



# The Baltic gas market: a microcosm of Europe's struggle to quit Russian gas

## Introduction

The Baltic gas market was, until eight years ago, entirely dependent on Russia for supplies. Even as recently as 2021, 74 per cent of the region's 5.6bcm of gas demand was met by imports from Russia. However, following Russia's invasion of Ukraine in February 2022, all four countries have announced the intention to give up Russian gas, albeit with varying degrees of urgency and alacrity, ranging from immediate to the indefinite future. The effort of these countries to achieve this goal constitute the main focus of this paper: how do they intend to replace such a dominant supplier, particularly given their relative isolation from the European energy system, and what will it cost? This paper finds that the region will struggle to replace Russian gas in the short-term, with uncertain timelines for LNG projects and transmission capacity limitations throughout the region making the winter period look particularly tough. Even with demand reduction upwards of 50 per cent so far in 2022 in the region's largest consumer, Finland, it is likely that either further demand cuts, a resumption of imports from Russia, or potentially both will be necessary for the region to make it through winter without significant disruptions to businesses and households. This paper finds that the region's main alternative supply project — the floating storage and regasification unit (FSRU) to be placed either in Estonia or Finland — will be insufficient to meet peak demand in the winter, and that there are scant alternatives. Supply side constraints are worsened by Lithuania and Latvia's decision to ban imports from Russia, which could cause large price spikes in the region. A lack of pipeline connections to other markets severely limits the region's options outside of LNG.

The secondary focus of this paper is to look at the similarities between the situation in the Baltic market and the European one, and at what lessons Europe might be able to learn from it. While direct lessons that can be gleaned cannot be compared too closely owing to the sheer difference in scale between the two regions, this paper finds that there are distinct similarities between not only the problems facing both markets in terms of their reliance on Russian gas, but also in the solutions both markets are proposing, namely replacing as much pipeline gas from Russia as possible with LNG from elsewhere, reducing consumption, and increasing gas storage levels ahead of winter. While the Baltic region has a much lower volume to replace, it also has far fewer means, both infrastructural and monetary, with which to do so. Therefore, this paper finds the actions of the Baltic states and importers useful to observe for Europe going forward.

This paper will be divided into several sections: initially it will look at Russian pipeline flows to the Baltics before and after the war, how they have changed and why, and what the views of national importers are on Russian gas. The second section will look at the current infrastructure in the Baltics, and whether it is sufficient to meet demand in the region, with particular focus on capacity at Latvia's Inčukalns storage facility and Lithuania's Klaipeda LNG terminal. The third section will focus on the Baltic's LNG

plans, where there are three terminals currently at different stages of development, and whether they will allow the region to meet its energy needs, and how this relates to a wider renewed European emphasis on LNG. It will then turn to a brief overview of renewable power generation in the Baltics, and whether this might be an alternative to Russian gas, with Finland and Lithuania in particular looking to increase wind generation, and all four Baltic transmission system operators (TSOs) signing up to the European Hydrogen Backbone initiative, which could see green hydrogen produced in the region and exported to Europe via both new and existing pipelines. The paper will conclude with a discussion of the Baltic countries' struggle and whether it can be considered more widely applicable to a similar European one, or whether the sheer difference in scale makes the Baltic struggle more of a regional problem and solution, as opposed to a model Europe might follow.

## An introduction to the region

The Baltic states and Finland have traditionally relied exclusively on Russian supply to meet their demand for gas, via an extensive network of Soviet-era pipelines that criss-cross the region still today. Before Lithuania chartered the FSRU Independence in December 2014,<sup>1</sup> the Baltic market had no connections to any countries other than Russia and Belarus (see map below).



Source: Gasgrid Finland

<sup>1</sup> <https://www.kn.lt/en/our-activities/lng-terminals/klaipeda-lng-terminal/559>

Since then, the only other connection with the outside market is the newly-built 2.4bcm/yr Gas Interconnector Poland-Lithuania (GIPL) pipeline, a 500km line stretching from Hołowczyce in southern Poland to near Vilnius, the capital of Lithuania. GIPL began partial operation on 1 May 2022, with “full-scale” commissioning expected in October.<sup>2</sup> Since the beginning of May, the line has been steadily flowing towards Poland: despite GIPL finally connecting the Baltic market to Europe by pipeline, it currently acts as a drain on gas which might otherwise have stayed within the region.

The Balticconnector is a 150km pipeline running from Paldiski in Estonia to Inkoo in Finland, connecting the two countries’ gas grids and integrating Finland into the Baltic market. The pipeline began operating in January 2020, ending Finland’s almost exclusive reliance on Russian gas. Together with Estonia and Latvia, the three countries formed a unified gas market in 2020, removing tariffs between their networks and imposing common fees at all border points. There were discussions in November 2021 between the Finnish and Baltic TSOs about adding Lithuania to the unified market by 2023,<sup>3</sup> but Lithuanian TSO Amber Grid now says it is not aiming for this until Q4 2023 at the earliest.<sup>4</sup>

Following Russia’s invasion of Ukraine in late February, all Baltic countries (hereafter including Finland) have announced an intention to abandon Russian gas. Lithuania acted quickest, halting Russian LNG imports by 4 March 2022, and stopping pipeline gas imports on 3 April.<sup>5</sup> It also stopped buying Russian oil, and in late May halted Russian electricity imports, becoming the first country to fully abandon Russian energy imports.<sup>6</sup> Lithuanian president Gitanas Nausėda said his country was “break[ing] energy ties with the aggressor”, while the Lithuanian cabinet of ministers on 18 May approved amendments to the country’s natural gas law banning gas supplies from Russia and other countries deemed to threaten national security. This was passed into law by the Lithuanian parliament, the Seimas, on 28 June.<sup>7</sup>

Latvia’s president Egils Levits in late July signed amendments to the country’s energy law banning Russian gas imports from the start of 2023, following parliament’s approval in mid-July.<sup>8</sup> Latvian prime minister Krisjanis Karins called for an “immediate full sanction on [Russian] oil, coal and gas” during negotiations on the most recent package of European Union (EU) sanctions.<sup>9</sup>

Estonian prime minister Kaja Kallas also joined Karins’ call for sanctions on Russian gas, saying it “has to be” in the seventh package of EU sanctions, although she acknowledged this was unlikely to pass. She also said “we need to stop buying gas as soon as possible from Putin’s regime, which is using this money in the war against Ukraine,” and said Estonia would take a “principled position” not to allow the planned LNG terminal in the bay of Paldiski to take deliveries of Russian LNG.<sup>10</sup> Finance minister Taavi Aas said the planned LNG terminal was necessary to “put an end to our use of Russian gas”<sup>11</sup> and that Estonia would halt Russian gas imports by the end of the year. “Let us repeat- gas might be expensive, but freedom is priceless”, Kallas said.<sup>12</sup>

And Finland says its energy policy is aimed at ending the country’s dependency on Russian energy imports, although it does not give a timeline for this.<sup>13</sup> Finland’s Ministry of Economic Affairs said that the process of phasing out Russian energy would be “gradual” and require “massive investments”,<sup>14</sup> although it noted that the planned LNG terminal with Estonia was the fastest way to phase out

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<sup>2</sup> ‘GIPL gas pipeline to start deliveries in May’, <https://direct.argusmedia.com/newsandanalysis/article/2306478>

<sup>3</sup> ‘Finland, Baltic states target 2023 gas market merger’, <https://direct.argusmedia.com/newsandanalysis/article/2272951>

<sup>4</sup> [https://www.ambergrid.it/uploads/documents/2022-03-29\\_Regional-Gas-Market-Council\\_meeting.pdf](https://www.ambergrid.it/uploads/documents/2022-03-29_Regional-Gas-Market-Council_meeting.pdf)

<sup>5</sup> ‘Lithuania ends Russian gas imports for domestic needs’, <https://direct.argusmedia.com/newsandanalysis/article/2318354>

<sup>6</sup> <https://enmin.lrv.lt/en/news/no-more-russian-oil-gas-and-electricity-imports-in-lithuania-from-sunday>

<sup>7</sup> ‘Lithuania bans Russian gas imports’, <https://www.argusmedia.com/en/news/2345549-lithuania-bans-russian-gas-imports>

<sup>8</sup> ‘Latvia bans Russian gas imports from 2023’, <https://direct.argusmedia.com/newsandanalysis/article/2356693>

<sup>9</sup> ‘EU leaders repeat red line on gas embargo’, <https://direct.argusmedia.com/newsandanalysis/article/2336758>

<sup>10</sup> ‘New FSRU to help Estonia, Finland quit Russian gas’, <https://direct.argusmedia.com/newsandanalysis/article/2319887>

<sup>11</sup> <https://www.mkm.ee/en/news/estonia-and-finland-enter-cooperation-agreement-floating-lng-terminal>

<sup>12</sup> <https://www.telegraph.co.uk/world-news/2022/06/11/europe-must-ensure-kremlins-war-ukraine-fails-worse-will-follow/>

<sup>13</sup> <https://tem.fi/en/russian-attack-on-ukraine> (the section titled ‘energy’)

<sup>14</sup> <https://tem.fi/en/-/phasing-out-russian-energy-will-be-gradual-and-require-massive-investments>

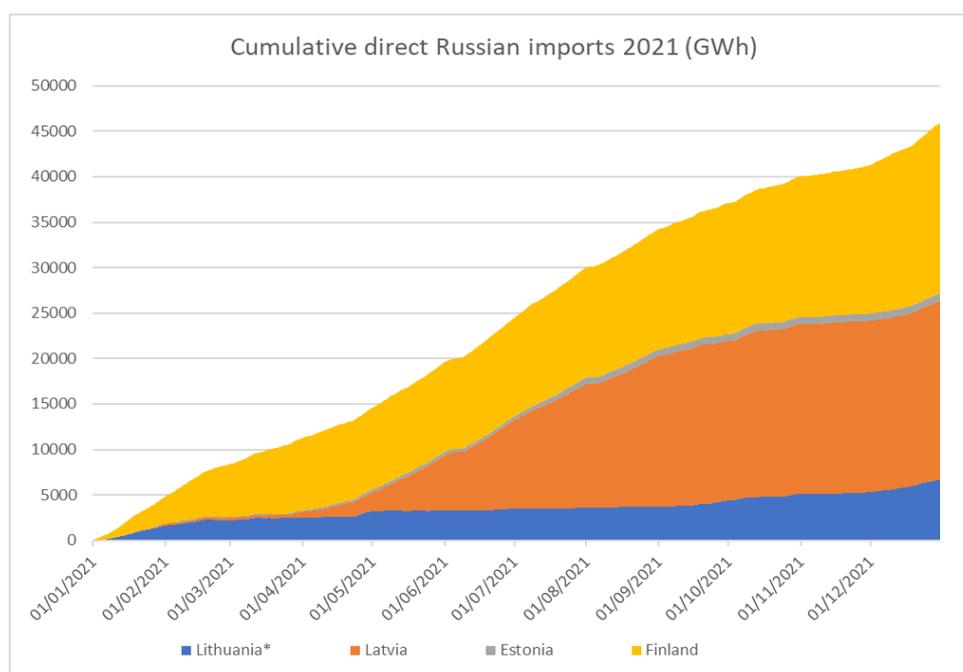
dependency on Russian pipeline gas.<sup>15</sup> At the moment, there is no plan for a national law abandoning Russian imports - it is still possible, but “legally somewhat challenging. The best option would be EU sanctions”, the economy ministry is quoted as saying.

