CNG Trucks Road Toll Exemption

On May 14, 2020, German Bundestag has ruled to extend the exemption of trucks using liquefied natural gas or compressed natural gas from motorway toll for three years. The vehicles above 7.5 tons will not be charged until December 31, 2023.

It is expected that the extension will reduce the Total Cost of Ownership (TCO) and facilitate the use of natural gas vehicles (NGVs) in Germany as well as in Europe due to the central position of the country. It will also have a positive impact on growing LNG and CNG station networks. Transport speaker of the CDU/ CSU Bundestag fraction Alois Rainer told media that the policy will support the successful market launch of climate-friendly alternatives to diesel as well as create further business confidence among companies.

The industry's alliances and unions welcomed this ruling, pointing out that it will make investment decisions in the sphere of alternative fuels more secure. Head of Zukunft Erdgas Tim Kehler also praised the extension and warned that for 20 years the emissions of the German transport sector have not been decreasing.

The decision to extend the exemption followed the according resolution of the transport committee of the Bundestag, which is represented by the ruling coalition parties CDU/CSU and SPD earlier in May. However, the move has been criticized by several climate organizations and the Green Party. The latter insists that the ruling 'costs taxpayers money and does not bring anything in terms of climate policy'. In particular, the Greens believe that NGVs may take a share from railroad cargo transportation.



## Gazprom NGV Europe Optimizes Its CNG Station Network in Czech Republic

The optimization of the existing CNG stations network started with relocation of two underutilized stations to centers of higher demand and more optimal costs. In May, CNG stations in Hodonín and Pelhřimov were closed while CNG stations in Kolín and Opava were modernized to meet the increasing demand for bus and trucks fuel. Their capacity was increased and additional refilling spots were added.

Furthermore, by the end of the year, Gazprom NGVE plans to have another two CNG stations opened in the Czech Republic; further expansion of the network is scheduled for the next year.

Head of Gazprom NGVE branch office Tobias Jacobs says, "Gas mobility in the Czech Republic is a clear success story with steadily growing sales volumes over the last 15 years and one of the best CNG station network in Europe. Together with the continuous political support – like the recently approved National Action Plan for Clean Mobility – and attractiveness of gas vehicles, especially for the environmentally important public transport and logistics, we see a big potential for CNG and LNG in the Czech Republic. We want to support this positive development and will further invest in our station network".




CNG Station in Kolin
Source: Gazprom NGV Europe

## Natural Gas Motorcars Win Ecotest by German ADAC

Vehicles that use natural gas as a motor fuel are more environmentally friendly than the majority of electric vehicles, as well as vehicles with a hybrid engine. This was concluded by the experts of the General German Automobile Club (ADAC) within its annual Ecotest.

Of 122 cars tested by ADAC following 2019, only six were able to get the highest five-star rating. The leaders of this rating included three cars running on natural gas, with Volkswagen Polo and Volkswagen Golf that scored two very top positions in terms of points; as well as Seat Arona.

The General German Automobile Club makes a list of the most eco-friendly vehicles every year, taking into account such criteria as the amount of CO2 emissions as well as NOx emissions. ADAC experts consider both types of emissions regardless of vehicle size, class and fuel type.

## Greenhouse Gas Emissions in EU Decrease Significantly in 2019

Greenhouse gas emissions in the EU's industrial and power generation sectors decreased significantly in 2019. This follows from a communique published by the European Commission. "Emissions of greenhouse gases from all operators covered by the EU Emissions Trading System (EU ETS) in 2019 reduced overall by 8.7% compared to 2018 levels," says the report.

The most significant reduction, which amounted to 15%, was recorded in the power generation sector. The European Commission noted that this decrease was the result of a switch from coal to renewable energy sources and natural gas.

The Emissions Trading System (EU ETS) is one of the key instruments of the EU's climate change policy.

Source: https://ec.europa.eu/clima/news/emissions-trading-greenhouse-gas-emissions-reduced-87-2019_en





## Renewables to Become Essential by 2050

### In the meantime, gas remains a reliable form of energy

**By Bernd Porzelius**



**Bernd Porzelius,**
Managing Director Conexio GmbH

**Bernd Porzelius has been Managing Director of Conexio GmbH since July 2017. In addition, he also contributes as a speaker and member of the advisory board for third-party events and is member of the committee to ensure impartiality at Omnicert GmbH.**

*Conexio GmbH is a subsidiary of Solar Promotion Group, that holds exhibitions and conferences on renewable energy and energy storage worldwide (e.g. in Germany, the USA, Brazil, India). In Munich, Solar Promotion organizes the parallel events Intersolar Europe and ees Europe – the largest and most heavily visited exhibitions for the solar and energy storage industry. As a subsidiary, Conexio organizes events in renewable energy industry on behalf of its parent company in Germany and other countries.*

The share of renewables in the energy supply is steadily growing worldwide. It is important to use a combination of different renewable sources. Decisive here is the reliable supply, storage and distribution of renewable electricity. A good example of a successful renewable energy deployment is Germany. Driven by a long-term renewable energy policy beginning in the 1970s and, more recently, a nuclear power phase-out, the country has spearheaded a transition to renewable energy that is known as the "Energiewende".