But while the governments of the Baltic countries are united in their desire to rid themselves of dependence on Russian gas, and Russian energy more broadly, they face an uphill battle. Estonia, Latvia and Finland were reliant on Russia for at least 75 per cent of their gas imports last year, as will be discussed below, while several large importers have expressed a desire to resume Russian imports. Limited capacities both to receive gas and transmit it through in the region will make it difficult for the Baltics to replace Russian supply.

### Baltic consumption, Russian flows, and the hesitance of national importers

Following the addition of Finland to the market, the Baltics as a whole consumed roughly 66.8TWh ( $\approx 5.6\text{bcm}$ ) of gas in 2021: Estonia consumed 5.1TWh ( $\approx 0.43\text{bcm}$ ), Lithuania 24.1TWh ( $\approx 2.02\text{bcm}$ ), Latvia 12.5TWh ( $\approx 1.05\text{bcm}$ ), and Finland 25.1TWh ( $\approx 2.1\text{bcm}$ ), according to statistics from their respective TSOs.

In 2021, Russian imports totalled around 49.2TWh ( $\approx 4.12\text{bcm}$ ), with 45.91TWh being delivered directly by pipeline (see graph).<sup>16</sup> The remaining amount (3.2TWh) is 20 per cent of the total 16.3TWh of sendout from Klaipeda last year, the proportion which terminal operator Klaipedos Nafta told the author Russian deliveries roughly accounted for in 2021.



Source:Entso-G transparency platform

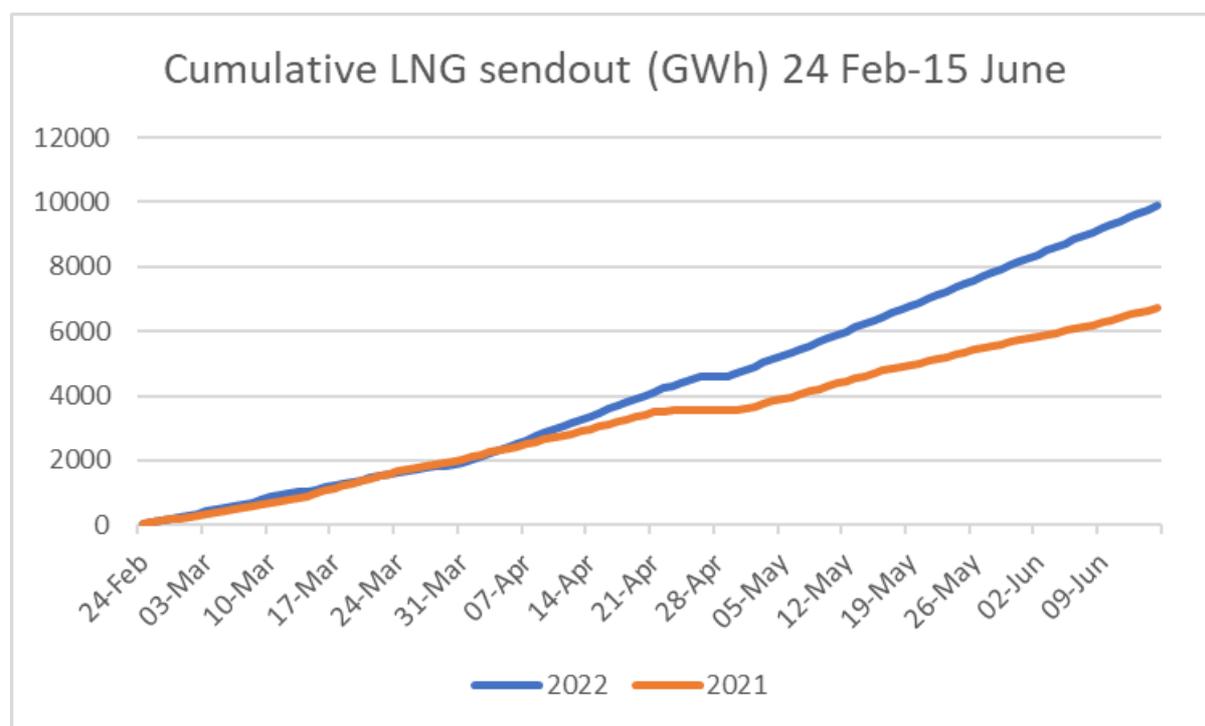
<sup>15</sup> <https://tem.fi/en/-/finnish-estonian-cooperation-on-Ing-terminal-ship-lease-advances-with-ministerial-mou-and-progress-in-transmission-operator-cooperation>

<sup>16</sup> \*Lithuania’s Russian imports at Kotlovka are netted off against same-day re-exports to the Russian exclave of Kaliningrad at the Sakiai interconnection point.

These figures suggest that Russia supplied 74 per cent of the gas consumed in the Baltic region last year.<sup>17</sup> It is difficult to say how dependent each individual country was on Russian gas relative to the others: because the market is well integrated, gas imported into one country from Russia might then be exported to another, as opposed to being directly consumed by the importing country. This explains why, for instance, Latvia's imports from Russia at Luhamaa (19.71TWh) were significantly higher than its consumption, and conversely why Estonia's imports at Värška (789GWh) were well below its consumption. Gas that was imported from Russia and at Klaipeda was also stored in Latvia's Inčukalns storage facility and then consumed or re-exported during periods of peak demand. That said, Lithuanian TSO Amber Grid said that Russia accounted for less than a third of its imports in 2021, pushed out by a greater volume of LNG from the US over the year, a trend that has continued since the start of the war.

### How have things changed since war began?

Since Russia's invasion of Ukraine on 24 February, the composition of imports into the Baltic countries has changed drastically. Overall, imports from 24 February-15 June 2022 declined by 16 per cent to 16.66TWh, down from 19.92TWh in the corresponding period for 2021. But this decline masks a large reorientation of the structure of Baltic imports: as shown in the graph below, pipeline receipts from Russia fell by 43 per cent, while sendout from Klaipeda increased by 37 per cent. Klaipeda has not received a single Russian cargo since the start of the invasion, meaning all of Klaipeda's sendout was from alternative sources. The combination of these two factors means that Russia's share of the supply mix between 24 February-15 June 2022 decreased to slightly less than 45 per cent, accounting for 7.47TWh out of the total 16.66TWh of Baltic imports.



Source: ALSI

<sup>17</sup> These numbers do not include Russian LNG supplied from Novatek's Vysotsk LNG plant to two small-scale LNG terminals in Finland, which are not connected to the country's national grid, and therefore are not part of consumption figures, TSO Gasgrid Finland said. These two terminals take almost exclusively Russian supply.

In fact, this share has fallen even more precipitously in the more recent past, after Gazprom cut off supply to Finland's largest importer Gasum on 21 May 2022 for its refusal to transition to payments in roubles.<sup>18</sup> Finland now procures its gas via the Balticconnector,<sup>19</sup> although Gasum continues to receive Russian LNG from Novatek's Cryogas-Vysotsk facility at its two small-scale LNG terminals; so much so that loadings from Vysotsk are even higher than its nameplate capacity as Novatek is selling "everything that there is" to Finland, the firm's CEO recently said.<sup>20</sup> But TSO Gasgrid Finland said that the two small-scale terminals are off-grid and the areas they serve are not part of consumption figures, making the continued receipt of Russian LNG in Finland a fact of relatively minor importance. Achema, a fertiliser giant operating in Lithuania and the largest commercial gas consumer in the Baltics, has turned towards spot purchases of LNG to replace piped gas from Russia.<sup>21</sup>

As mentioned, Lithuania also halted all imports of Russian gas for domestic use on 2 April 2022,<sup>22</sup> although it continues to receive gas at Kotlovka which it then transmits to Kaliningrad in a 'special transmission mode' that has no access to the domestic market. It recently became the first country to entirely outlaw the import of gas from Russia, as well as any other states deemed a threat to national security, with the aim of "ensur[ing] Lithuania's national and energy security".<sup>23</sup> Estonia has also not directly received any Russian gas at Värskas since 31 March 2022.

Therefore, while a relatively small sample size, pipeline imports from Russia between 21 May-15 June 2022 were just 41GWh in total, against 3.6TWh in the corresponding period of 2021. In other words, Russian gas imports to the Baltics in this period all but completely ceased; sendout from Klaipeda increased to 2.88TWh from 1.63TWh in 2021 over the same period, helping to offset some of the lost receipts of pipeline gas.

That said, at the time of writing (August 2022), Latvia has resumed the import of Russian gas at Luhamaa, with more than 1.4TWh entering on the Russian border between 15 June - 31 July 2022.<sup>24</sup> Latvijas Gāze still has a long-term contract with Gazprom that runs until 2030, although news recently emerged that the firm was purchasing Russian gas from an intermediary, paying in euros instead of roubles. On 30 July 2022 Gazprom halted supplies to Latvia, citing vague contractual violations.<sup>25</sup> This is perhaps further testament to the allure of reliable Russian gas deliveries that do not depend on the availability of capacity at Klaipeda or the capital needed to procure LNG cargoes. It also shows that, in the absence of strong legal decisions from the government, the private sector may opt for what is more profitable as opposed to what is more aligned with the country's political stance.

## Wartime stockbuild in the Baltic region

Another marked change since the start of the war in Ukraine has been the quick switch to net injections at Latvia's Inčukalns storage facility. Traditionally, withdrawals are made from the facility until the beginning of May, and then replenished during the summer. However, operator Conexus Baltic Grid brought forward the start of the injection season to 26 February 2022, in light of concerns about the possible shortage of gas reserves in the region, it said.<sup>26</sup> Then in mid-March, Conexus increased the available injection capacity even further, allowing for injections to step up.<sup>27</sup>

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<sup>18</sup> 'Gasum's Russian gas supply to halt from tomorrow', <https://direct.argusmedia.com/newsandanalysis/article/2333587>

<sup>19</sup> 'Finland confirms reorientation of gas supply', <https://direct.argusmedia.com/newsandanalysis/article/2334228>

<sup>20</sup> <https://1prime.ru/gas/20220617/837218111.html>

<sup>21</sup> 'Europe LNG: Prices jump again',

<https://direct.argusmedia.com/newsandanalysis/article/2341680>

<sup>22</sup> 'Lithuania ends Russian gas imports for domestic needs', <https://direct.argusmedia.com/newsandanalysis/article/2318354>

<sup>23</sup> 'Lithuania bans Russian gas imports', <https://direct.argusmedia.com/newsandanalysis/article/2345549>