The "Energiewende" has gained broad political consensus in recent years. Its main goals are climate change mitigation, better energy security and industrial development. Germany's experience continues to attract interest in a global renewable energy community and among national policy makers. It has inspired action in many countries around the world. Moreover, Germany has played a remarkable leadership role in the promotion of renewables in the international arena. Now it has an opportunity to show the world what the true energy system of



the future will be. The country has started on a process that will continue for years to come and will require constant evolution.

A new chapter in global energy supply started 20 years ago, when Germany introduced the Renewable Energy Sources Act (EEG)[1].

As the EGG came into force, it became obvious, that renewables were suddenly no longer the thing of idealists, but a future technology that the government wanted to promote and support. Our events and conferences, held by Conexio GmbH, began right from the "birth" of the renewable power industry in Germany and worldwide. Some of our annual conferences have been already celebrated their 20th and even 30th anniversary.

Energy industry is changing. Being the host of conferences and service supplier, Conexio brings those people together, who shape energy sector and are responsible for these changes. Innovators, political and business leaders, researches, economists, and experts meet up to achieve the most efficient results in transformation of the energy industry. We used to act and think big, as well as to develop a global mindset, although our headquarters and history began in Germany.

Since then, a lot has happened, despite of the fact that the pace of development in Germany has slowed down. Today we use the term "renewable energies" mainly to mean photovoltaics and wind, whether it is offshore or onshore project. It is a matter of a decision of politicians to promote intentionally these two types of energy production. As a fact, they complement each other very well –solar systems are more productive in the daytime and in summer, wind turbines at night and mostly in winter. This renewable energy supply can be stabilized through a smart distribution of systems, storage and innovations in the transmission and distribution network. Above all, an essential aspect for this stability is to link different sectors, i.e. transport, heat and power generation. At our events, we focus on the suitable innovations and business models for this development, because this way the entire industry benefits from the exchange and from the network, which inspires good ideas.

We will face further challenges in the coming years: Germany has set the goal to reduce its greenhouse emissions by 55 percent by 2030 compared to 1990. Our country even wants to become $CO_2$-neutral by 2050 – it is an ambitious goal of zero net output, which leaves room for various technologies. Researchers from the Fraunhofer Cluster of Excellence "Integrated Energy Systems" CINES currently have brought to light 13 points* of "Energiewende" in Germany, that show: Renewables, especially wind and solar energy, will become most essential and important sources by 2050[2] .



Source: Fraunhofer ISE

*1. The EEG first came into force on April 1, 2000 and was preceded by the Electricity Feed-in Act (1991) which entered into force on 1 January 1991. This law initiated the first green electricity feed-in tariff scheme in the world. The EEG has generally been a success and led to the particularly rapid uptake of two renewable energy technologies: wind power and photovoltaics. The act also covers biomass (including cogeneration), hydroelectricity, and geothermal energy.*

*2. https://www.ise.fraunhofer.de/content/dam/ise/de/documents/publications/studies/Fraunhofer-CINES-13-Thesen-Wie-die-Energiewende-gelingen-kann.pdf*



## 13 points to fulfill "Energiewende"

1. Renewables will become the most important energy source for heating, transport and electric power industry;
2. Biomass, sun thermal energy and geothermic may serve as additional energy source;
3. Efficient energy use covers an ultimate energy demand;
4. The growing energy demand in heating (buildings, industry), mobility and in raw products for chemical processes in long-term perspectives;
5. Volatile electricity determines the energy system;
6. The back up of rare cold "Dunkelflaute" situations ("dark doldrums" when there no sun shining and wind blowing) can be reached at low cost with increased power plants output;
7. Digitalization plays an important role in transformation of electric power system;
8. In matters of heat supply it's necessary to take into account regional and local recommendations related to fundamental decisions in infrastructure field;
9. A collaboration of all energy sectors plays an important role in achieving climate protection goals;
10. A balanced European development has advantages in using the best places/locations;
11. Hydrogen production via electrolysis from green electricity plays an important role in achieving climate goals;
12. The whole $CO^2$-filtration from the air will be a key technology to achieve climate protection goals;
13. Research and development are the key points of "Energiewende".





The nuclear power plants in Germany will be shut down by 2022, the coal plants by 2038. That leaves us 18 years to go. However, there will be only 12 years until 2050, the year, when we will have to achieve the large climate neutral target. During that period, natural gas represents a reliable form of energy, until renewables can support the entire energy supply in all sectors. We see already here interesting approaches by reducing the share of emissions in gas supply. For example, Power-to-Gas-Technology and further hydrogen innovations, supported in Germany though the national hydrogen strategy of the German government. The most interesting prospects for the coming years are possibilities to create regional market value chains and to integrate citizens into the supply network, so-called "prosumers"[3].

In the short term, however, we are facing a completely different challenge: the effects of a corona pandemic, which is making the global economy tumble. For us, it is a great opportunity to meet greater challenge of a green economy by linking sustainable conditions to financial support costs, both ecological and social. In the end, the fight against climate change was the key point on all channels until early 2020. We are deeply sure that there is a great opportunity to combine these two goals and get out of this current crisis stronger.



Source: Fraunhofer IWES

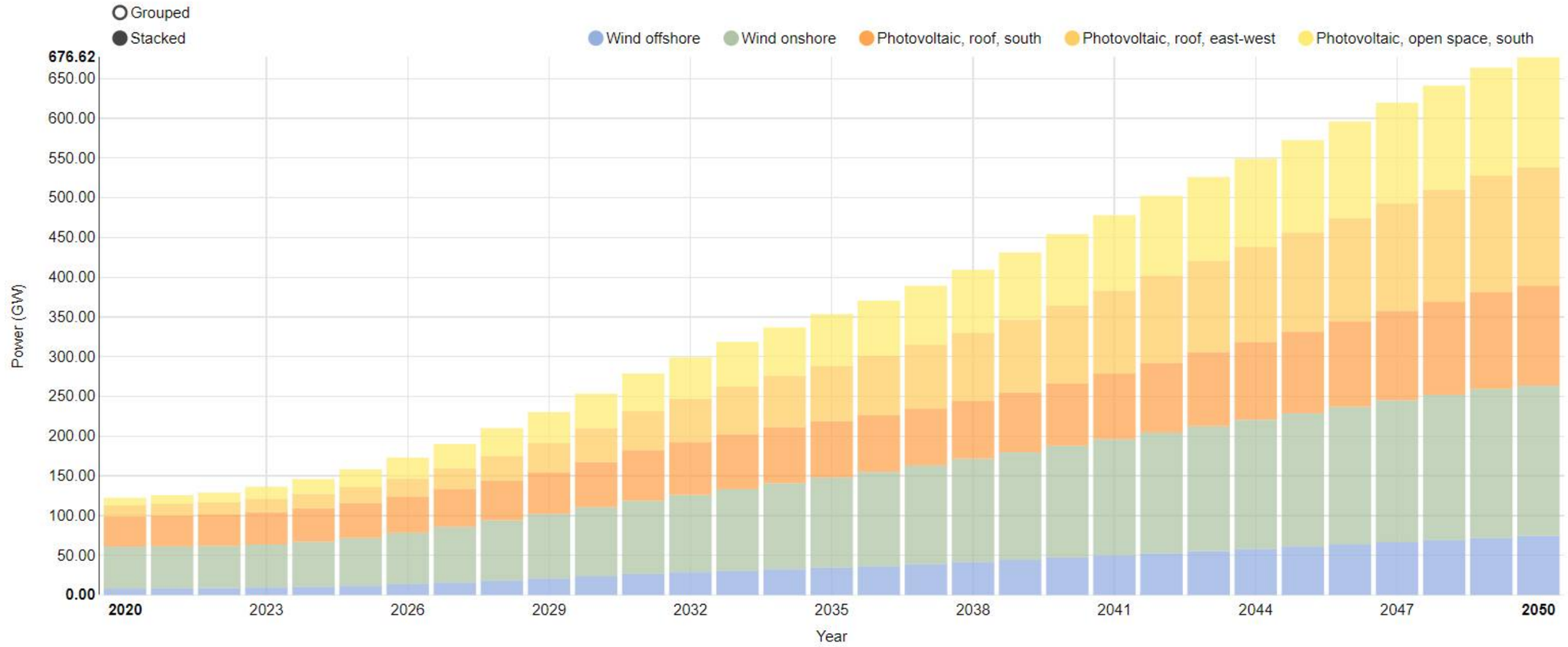
*3. A prosumer is a person who consumes and produces a product. The term is derived from prosumption, a dot-com era business term meaning "production by consumers". These terms were coined in 1980 by American futurist Alvin Toffler, and were widely used by many technology writers of the time. The term has since come to refer to a person using commons-based peer production.*



# Fraunhofer ISE Study 2020

## Installed capacity of variable renewables (VRE) for electricity generation in Germany

Source: https://energy-charts.de/remod_power_inst.htm?main=inst&source=fEE&scenario=Referenz




Fraunhofer ISE Study 2020: Towards a climate-neutral energy system.
Scenario reference: without further boundary conditions promoting or aggravating the achievement of the objective.
Disclaimer: Transformation paths and construction/dismantling rates represent results of the mathematical optimization with REMod for the study “Paths to a climate-neutral energy system” and are not to be interpreted as a forecast.
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