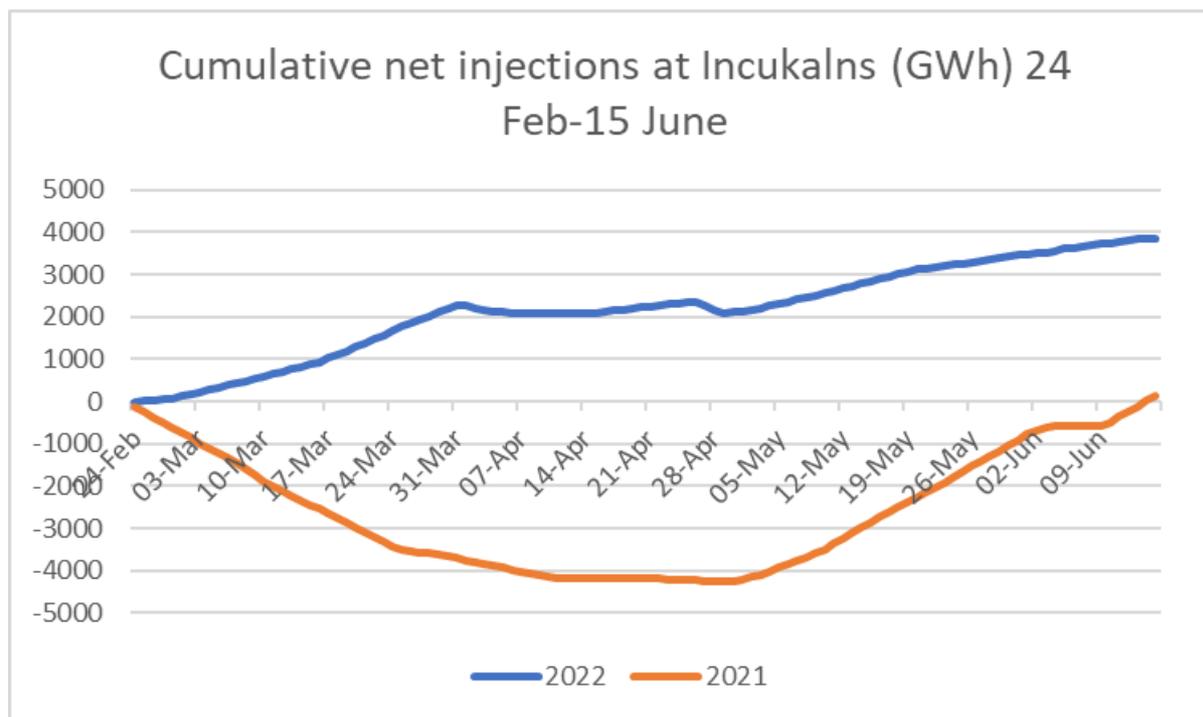
<sup>24</sup> 'Latvia bans Russian gas imports from 2023', <https://direct.argusmedia.com/newsandanalysis/article/2356693>

<sup>25</sup> 'Russia's Gazprom halts gas exports to Latvia', <https://direct.argusmedia.com/newsandanalysis/article/2357660>

<sup>26</sup> 'Conexus brings forward Inčukalns injection season', <https://direct.argusmedia.com/newsandanalysis/article/2306424>

<sup>27</sup> 'Latvia's Conexus ups daily injection capacity', <https://direct.argusmedia.com/newsandanalysis/article/2311860>

This led to a drastically different stockbuild compared to 2021: as shown in the graph, from 24 February-15 June 2022, there was a net stockbuild of 3.86TWh, compared to just 137GWh in the corresponding period of the previous year- an increase of over 28 times the volumes.



Source: AGSI

## Demand reduction in the Baltics

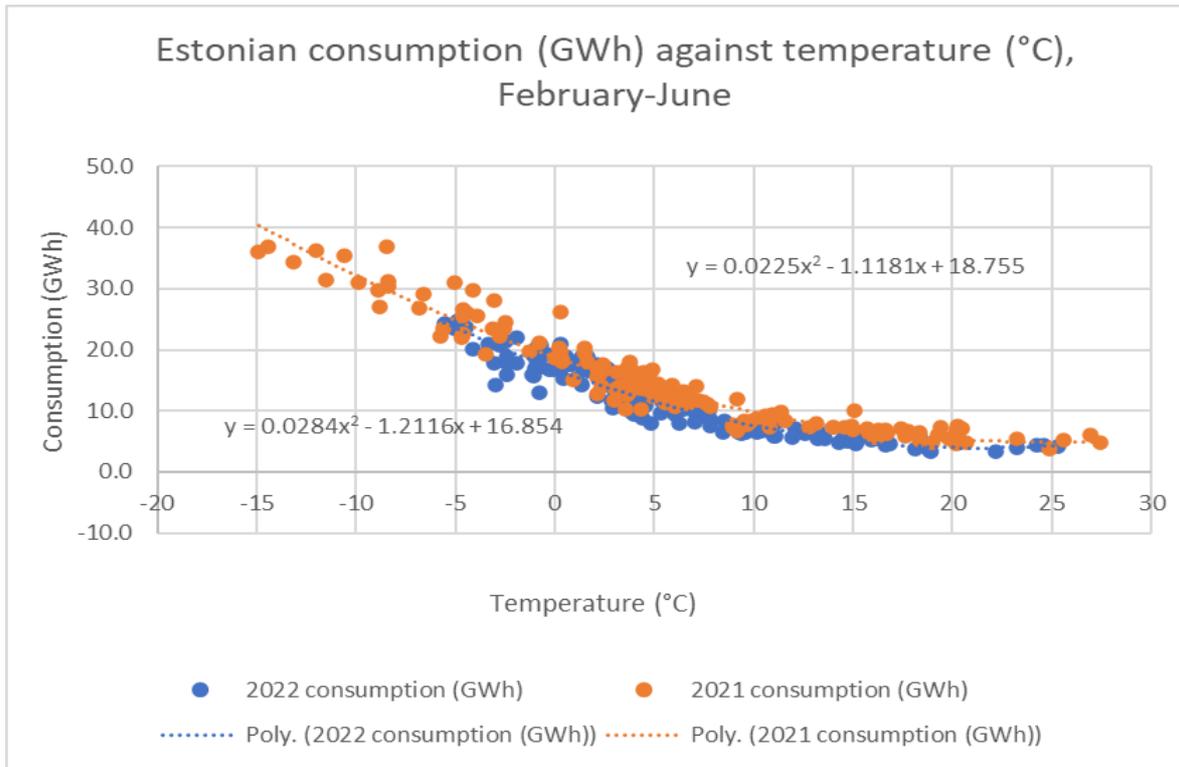
Significant demand reduction was the underlying factor which allowed both a decrease in imports from Russia and a brisk stockbuild at Inčukalns since the start of the war.

Baltic gas consumption from February - June 2022 fell by 39.6 per cent, according to data gathered from their respective TSOs, down to 18.09TWh from 29.94TWh in the same period of 2021. Consumption fell most sharply in Finland (-50 per cent), and least sharply in Estonia, (-21 per cent), while in both Lithuania and Latvia it fell by 35 per cent.

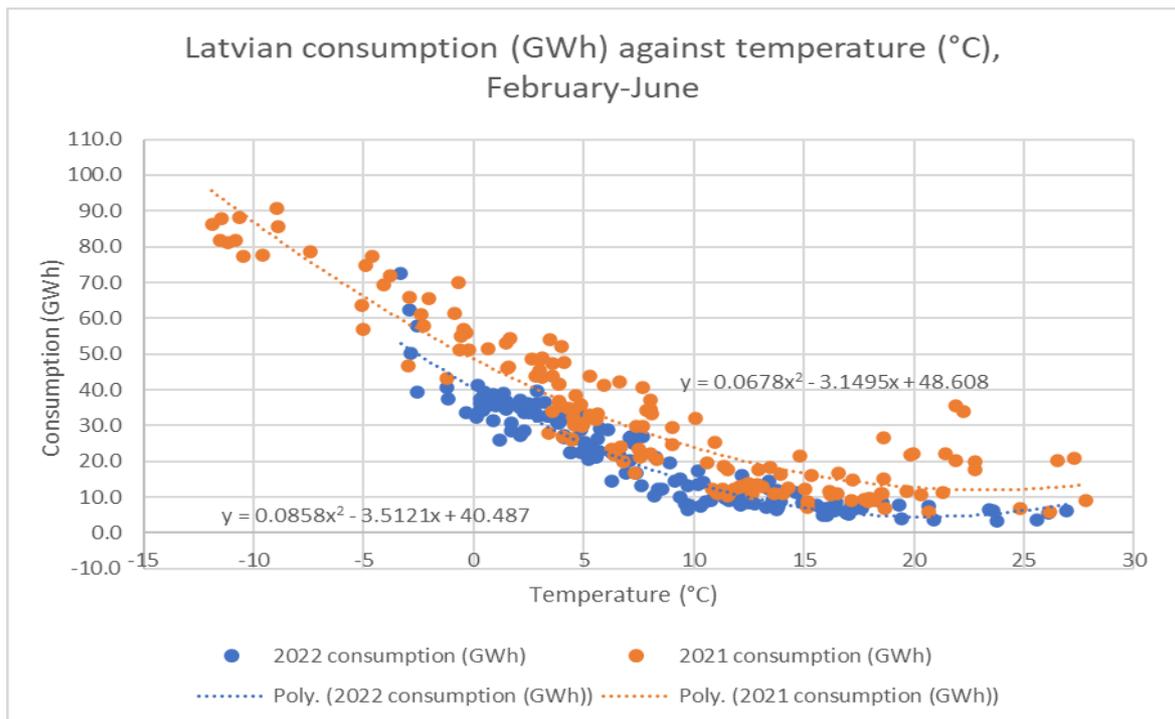
When Estonian TSO Elering commented on the 40 per cent drop in consumption in May 2022, it noted it was unclear whether this was a “one-off change arising from the mild winter and various factors or whether it indicates long-term changes in consumption patterns, i.e. the change of certain consumers from gas to alternative fuels”.<sup>28</sup>

In keeping with a relatively mild winter across much of Europe, average temperatures from February through June were higher in all four Baltic capitals in 2022 compared to 2021, although temperatures in Helsinki and Vilnius still held below the ten-year average, even if it was warmer than the preceding year. So warmer temperatures undoubtedly played some role in reducing consumption in the Baltics, particularly as heating accounts for a sizable portion of demand, especially in population-dense capitals such as Tallinn and Helsinki. But the temperatures were nowhere near warm enough to account for a near 40 per cent drop in consumption.

<sup>28</sup> <https://elering.ee/en/first-meeting-gas-market-crisis-committee-took-place-led-elering>



Source: Speedwell, Conexus Baltic Grid

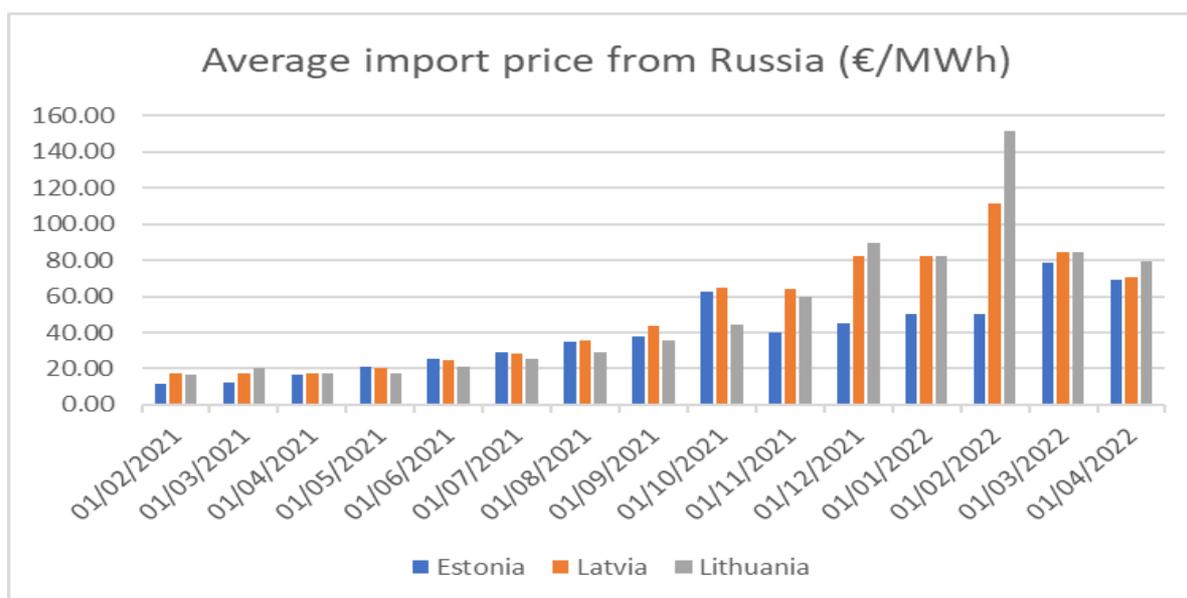


Source: Speedwell, Conexus Baltic Grid

The graphs show that consumption at a given temperature for February through June is lower in both Estonia and Latvia, demonstrating demand reduction even after accounting for warmer weather in 2022. While daily consumption figures were not available for Finland and Lithuania, Latvia and Estonia's consumption patterns are indicative of those in the Baltic region.

High gas prices are the main driver for this demand reduction. Latvian utility Latvijas Gāze blamed historically high gas prices in April, which would lead to "a disproportionately high selling price of natural gas to our customers and make such offers uncompetitive", as the reason for halting imports from Gazprom,<sup>29</sup> while Estonia's Eesti Gaas also pointed towards economic factors making imports unaffordable.<sup>30</sup> It is important to note that both companies blamed economic, as opposed to political, reasons for their decision to halt imports. In early April, Latvijas Gāze emphasised that by abandoning Russian gas, Latvia's energy security would be destabilised, creating an energy crisis, adding that it intended to continue buying gas from Russia provided it is allowed to do so by sanctions regimes. The continued readiness to import Russian gas was explained by the fact that there are "no alternative sources of supply in the summer", and the firm has more than 350,000 customers to supply.<sup>31</sup> Latvijas Gāze further raised significant concerns to the Latvian government regarding its decision to ban Russian gas imports from 2023, noting that the decision should be taken jointly by all Baltic countries, otherwise it will only contribute to an increase in prices in the region. "Latvia alone in the single market area cannot prohibit the import of gas", the firm said.<sup>32</sup> Prices for energy in June 2022 rose twice as fast in Estonia as they did in the rest of the eurozone, leading to an increase in the inflation rate to 21.9 per cent on the year.<sup>33</sup>

Many of Gazprom's long-term contracts are at least partially linked to the TTF front-month index, a European benchmark price. As seen in the graph below, record high settlements since the start of 2022, particularly those that came after the outbreak of the war, have contributed to the price of imported gas from Russia in the Baltics more than quadrupling compared to 2021.



Source: Customs data published by Eurostat<sup>34</sup>

<sup>29</sup> 'Baltic countries shun Russian gas', <https://direct.argusmedia.com/newsandanalysis/article/2318527>

<sup>30</sup> 'Estonia struggles to quit Russian gas', <https://direct.argusmedia.com/newsandanalysis/article/2320878>

<sup>31</sup> 'Latvia plans to continue Russian gas imports', <https://direct.argusmedia.com/newsandanalysis/article/2319815>

<sup>32</sup> 'Latvijas Gaze challenges Russian gas import ban', <https://direct.argusmedia.com/newsandanalysis/article/2357884>

<sup>33</sup> <https://1prime.ru/energy/20220707/837416446.html>

<sup>34</sup> Finland has not published this data since 2007, and is therefore excluded. April is the most recent month that all three other Baltic countries have price data for.

This has pushed some industries towards transitioning to the use of alternative fuels: Estonia's ministry of the economy recently recommended that district heating providers that are unable to source enough gas for the coming heating season should prepare to burn fuel oil,<sup>35</sup> while some of Estonia's largest industrial consumers have had to focus on alternative fuels and energy efficiency in the face of high gas and power costs.<sup>36</sup> Large shale oil producer Eesti Energia has called for a state of emergency to be declared in Estonia, which would give generators and industrial users time to apply for necessary permits and perform upgrades to allow their plants to run on shale oil. If the matter isn't addressed immediately, winter will arrive, by which time it would be "too late to start making the changes," chair of Eesti Energia's board Hando Sutter said.<sup>37</sup> Sutter said "extraordinary measures" should be taken as soon as possible to reduce gas consumption and replace it with other energy sources, where possible. Estonia's ministry of the economy concurred, but said it was only necessary to declare a state of emergency at the district level, in order to facilitate district heating providers switching to alternative fuels, but that a state of emergency on a national level is not yet necessary (7 June 2022).<sup>38</sup>

On 8 July 2022, Narva, Estonia's third largest city, became the first such municipality to declare a state of emergency, after Enefit Power, which provides heat to the city, failed in a recent tender to procure any gas for the winter. The city's government hopes that this decision will give Enefit Power time to apply for authorisation to use shale oil, which would cost just one third of the price of gas, the mayor said.<sup>39</sup> The Environmental Board has now granted them permission to use shale oil;<sup>40</sup> and as of July 2022 the Board believes 200 companies hold an environmental permit to use shale oil, while approximately 50 more could apply to use it immediately if necessary.<sup>41</sup> Estonia's economy minister Riina Sikkut called for companies to make these applications "as soon as possible in order to be ready for winter in time", underlining that the government cannot guarantee that everything will go according to plan, and that at least in the upcoming winter Estonia must be ready for a temporary fuel change.<sup>42</sup> The city of Vilnius' government also said they were considering a switch to fuel oil, although noted that it could continue using gas if prices were to normalise.<sup>43</sup> The Finnish chemicals industry federation said it is ready to switch 90-95 per cent of its gas consumption to an alternative source in the next two years, which could eliminate around 7TWh of Finnish gas demand, or almost a third of its annual consumption.<sup>44</sup>

High prices are also being passed on to end consumers, which is likely to lead to further demand reduction. Latvijas Gāze plans to increase its domestic tariffs by 65-90 per cent from the start of July 2022, explaining that it is "no longer possible to buy such cheap natural gas, and the cheap gas purchased last season has been used up", meaning gas must be bought at market prices.<sup>45</sup>

There has also been some demand reduction in the Baltics owing to sanctions. Lifosa, a large Lithuanian fertiliser producer owned by Eurochem, idled output in early April 2022 because of logistical and financial challenges following sanctions placed on one of Eurochem's former beneficiaries,<sup>46</sup> before partially resuming production again in early August. The firm announced it will begin to suspend production once more on 13 September 2022 because of a lack of ammonia availability.<sup>47</sup>

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<sup>35</sup> 'Estonia considers gas-to-oil switch for local heating', <https://direct.argusmedia.com/newsandanalysis/article/2345556>

<sup>36</sup> <https://news.err.ee/1608644080/estonia-s-big-manufacturers-seek-savings-amid-energy-crisis>

<sup>37</sup> <https://news.err.ee/1608649270/eesti-energia-chair-calls-for-state-of-emergency-over-natural-gas-supply>

<sup>38</sup> <https://news.err.ee/1608649270/eesti-energia-chair-calls-for-state-of-emergency-over-natural-gas-supply>

<sup>39</sup> <https://news.err.ee/1608652441/city-of-narva-declares-state-of-emergency-over-natural-gas>

<sup>40</sup> <https://news.err.ee/1608664315/environmental-board-authorizes-enefit-power-to-heat-narva-with-shale-oil>

<sup>41</sup> <https://news.err.ee/1608665293/50-estonian-heating-companies-could-apply-to-use-shale-oil>

<sup>42</sup> <https://www.mkm.ee/uudised/sikkut-maagaasi-asendamise-ga-tuleb-tegeleda-juba-tana>

<sup>43</sup> 'Estonia's Enefit Power to heat with oil, not gas', <https://direct.argusmedia.com/newsandanalysis/article/2354620>

<sup>44</sup> 'Finnish chemical industry ready for next winter', <https://direct.argusmedia.com/newsandanalysis/article/2358453>

<sup>45</sup> [https://www.delfi.lv/bizness/biznesa\\_videl/latvijas-Gazes-dabasGazes-tarifi-majsaimniecibam-no-sodienas-pieaug-robezas-no-65-6-lidz-89-9.d?id=54505432](https://www.delfi.lv/bizness/biznesa_videl/latvijas-Gazes-dabasGazes-tarifi-majsaimniecibam-no-sodienas-pieaug-robezas-no-65-6-lidz-89-9.d?id=54505432)

<sup>46</sup> 'Eurochem's Lifosa fertilizer plant stops production', <https://direct.argusmedia.com/NewsAndAnalysis/Article/2320723>

<sup>47</sup> 'Lithuania's Lifosa to halt phosphates output', <https://direct.argusmedia.com/newsandanalysis/article/2368952>

The fertiliser industry in particular has suffered due to high gas prices, as gas is the major feedstock for ammonia, the key ingredient in the production of fertilisers. Achema, which may account for as much as 15TWh of gas consumption in Lithuania, had already shut down one of its ammonia units in late 2021, and will close the second by the start of September 2022.<sup>48</sup> This will have a drastic effect on Lithuania's gas demand this year, and on the ability of Lifosa to operate, as Achema had been the main supplier of ammonia in the region.

## Similarities to Europe

Steep price rises have had similar effects in Europe, with recent OIES research suggesting significant demand-side reduction in 2022 of around 21bcm in the first four months of the year, after surprisingly resilient gas demand in 2021.<sup>49</sup> Fertiliser producers have shuttered plants as they became unprofitable, with almost 70 per cent of the continent's nitrogen production due to be offline by September 2022,<sup>50</sup> while BASF, one of the world's largest chemicals manufacturers and Germany's largest gas consumer, is examining which sites it can most easily close to reduce demand.<sup>51</sup>

Issues regarding profitability due to price rises have been compounded by recent limitations to Nord Stream, which carries 55bcm of gas per year from Russia to Germany. Gazprom capped Nord Stream's capacity to 40 per cent in mid-June 2022, owing to apparent complications with the return and servicing of turbines for the line.<sup>52</sup> The Russian side has subsequently cut deliveries to most of its largest European buyers by up to 60 per cent,<sup>53</sup> with this hitting German utility Uniper so hard that it has been forced to seek financial aid from the state as the firm faces "significant financial burdens", and has been forced to purchase gas on the spot market to make up for lost deliveries.<sup>54</sup> On 27 July Gazprom then capped capacity on the line to just 20 per cent.<sup>55</sup> These supply limitations have further driven up prices, creating an inflationary cycle.

In response to these supply limitations, the EU in July published its plan to reduce gas demand, saying that "there is not enough gas available globally to 100 per cent replace Russian gas, if there is full disruption of flows from Russia".<sup>56</sup> Europe must "prepare for the worst" by reducing energy consumption as much as possible: if the EU overall reduces temperatures for heating or air-conditioning by only 2°C, the group could save the equivalent of deliveries through Nord Stream 1, Ursula von der Leyen, the president of the European Commission said.<sup>57</sup> At a national level, member states are also preparing to reduce their gas demand. For instance, in June, Germany declared the second stage of its emergency gas plan, asking coal-fired power plant operators to prepare these units for operation in case gas consumption had to be reduced further,<sup>58</sup> while Austria is also preparing measures that would instruct large consumers to upgrade their plants to operate with alternative energy sources, particularly oil,<sup>59</sup> and plans to reconvert its 225MW Mellach gas-fired combined heat and power plant to operate with coal as fuel.<sup>60</sup>

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<sup>48</sup> 'Four more nitrogen plants to shut down',

<https://direct.argusmedia.com/newsandanalysis/article/2364150>

<sup>49</sup> <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2022/06/Insight-117-Demand-response-to-high-gas-prices-in-Europe-in-2021-and-early-2022.pdf>

<sup>50</sup> 'CF plans permanent closure of Ince plant', <https://direct.argusmedia.com/newsandanalysis/article/2339159>

<sup>51</sup> 'Most European nitrogen fertiliser plants due to close',

<https://direct.argusmedia.com/newsandanalysis/article/2364591>

<sup>52</sup> 'Nord Stream gas cuts to deepen from Thursday: Gazprom', <https://direct.argusmedia.com/newsandanalysis/article/2341695>

<sup>53</sup> 'Gazprom reduces gas supply to Eni, Engie, OMV, CEZ', <https://direct.argusmedia.com/newsandanalysis/article/2341992>

<sup>54</sup> 'Uniper seeks state aid over gas crisis', <https://direct.argusmedia.com/newsandanalysis/article/2346445>

<sup>55</sup> 'Gazprom cuts gas flows to European buyers',

<https://direct.argusmedia.com/newsandanalysis/article/2354995>

<sup>56</sup> 'EU energy commissioner confirms gas cut plan for July', <https://direct.argusmedia.com/newsandanalysis/article/2345098>

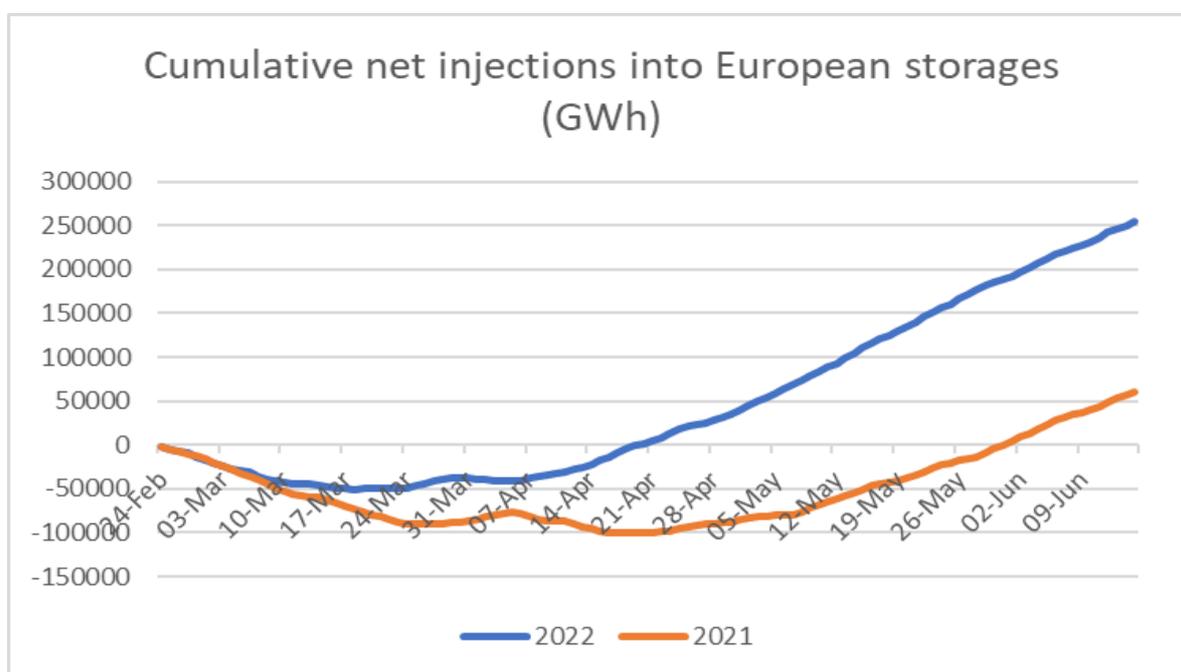
<sup>57</sup> 'EU seeks to cap gas demand, not prices', <https://direct.argusmedia.com/newsandanalysis/article/2347077>

<sup>58</sup> 'Germany declares second emergency gas level', <https://direct.argusmedia.com/newsandanalysis/article/2343979>

<sup>59</sup> <https://infothek.bmk.gv.at/gasnotfallplan-oesterreich-fruehwarnstufe/>

<sup>60</sup> 'Austria to reconvert gas-fired CHP plant to coal', <https://direct.argusmedia.com/newsandanalysis/article/2342968>

Europe has also, along with reducing consumption, been drastically increasing the pace of its storage injections this year, with the EU having recently passed legislation mandating its members to fill their storage facilities to 80 per cent of capacity by 1 November 2022. Combined EU and UK storage injections of 4.9TWh/d in May 2022 were the highest for any month on record,<sup>61</sup> while the graph below shows that overall net injections on 24 February - 15 June 2022 more than quadrupled from 2021 to 2022. In other words, just as in the Baltic countries, less gas is being consumed and more being put into storage since the start of the war, spurred by high prices and threats to supply. High prices have specifically impacted industrial demand, particularly in sectors like steel manufacturing and chemicals, where replacing gas is extremely difficult and expensive; households are bracing themselves for significant domestic price increases this winter across Europe.



Source: AGSI

Clearly there are distinct similarities between the struggles over gas supply faced by Europe and the Baltic countries, and some of the steps that they are taking to address them.

### The Baltics' big bet: LNG

The Baltic countries have just one other viable option to replace Russian gas, namely LNG. The previous section has already covered the large increase in sendout from Lithuania's Klaipeda terminal, so the region's focus on increasing LNG imports is already clear. However, Klaipeda can only regasify between 30-40TWh per year, meaning that a significant quantity of the Baltics' consumption is not secured by current infrastructure alone. But three further LNG terminals are planned which could allow the region to become entirely independent of Russian gas in the coming years. The more pressing issue is whether any of these projects will be finished in time for the coming winter, and whether this will be able to provide the region with enough gas to make it through the heating season without needing to resume large-scale imports of Russian gas.

The project with the quickest start-up time is planned to be moored in the Gulf of Finland, and is a joint project between the TSOs of Estonia and Finland. While the FSRU will eventually be moored in Finland, its location this winter depends on where the necessary infrastructure is completed first. The two options

<sup>61</sup> 'ENG: NBP first-quarter 2023 stable', <https://direct.argusmedia.com/newsandanalysis/article/2339174>

are in the ports of Paldiski or Inkoo, both located close to where the Balticconnector comes ashore in Estonia and Finland, respectively.

It is likely that Paldiski will be ready first, as expected construction time for a quay there is shorter than that for Inkoo in Finland, Elering chief executive Taavi Veskimägi said.<sup>62</sup> Estonia's ministry of the economy said recently that the LNG infrastructure will be ready to receive gas by the end of November 2022, although Estonian TSO Elering said that it "cannot guarantee" that it will be ready by then, saying only that it would "do everything in our powers" to meet this deadline.<sup>63</sup> Elering had previously run into problems during its negotiations with construction firms Alexela and Infotar, having been unable to strike a deal on the construction of a hauling berth for the FSRU. But the companies have now reached an agreement, and both Alexela and Elering have begun works. On 31 August 2022 Alexela and Infotar completed construction of the mooring quay.<sup>64</sup> Estonia also had issues with funding for the construction of the LNG infrastructure itself, with rumours that Alexela had asked the state for €40mn, which the Estonian side rejected on the grounds that, as Elering said, "we are a transmission system operator and run pipes, we have never been keen on having to rent ships or building piers".<sup>65</sup> Gasgrid Finland said that the infrastructure at Inkoo will be ready by December 2022.<sup>66</sup>

The FSRU, the 150,900m<sup>3</sup> *Exemplar*, will be provided by US shipowner Excelerate Energy, after it signed a 10-year charter with a joint-venture subsidiary of Gasgrid Finland and Elering.<sup>67</sup> Gasgrid Finland will pay 80 per cent of the rental cost, and Elering the other 20 per cent, roughly in line with the expected split of capacity usage. Latvia's government had previously expressed interest in purchasing a 30 per cent stake in the project,<sup>68</sup> but told the author this was no longer necessary as they had been assured that third-party access to the terminal would not be restricted.

The *Exemplar* has a regasification capacity of 5bcm/yr (3.8mn t/yr of LNG).<sup>69</sup> This converts to roughly 57.5TWh, if fully used. However, with capacity limitations both in domestic grids and along the Balticconnector, as well as the financial limitations of importers, it is unlikely that the FSRU will be used to anywhere near this full potential. Marti Haal, board member of Alexela, said that around 25-30TWh would be a "reasonable" estimate.<sup>70</sup> Gasgrid Finland targets a utilisation rate of around 35TWh/yr, although acknowledged this was unlikely to be reached in the first couple of years.<sup>71</sup> Even so, it should be sufficient to meet the needs of Finland and Estonia, as well as potentially providing some extra gas for the rest of the Baltic market.

However, there are three important questions which need to be addressed: whether the infrastructure will be completed in time; whether the Baltic countries will be able to secure enough cargoes; and whether capacity limitations in the Baltics mean that even with the addition of the new FSRU there still won't be enough gas in the region.

The first of these is an open question, and one without a definite answer. If the timeline is met, and the FSRU can start sending gas by the end of November 2022, then this would be a big help for the region in the winter. That said, with the heating season beginning in October, there remain almost two months of heating demand during which the FSRU still would not be operational, even using the most optimistic timeline. This could stretch already limited supply in the Baltics, particularly if the weather is cold. The longer the timeline drags on, the worse the supply outlook becomes.

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<sup>62</sup> 'Elering clarifies details on Paldiski FSRU plans', <https://direct.argusmedia.com/newsandanalysis/article/2327994>

<sup>63</sup> 'Paldiski LNG could start by end of November', <https://direct.argusmedia.com/newsandanalysis/article/2343041>

<sup>64</sup> <https://www.linkedin.com/feed/update/urn:li:activity:6971402700735295488/>

<sup>65</sup> <https://news.err.ee/1608594601/system-operator-alexela-will-procure-quay-and-floating-terminal-by-itself>

<sup>66</sup> 'Finland's FSRU to be commissioned in December', <https://direct.argusmedia.com/newsandanalysis/article/2362323>

<sup>67</sup> 'Excelerate Energy to supply FSRU to Baltics', <https://direct.argusmedia.com/newsandanalysis/article/2333651>

<sup>68</sup> 'Latvia to join Estonia's Paldiski LNG terminal', <https://direct.argusmedia.com/newsandanalysis/article/2324097>

<sup>69</sup> <https://direct.argusmedia.com/newsandanalysis/article/2333651>

<sup>70</sup> <https://news.err.ee/1608594535/alexela-board-member-company-has-not-asked-state-for-lng-terminal-funding>

<sup>71</sup> [https://gasgrid.fi/wp-content/uploads/Webinar\\_presentation\\_material\\_250722.pdf](https://gasgrid.fi/wp-content/uploads/Webinar_presentation_material_250722.pdf)

The question of whether the Baltics will be able to procure enough cargoes to supply it is also one without a definite answer, as it depends on the availability of spot cargoes and whether they are priced at affordable levels. This, in turn, is heavily dependent on external factors such as temperatures in Europe and demand levels, particularly in large importing countries in Asia. If the weather is cold, and/or demand in Asia strong, it is possible that spot LNG will so much more expensive than Russian piped supply would cost that several of the rather politically-agnostic importers such as Latvijas Gāze or Eesti Gaas may be forced to return to taking Russian gas. Finland's Gasum was cut off by Gazprom for its refusal to pay in roubles, but the firm could decide to start paying in roubles, if LNG turned out to be unaffordable. As Haal noted, it may be necessary for the governments to take firm decisions on ending the import of Russian gas, as Lithuania has, because otherwise the market may have to decide.<sup>72</sup> Faced with the possibility of being unable to meet customer demand, Russian piped gas may be more attractive to importers than political concerns.

Importers could instead look to sign long-term LNG contracts, many of which are indexed to oil or to the Henry Hub price, but this then comes with a significant, extended financial agreement, which some importers are hesitant to take on. And with all commodity prices, not just gas, far more expensive than they have been in recent years due to the war, an oil-indexed contract with current Brent prices might not even save importers money. Baltic importers could look to sign medium-term contracts with LNG aggregators or trading firms, but these tend to be more expensive than long-term contracts, as the seller takes on additional risk. With many European countries seeking to replace Russian gas with LNG, this will further drive up the price, which could price some Baltic importers out of the market.

With an increasing emphasis in the Baltics being placed on the transition to renewable energy, as we discuss in the next section, these contracts may not be attractive to large importers who will shortly be looking to more fully transition their portfolios to greener sources of energy. If this energy crisis turns out to be only a temporary phenomenon, and future gas demand in the Baltics is unsure, then medium or long-term contracts may not be financially sound decisions.

The biggest question of all is whether, even if the FSRU to be moored in the Gulf of Finland is ready by the end of November, there will be sufficient capacity in the Baltic's gas grid infrastructure to allow for much of this regasified supply to reach its target markets.

Latvijas Gāze has affirmed several times that it does not believe the region is adequately prepared for winter, even with the addition of the FSRU in the Gulf of Finland. The problem for Baltic countries is not a scarcity of resources, but a lack of infrastructure for the use of LNG, according to Latvijas Gāze's head of wholesale gas, Janis Kalejs. Existing infrastructure "does not have sufficient capacity to provide the region with the required amount of natural gas", he said.<sup>73</sup> Klaipeda is fully booked until the end of the year, meaning that even if a buyer can procure a shipment, there is nowhere to unload it, Kalejs said. In addition, even following the commissioning of the FSRU in the Gulf of Finland, insufficient regasification capacity and grid bottlenecks will make it impossible to meet demand on peak days next winter. If the Baltics do not come up with new solutions to ensure sufficient injections into Inčukalns, "we need to be prepared for emergencies next winter", Kalejs stated.<sup>74</sup>

This problem is only exacerbated now that the Baltics are linked by GIPL to Poland, which will further drain resources in the region by booking capacity at Klaipeda. Polish importer PGNiG has received four cargoes at Klaipeda since the commissioning of the link on 1 May 2022, although at least three of the cargoes have been shared with Eesti Gaas, so not all the supply from these shipments has left the Baltics. From 1 May - 15 June 2022, there was a total 1.38TWh of gas exported to Poland via GIPL. PGNiG is also known to have booked at least some of the capacity that was recently offered at Klaipeda for 4Q 2022, which will further drain supplies and available space at the terminal during the peak heating season.<sup>75</sup> That said, the argument could also be made that without the financial clout of PGNiG these

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<sup>72</sup> <https://news.err.ee/1608594535/alexela-board-member-company-has-not-asked-state-for-lng-terminal-funding>

<sup>73</sup> 'Baltics lack sufficient infrastructure: Latvijas Gaze', <https://direct.argusmedia.com/newsandanalysis/article/2332186>

<sup>74</sup> 'Two Baltic LNG terminals not enough: Latvijas Gaze', <https://direct.argusmedia.com/newsandanalysis/article/2336564>

<sup>75</sup> 'Klaipeda 4Q LNG capacity in high demand', <https://direct.argusmedia.com/newsandanalysis/article/2335561>

cargoes may not have been procured at all, and that therefore at least some gas has stayed in the Baltics, helping to ensure fuller utilisation of Klaipeda's capacity.

Eesti Gaas echoed these comments, saying that it will be hard to fill Latvia's Inčukalns facility without Russian gas deliveries,<sup>76</sup> and noted the obstacle of bottlenecks between the Baltic countries.<sup>77</sup> Therefore, even if the region has gas, the infrastructure is "not ready to cope with such a rapid change in supply sources, and this is likely to be reflected in domestic prices," the firm concluded.<sup>78</sup>

Some projects have been launched between Baltic TSOs aimed at increasing interconnection capacities in the region, most notably the Enhancement of Lithuania-Latvia Interconnection (ELLI), expected to be finished by 2024. The investment is expected to double the interconnection capacity to up to 130.5GWh/d in the Latvian direction and up to 119.5GWh/d in the Lithuanian direction. The project will create capacity to transport up to 47.6TWh/yr of gas to Latvia and up to 43.6TWh/yr to Lithuania, according to Lithuanian TSO Amber Grid.<sup>79</sup> But given the extended timeline of the project, this won't help the region in the approaching winter, when supply is likely to be tightest. At the time of writing in August 2022, the Latvian and Lithuanian TSOs have announced that they will speed up the implementation of the ELLI project, and aim to lift gas transmission capacity to Latvia from Lithuania by a third, to 90GWh/d, from 1 November 2022.<sup>80</sup> This will provide a welcome boost to flows from Klaipeda to the rest of the region in time for winter, if implemented on time.

Finland's Hamina LNG terminal, the first terminal in the country that will be connected to the grid, has an initial sendout capacity of around 3TWh/yr, which could be increased at a later stage with the addition of evaporation capacity, operator Hamina LNG Oy said. In parallel, the terminal is designed to distribute an additional 3TWh/yr through its truck-loading bay, bringing the terminal's total import capacity to some 6TWh/yr in its initial stage. The project's second phase would bring total import capacity to some 7TWh/yr, and this could be expanded further at a later stage, the firm said.<sup>81</sup> But the project has been perpetually delayed, with the most recent setback moving the commissioning date back to October 2022, from a previously planned start in Q2 2022.<sup>82</sup> Further, with a maximum sendout to the grid of just 4.8GWh/d, this will make a minimal dent during peak consumption periods in Finland. In any case, the startup of this terminal should provide some small help in the winter.

Latvia will also build its own LNG terminal, at the port of Skulte. The Latvian government aims to commission the terminal in 2023-24, and the government plans to grant the project the status of an object of national interest, allowing faster and simpler administrative procedures to be applied in the project's implementation.<sup>83</sup> A Latvian terminal would have lower maintenance costs than the FSRU in the Gulf of Finland, and the gas could then be stored directly into Inčukalns as opposed to at the terminal, the country's economy minister Janis Vitenbergs said.<sup>84</sup> Plans to build a terminal at Skulte have been mooted for many years, but the project has never come to fruition. However, Latvian energy firm Virsi recently agreed to buy a 20 per cent stake in the proposed Skulte project, which envisages a floating facility with some 200GWh/d of sendout capacity and a pipeline to Inčukalns, instead of dedicated LNG storage.<sup>85</sup>

## LNG for this winter

While the successful commissioning of all these LNG projects and infrastructure improvements could see almost every country in the region with its own terminal providing more than enough regasification

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<sup>76</sup> 'No rouble payment if against sanctions: Eesti Gaas', <https://direct.argusmedia.com/newsandanalysis/article/2326050>

<sup>77</sup> <https://www.gaas.ee/gaasituru-ulevaade-2022-a-ii-kvartal/>

<sup>78</sup> *ibid*

<sup>79</sup> 'Lithuania pushes ahead with gas interconnection project', <https://direct.argusmedia.com/newsandanalysis/article/2300677>

<sup>80</sup> 'Lithuania to up gas capacity to Latvia from November', <https://direct.argusmedia.com/newsandanalysis/article/2356974>

<sup>81</sup> <https://www.haminalng.fi/wp-content/uploads/2022/04/Hamina-LNG-Oy-Press-release-11-April-2022.pdf>

<sup>82</sup> 'Finland's Hamina LNG delays start-up until October', <https://direct.argusmedia.com/newsandanalysis/article/2320898>

<sup>83</sup> 'Latvia to support planned Skulte LNG project', <https://direct.argusmedia.com/newsandanalysis/article/2366274>

<sup>84</sup> 'Latvia to support planned Skulte LNG project', <https://direct.argusmedia.com/newsandanalysis/article/2366274>

<sup>85</sup> 'Latvia's Skulte LNG project attracts 20pc stakeholder', <https://direct.argusmedia.com/newsandanalysis/article/2333605>

capacity to feed the Baltics, this is not going to be possible until at least the end of 2023, and likely later. While these future installations could allow the Baltics to relatively comfortably give up Russian gas, at least from a capacity perspective if not on price, the more pressing issue is the supply outlook for the winter.

Even with the current timeline for the commissioning of the Hamina and Gulf of Finland projects, things are expected to be very tight. If there is any delay whatsoever, the region may have no other option but to resume pipeline imports from Russia. Even if LNG capacity becomes available, it is highly uncertain whether this will be sufficient to feed the region during peak consumption, especially owing to pipeline capacity constraints. At peak times in winter 2021, Finland's Gasum was importing as much as 149GWh/d from Gazprom at Imatra. But maximum capacity from Estonia to Finland along the Balticconnector is currently around 65.4GWh/d, following recent updates from the Estonian and Finnish TSOs.<sup>86</sup> So if the FSRU is moored at Paldiski in winter 2022, it is unlikely that Finland will be able to import as much as it needs via the Balticconnector, and Hamina will not make up for all the shortfall. Gasum has acknowledged that these capacity limitations might make things "challenging".<sup>87</sup> Furthermore, entry capacity to the Finnish or Estonian grids may be lower than the maximum 140GWh/d of sendout that the *Exemplar* is capable of, meaning it may not be possible to use the FSRU's full capacity, according to information from Gasgrid Finland and Elering, making it even harder to meet peak demand.<sup>88</sup>

Even if the FSRU project is up and running according to schedule, there is no guarantee that the gas it provides will be at an affordable price, as Hando Sutter indicated.<sup>89</sup> In the absence of laws banning the import of Russian gas, such as exist in Latvia and Lithuania, it may be hard for importers to refuse the allure of potentially cheaper and more reliable piped gas from Russia- particularly those with already extant long-term contracts with Gazprom such as Latvijas Gāze or Gasum, compared to LNG from suppliers with whom no contracts have yet been signed to be delivered at terminals that are not yet operational. It is likely that either significant demand reduction this winter or a resumption of Russian gas imports will be necessary, or potentially both, if the region is to make it through the heating season.

Plans for state reserves could help to offset some disruption of supply or large increases in price, but not all countries have these plans in place. Latvia's state-owned utility Latveerģo has already purchased 2TWh which have been stored in Inčukalns, and cannot be touched until 1 October (although this gas is not directly owned by the state); a further 1.8-2.2TWh will be purchased in the form of LNG delivered to Klaipeda in Q4 2022, to be held directly for the state and used only after a government decision in case of emergency.<sup>90</sup> 4TWh would be enough to cover around a third of Latvia's annual gas demand. Estonia's government is aiming to procure 1TWh of reserves, or around one-fifth of its annual demand, but its first three tenders have secured just under half of this amount, and market conditions will make securing the rest of it difficult, Eesti Gaas said.<sup>91</sup> Neither Lithuania nor Finland, the two largest consumers in the region, plan to purchase state reserves,<sup>92</sup> meaning that very little of the Baltics' overall demand would be covered by state reserve plans.

Several Baltic countries have also signed mutual-aid agreements in the case of significant supply disruptions. Estonia has signed one with both neighbouring Latvia and Finland,<sup>93</sup> while Latvia also signed one with Lithuania.<sup>94</sup> But given that the Baltics are an isolated market with only two current links to the outside market (Klaipeda and GIPL), it is unlikely that if there is a shortage in one country, there

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<sup>86</sup> 'Baltic TSOs update Balticconnector gas capacity', <https://direct.argusmedia.com/newsandanalysis/article/2338404>

<sup>87</sup> <https://www.gasum.com/en/About-gasum/for-the-media/News/2022/gasum-takes-its-natural-gas-supply-contract-to-arbitration/>

<sup>88</sup> [https://gasgrid.fi/wp-content/uploads/Webinar\\_presentation\\_material\\_250722.pdf](https://gasgrid.fi/wp-content/uploads/Webinar_presentation_material_250722.pdf)

<sup>89</sup> <https://news.err.ee/1608649270/eesti-energia-chair-calls-for-state-of-emergency-over-natural-gas-supply>

<sup>90</sup> 'Latvia to create strategic gas reserves', <https://direct.argusmedia.com/newsandanalysis/article/2348610>

<sup>91</sup> 'Estonian gas stockpile contracted half of target', <https://direct.argusmedia.com/newsandanalysis/article/2362429>

<sup>92</sup> 'Finland, Lithuania to do without state gas reserves', <https://direct.argusmedia.com/newsandanalysis/article/2349137>

<sup>93</sup> 'Estonia addresses gas supply risks', <https://direct.argusmedia.com/newsandanalysis/article/2330473>

<sup>94</sup> 'Latvia, Lithuania ink gas supply security deal', <https://direct.argusmedia.com/newsandanalysis/article/2310946>

will be an abundance in another. In some ways, if one country suffers, it is likely they will all suffer. Therefore in an emergency, it seems unlikely that these agreements would do much to alleviate the issue. Potentially in the short-term it could allow a country with more significant stores at Inčukalns to release some of this to another country, but this would be nothing more than a stop-gap measure that would not solve the wider problem of a supply emergency.

### Similarities with Europe's strategy

Europe is also looking to LNG as a means of cutting its dependence on Russian gas and increasing the diversity of supply. The bloc's new REPowerEU project aims to cut EU imports of Russian gas by two-thirds, or over 100bcm, by the end of 2022. The plan is for 60bcm of gas to be replaced by gas from other sources, mostly in the form of LNG, with the Commission saying it could increase LNG imports by about 50bcm a year, with Qatar, the US, Egypt and exporters in west Africa potentially providing additional supply.<sup>95</sup> The EU has set up a task force to help member states diversify their energy supply and reduce dependence on Russian fossil fuels. The commission specifically noted the need for the EU to secure more of its energy supply through voluntary common purchase of LNG.<sup>96</sup> To this end, it has launched a platform for the common purchasing of gas, LNG and hydrogen that it hopes will help to phase out dependency on Russian gas.<sup>97</sup>

European countries have also launched a multitude of planned LNG projects, in total planning to upgrade its LNG import capacity by 80.7mn t/yr by the start of 2026. Europe has 16 projects that have already reached FID or are based on the optimisation of existing infrastructure. If completed, these would increase Europe's LNG import capacity to 274mn t/yr by 2026, 42 per cent more than at present.<sup>98</sup> Germany and Italy, the two biggest importers of Russian gas in Europe, have plans for five and three projects each, respectively.

But while there can be no doubt that Europe is placing heavy emphasis on LNG to replace Russian pipeline gas, it also faces many of the same issues the Baltics do in terms of capacity bottlenecks which inhibit the distribution of this gas to all member states. The Iberian peninsula has nearly 40 per cent of Europe's regasification capacity, but just one pipeline link to France at Pirineos, meaning that exports in this direction are limited to just 225GWh/d.<sup>99</sup> Even if more gas could make it into France, grid bottlenecks there, as well as complications due to odorization of gas, mean that increasing exports from France to elsewhere would also be difficult.<sup>100</sup> There is renewed interest in reviving the long-dormant plan to build the Midcat pipeline, which would provide a new pipeline link between Spain and France, as well as for a new pipeline linking Spain and Italy.<sup>101</sup> But just like the Baltics, these infrastructure projects will not be ready for years, even if they do reach FID, so big questions remain about Europe's ability to absorb all the LNG it wants to over the winter period.

Capacity constraints are also rife in south-eastern Europe, as long-term bookings by Gazprom block access to supply routes, making it hard for LNG from Greece and Turkey to feed the rest of the region. The commissioning of the 3bcm/yr Interconnector Greece-Bulgaria (IGB) could help to alleviate some of these issues, but the project has been constantly delayed; it was most recently expected to be operational by the end of July 2022, but while construction and licensing are complete,<sup>102</sup> final commissioning has been delayed again until October owing to a transition in government and technical issues.<sup>103</sup> However, until further upgrades to the Greek system have been carried out, the IGB will only receive gas from the Trans-Adriatic Pipeline (TAP), as physical constraints prohibit Greek system

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<sup>95</sup> 'EU aims to slash Russian gas imports by 2023', <https://direct.argusmedia.com/newsandanalysis/article/2309541>

<sup>96</sup> 'EU establishes energy diversification task force', <https://direct.argusmedia.com/newsandanalysis/article/2334997>

<sup>97</sup> 'EU launches gas, LNG, hydrogen purchase platform', <https://direct.argusmedia.com/newsandanalysis/article/2320287>

<sup>98</sup> 'Europe eyes 42pc rise in LNG import capacity by 2026', <https://direct.argusmedia.com/newsandanalysis/article/2344644>

<sup>99</sup> 'EU plans to replace Russian gas with LNG face headwinds', <https://direct.argusmedia.com/newsandanalysis/article/2316246>

<sup>100</sup> 'French grid bottlenecks could curb Spanish gas imports', <https://direct.argusmedia.com/newsandanalysis/article/2324070>

<sup>101</sup> 'Spain-Italy gas pipeline project advances', <https://direct.argusmedia.com/newsandanalysis/article/2330750>

<sup>102</sup> 'IGB gas line granted transmission licence in Greece', <https://direct.argusmedia.com/newsandanalysis/article/2354224>

<sup>103</sup> <https://www.me.government.bg/bg/news/informaciya-do-mediite-3051.html>

operator Desfa from offering capacity in either direction between the IGB and the Greek grid.<sup>104</sup> Therefore, exporting LNG from Greece in the short-term will remain limited to the relatively small Kulata-Sidirokastro point, and beyond this it will be reliant on capacity in TAP being available. There is also no interconnection agreement between the TSOs of Bulgaria and Turkey, making it currently difficult to export regasified Turkish LNG to Bulgaria and beyond.

With EU legislation mandating EU member states to fill their storage facilities to 80 per cent of capacity by 1 November 2022, many governments are stepping in to purchase reserves or to help subsidise private companies to purchase gas to keep in storage. Austria, for example, has purchased a 20TWh state reserve,<sup>105</sup> enough to cover almost a quarter of annual consumption, while the Netherlands is subsidising injections into Europe's largest storage facility, Bergermeer.<sup>106</sup>

While a comprehensive examination of Europe's LNG plans and bottlenecks is outside the scope of this paper, these examples are enough to demonstrate that Europe and the Baltics have much the same strategy when it comes to their attempts to replace Russian gas, and face many of the same obstacles.

### The long game: renewable electricity and hydrogen

While this paper is focussed on the Baltic gas market, it would be remiss not to examine at least in minor detail the other notable alternative to Russian gas, at least in the medium to long term: renewable energy. With ample coastline, particularly in Finland, offshore wind supplies a sizeable amount of the Baltics' overall energy mix, and these countries have continued to add to their renewable generation since the start of the war. Solar power is also becoming more popular in the region, particularly in Lithuania, and all four countries have joined the European Hydrogen Backbone (EHB) initiative, which envisages producing hydrogen with spare renewable energy and transporting it via pipeline through to large industrial users in places like Germany and France.

The power grid systems of the Baltics are also still reliant on Russia, operating on the post-Soviet BRELL (Belarus, Russia, Estonia, Latvia and Lithuania) system which requires at least minimal flows from Russia to keep the system functional. The Baltics want to disconnect from the BRELL system as soon as possible to minimise reliance on Russian energy, but full synchronisation with continental Europe isn't planned until the end of 2025. While the system remains connected to Russia and Belarus, the Baltics remain open to threats: following disagreements over the transit of goods through Lithuania to the Russian exclave of Kaliningrad, Russia has threatened to cut Lithuania off from BRELL.

That said, such a threat is technically difficult, as it would require cutting off all three Baltic States. Lithuania's energy minister Dainius Kreivys said before the tensions in Kaliningrad that Lithuania's national security "would not be affected" if the Baltic states were disconnected from the BRELL system. He said such a cut-off would not have an impact on Lithuanian consumers because the country would be immediately connected to the western European grid via Poland. The minister emphasised that imports from Russia are very minimal — just enough to keep the system technically operational.<sup>107</sup> Electricity imports in the Baltics from Russia's state exporter Inter RAO were officially suspended from 23 May 2022,<sup>108</sup> power prices in the region subsequently soared, and remained elevated in June.<sup>109</sup> Martynas Giga, director of independent electricity trader Elektrum Lietuva, said that the abandonment of Russian electricity will boost green energy in Lithuania, the Baltics and beyond.<sup>110</sup>

Baltic electricity transmission system operators have offered each other help, as well as themselves receiving assurances of outside help. They have formed a joint operating security company called Baltic

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<sup>104</sup> 'IGB gas flows to Bulgaria may start later this month', <https://direct.argusmedia.com/newsandanalysis/article/2348153>

<sup>105</sup> 'Austria fully contracts gas storage reserve', <https://direct.argusmedia.com/newsandanalysis/article/2355034>

<sup>106</sup> 'Netherlands' second Bergermeer auction undersubscribed', <https://direct.argusmedia.com/newsandanalysis/article/2348183>

<sup>107</sup> 'Cutting Lithuania off from Brell power grid 'unlikely'', <https://direct.argusmedia.com/newsandanalysis/article/2343769>

<sup>108</sup> 'Russia's Inter RAO halts Baltic power flows', <https://direct.argusmedia.com/newsandanalysis/article/2334276>

<sup>109</sup> 'Baltic power prices soar in May', <https://direct.argusmedia.com/newsandanalysis/article/2340784>

<sup>110</sup> 'Lithuanian sync to CE not affected by Russian ban', <https://direct.argusmedia.com/newsandanalysis/article/2336080>

RCC OU, which will calculate the capacity of power lines between countries, assess the reliability and adequacy of systems, plan line disconnections, and develop a common network model.<sup>111</sup> Nordic TSOs Energinet, Fingrid, Svenska Kraftnat and Statnett are also planning to support the Baltics should they be disconnected from the Russian electricity grid.<sup>112</sup>

Estonia and Finland recently signed an initial agreement aimed at building a third interconnector between the two countries, EstLink 3, which would bring their total interconnecting capacity up to a potential 3GW, and would increase security of supply in the Baltic region and help the EU achieve its renewables targets, Elering chief executive Taavi Veskimägi said.<sup>113</sup>

Finland has also cancelled its joint project with Russian state-owned nuclear company Rosatom to develop the 1.2GW Hanhikivi nuclear plant in northern Finland, and is now searching for alternative foreign partners.<sup>114</sup> This political decision could cause problems for Finland's power generation, though, particularly as commercial production at Finland's 1.6GW Olkiluoto 3 nuclear reactor has been pushed back to December after having already been delayed to September.<sup>115</sup>

In order to replace the dominance of Russian energy imports, Baltic countries have pushed forward with renewables projects this year. Finland installed 784MW of wind power — 154 turbines in total — in the first half of this year, lifting its total wind capacity to 4.04GW, according to the country's wind power association. This was more than was added in the entirety of 2021.<sup>116</sup> Finland also recently set a new target of net zero emissions by 2035, arguably the most ambitious climate goal in the developed world.<sup>117</sup> Lithuania plans to invest €1bn in renewable energy, and in April 2022 passed the country's first offshore wind legislation, giving a green light to the development of offshore wind farms in the Baltic Sea;<sup>118</sup> Green Genius plans to install 700MW of wind and solar capacity in the country by 2025.<sup>119</sup> Denmark-based renewable energy developer European Energy plans to build a 110MW solar photovoltaic (PV) park in Latvia, where it already has 1GW of renewable projects under development.<sup>120</sup> These are just a small selection of some of the renewables projects planned in the Baltic region in the near future.

All four countries are members of the EHB initiative, with Finland being particularly keen to promote the development of hydrogen projects and infrastructure. The 'Nordic countries and the Baltic region' corridor, letter D on the map, would see hydrogen produced in these areas, particularly in northern Finland and Sweden where there is ample space for turbines, and transported via new and existing infrastructure down through to Poland and then across into the industrial centre of Germany. Some hydrogen will also be consumed domestically, helping to reach the countries' climate neutrality goals.

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<sup>111</sup> 'Baltic joint operating company begins operations', <https://direct.argusmedia.com/newsandanalysis/article/2346840>

<sup>112</sup> 'Nordic TSOs plan to support Baltic power grid', <https://direct.argusmedia.com/newsandanalysis/article/2316134>

<sup>113</sup> 'Estonia, Finland sign third power link agreement', <https://direct.argusmedia.com/newsandanalysis/article/2345495>

<sup>114</sup> 'Finnish firm's 1.2GW nuclear construction licence ends', <https://direct.argusmedia.com/newsandanalysis/article/2340717>

<sup>115</sup> 'Finnish 1.6GW nuclear plant further delayed', <https://direct.argusmedia.com/newsandanalysis/article/2341963>

<sup>116</sup> 'Finland ups wind capacity by 784MW in 1H', <https://direct.argusmedia.com/newsandanalysis/article/2347419>

<sup>117</sup> 'Finland aims for net zero by 2035 in new climate act', <https://direct.argusmedia.com/newsandanalysis/article/2346875>

<sup>118</sup> 'Lithuania adopts first offshore wind legislation', <https://direct.argusmedia.com/newsandanalysis/article/2319856>

<sup>119</sup> 'Green Genius eyes 700MW of Lithuanian wind, solar', <https://direct.argusmedia.com/newsandanalysis/article/2330763>

<sup>120</sup> 'European Energy to build Latvia's largest solar park', <https://direct.argusmedia.com/newsandanalysis/article/2341961>



Source: GasgridFinland

According to the latest EHB analysis, potential production in the region of corridor D is estimated to be 127 TWh per year by 2030.<sup>121</sup> “The hydrogen economy is indeed a very significant opportunity for the countries around the Baltic Sea, which have excellent renewable energy resources, space and pioneering in the development of sustainable technology solutions”, said Gasgrid Finland’s unit manager Sara Kärki.<sup>122</sup> To realise its plan, the EHB called for decisive action to simplify and shorten permitting procedures, increase financing solutions, incentivise demand for hydrogen, and strengthen partnerships with likely suppliers such as Morocco, Algeria, Tunisia and Ukraine.<sup>123</sup> Gasgrid Finland will now begin to develop a national hydrogen network, as well as a project to build a hydrogen pipeline in the Bothnian Bay, linking demand sites in Sweden and Finland and helping to develop the regional hydrogen market.<sup>124</sup> Finland’s wind power generation capacity is on track to triple by 2024 compared with 2020, and increase nine-fold to 18GW by 2030, Finnish electricity transmission system operator Fingrid estimates. The company has received connection requests from generation projects equivalent

<sup>121</sup> <https://ehb.eu/files/downloads/EHB-Supply-corridors-presentation-ExecSum.pdf>

<sup>122</sup> <https://gasgrid.fi/2022/05/31/gasgrid-finland-julkaisee-yhdessa-muiden-european-hydrogen-backbone-ryhman-jasenten-kanssa-viisi-potentiaalista-vetykaytavaa-vastaamaan-euroopan-kiihdytettyihin-2030-vetytavoitteisiin/>

<sup>123</sup> ‘EHB coalition eyes five corridors to supply Europe’s H2’, <https://direct.argusmedia.com/newsandanalysis/article/2337336>

<sup>124</sup> <https://nordichydrogenroute.com/news/gasgrid-finland-and-nordion-energi-launches-the-nordic-hydrogen-route-the-first-large-scale-cross-border-hydrogen-network-in-europe/>

to 150GW, which could yield nearly 450TWh of surplus electricity, which could be converted to around 300TWh of clean hydrogen, if the projects go ahead, Fingrid says.<sup>125</sup>

There are also other hydrogen projects planned in the Baltics, such as Estonia's 'hydrogen valley' project that was recently announced: this brings together around 30 projects mostly in the feasibility stage spanning all aspects of the supply chain, with plans for at least six production facilities, infrastructure including import and export terminals, and end-use applications in transport and heating.<sup>126</sup>

However, such plans remain hopeful, and are dependent on the development of infrastructure, technology, and demand for hydrogen which has yet to materialise. While the EU has promised significant funding for hydrogen projects, this does not mean that industry will be quick to transition to using hydrogen, particularly given its expense. Furthermore, following the EU's decision to label gas as a 'green' energy, it may be that many European countries look to intensify coal-to-gas switching, as opposed to gas-to-hydrogen, meaning that uptake of hydrogen could remain muted until it becomes cost-competitive with gas and coal. It also remains unclear whether older pipelines, particularly the Soviet-era ones in the Baltic countries, could safely carry hydrogen, or whether they would corrode the pipelines. Retrofitting the pipelines could turn out to be just as expensive as building new ones, making the Baltic countries' plans to build 'corridor D' of the EHB expensive. Given such uncertainties, the Baltics' plans for hydrogen as a 'fuel for the future' remain unsure.

## Europe and renewables

The Baltic push for renewables is part of a wider European trend towards increasing renewable production, which has increased momentum since the start of the war in Ukraine. The European Commission published the REPowerEU plan in May 2022, which aims to replace a portion of Europe's gas imports from Russia with renewables and hydrogen. The EU increased its target for renewables as a share of gross final energy consumption to 45 per cent by 2030, up from 40 per cent from 2021's Fit for 55 proposal. "This would bring the total renewable energy generation capacities to 1236 GW by 2030, in comparison to 1067 GW by 2030 envisaged under Fit for 55 for 2030", according to the document.<sup>127</sup> It aims to double the number of solar PVs installed by 2025, as this is the quickest renewable power source to roll out, it claims.

REPowerEU also set a target of 10 million tonnes of domestic renewable hydrogen production, and an additional 10 million tonnes worth of imports by 2030, and is providing more than €200mn of funding in order to double the number of 'hydrogen valleys' similar to that in Estonia.<sup>128</sup> The Commission's analysis indicates that REPowerEU will require an additional investment of €210bn between now and 2027, on top of the investments already needed to meet the Fit for 55 proposals; the Commission expects these investments will pay for themselves by saving €94bn a year on energy imports per year by 2030.<sup>129</sup>

The problem for both the Baltics and the EU as a whole, rather obviously, is that these infrastructure projects will take years to construct, and in the meantime a reliance on fossil fuels, including those from Russia, will remain. A further issue, even in the short term, is that while renewables can be deployed fairly quickly, theoretically allowing a quick replacement of Russian gas, this requires national grids to be ready to receive all this additional electricity and still be able to balance the grid. Also, particularly in the Baltics, gas is mostly used for heat as opposed to the production of electricity, meaning that until heating is electrified through a massive expansion of heat pumps, renewables will struggle to displace gas in these hard-to-abate sectors.

In any case it is clear, even from this rather limited evaluation of renewables and hydrogen, that both the Baltics and the EU as a whole plan to replace Russian gas with these alternative forms of energy

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<sup>125</sup> 'Finnish utilities build case for hydrogen network', <https://direct.argusmedia.com/newsandanalysis/article/2312767>

<sup>126</sup> 'Estonian consortium plans nationwide hydrogen valley', <https://direct.argusmedia.com/newsandanalysis/article/2348254>

<sup>127</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A230%3AFIN&qid=1653033742483>

<sup>128</sup> *ibid*

<sup>129</sup> *ibid*

in the longer term, and that both the Baltics and the EU share many of the same infrastructural issues in terms of grid limitations and the use of gas mostly for heating, which will make replacing gas with renewables difficult.

## Conclusion

This paper has sought to illustrate the similarities between the Baltic and European gas markets, and how they share not only many of the same issues — a reliance on Russian gas, a lack of current alternatives in sufficient volumes, high gas prices which in turn cause demand reduction — but also many of the same proposed solutions: quick construction of LNG terminals to open up the market to external supply, government subsidies for storage and state stockpiles, and in the longer term a switch to renewable energy and hydrogen.

It is worth acknowledging that comparisons between the Baltics and Europe as a whole can not be stretched too far, given the sheer volume disparities between the two. But it is also worth considering that the Baltic market, having been dependent on Russia for 74 per cent of its gas imports in 2021, was far more reliant on Russia than Europe, intensifying both the struggle and the need for diversification. Further, the Baltic market also has far fewer points of access from which to diversify its imports, with one of those two links, GIPL, actually currently acting as a draw of gas away from the region into Poland.

Therefore it bears an interesting comparison, or contrast, to a country like Italy, whose gas demand is many times higher than the Baltics, but which is also has several LNG terminals (with three more in the offing), and pipeline links not only to neighbouring European countries, but also to big gas exporters like Libya, Algeria, and, via TANAP/TAP, Azerbaijan. While Italy faces a much larger task replacing Russian gas in terms of volumes, it also has far greater means, both financially and infrastructurally, with which to do so.

But the Baltic region is also worthy of study in and of itself: no other region has been so reliant on Russia for its energy, and so disconnected from the rest of the European energy system. The struggles it faces in replacing Russian gas, and the steps it is taking to address them, are therefore important case studies in what other similarly reliant countries can do.

In conclusion, then, the Baltics represent in a microcosm the problems Europe is facing and the solutions it is proposing, and also are perhaps a portent of how the coming winter will progress as both try to largely quit their dependence on Russian gas.

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