

# LNG rush threatens Baltic energy transition

## Why new LNG infrastructure is a false solution for energy security in the Baltics

For more information

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Citizens protest the proposed Skulte LNG terminal in Riga in front of the Cabinet of Ministers on 4 February 2023. Photo: Niklāvs Kadiķis

### Introduction

Russia's war in Ukraine has exposed a severe oversight in Europe's energy security risks. The Baltic states and Finland have been most affected by the war due to existing pipeline connections to Russia, with little to no access to alternative fossil gas sources. These countries that had relied on Russia for fossil gas imports now lacked sufficient alternative infrastructure to cover regional demand. The main efforts to diversify gas sources and reduce regional reliance on Russia in the past decade have been the construction of the Klaipeda liquified natural gas (LNG)<sup>1</sup> terminal in Lithuania and Balticconnector, the first gas pipeline connecting Finland and Estonia.

<sup>1</sup> The term liquified natural gas is used by the fossil fuel industry to refer to a type of fossil gas in liquid form.

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Investments in LNG terminals have been proposed by governments as a solution to the curtailed fossil gas supply in affected countries. For instance, Finland managed to secure a 10-year charter deal for a floating terminal situated in Inkoo, where deliveries to the grid began in late 2022, while Latvia decided to invigorate an old idea of developing a land-based LNG terminal in Skulte. The combined maximum regasification capacity of these two projects is 9.1 billion cubic metres (bcm) per year. Not considering utilisation rates, technical limitations and declining gas demand, the terminals at Klaipeda, Inkoo and Skulte (a combined 13.1 bcm per year) would have a surplus regasification capacity of over 7 bcm per year when factoring in regional demand figures (5.6 bcm per year).

This brief aims to show that no new permanent LNG infrastructure is needed in the Baltic region and Finland.

A study by Artelys from May 2022 on additional investments required for the security of gas supply<sup>2</sup> determined that the region needed limited new import capacity infrastructure to ensure this supply, which has since been addressed by the chartered floating storage and regasification unit (FSRU) stationed in Inkoo. Similar findings were presented in the REPowerEU plan, which evaluated additional EU fossil gas infrastructure needs. Even according to the European Network of Transmission System Operators for Gas (ENTSOG), which prepared the assessment and is well known for exaggerating future gas demand, the addition of one temporary floating terminal to the existing Klaipeda terminal would significantly ease regional demand.<sup>3</sup> Finally, an assessment by Trinomics on REPowerEU needs in Estonia shows that increasing LNG import capacity in Estonia is not a cost-efficient option for diversifying gas supply and that closer regional cooperation is sufficient.

This brief is based on open-access information from governments, academic articles, scientific reports, analyses and publications by environmental non-governmental organisations.

## Overview of existing infrastructure

Although a cut-off from Russian gas was a serious energy security risk for the region, fossil gas is a relatively small part of the countries' energy mix. In 2021, the joint gas market of the four countries consumed around 5.6 bcm of fossil gas. Theoretically, the Klaipeda LNG terminal in Lithuania can supply 4 out of the 5.6 bcm, which covers the demand of the three Baltic states, with only Finland left to fend for itself. This calculation is complicated, however, because Klaipeda now also supplies Poland through the Gas Interconnection Poland-Lithuania interconnector, which opened in May 2022. This has increased competition for booking LNG capacity in the terminal and calls into question whether the Baltic states can cover the demand. This will be more of an issue in the heating season of 2023-2024 when Latvia's underground storage facility is depleted of Russian gas, with little prospect of it being refilled as easily as it was in 2022.

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<sup>2</sup> Artelys, '[Does phasing-out Russian gas require new gas infrastructure?](#)', Artelys, 18 May 2022.

<sup>3</sup> European Commission, '[REPowerEU Plan](#)', European Commission, 18 May 2022.

Fossil gas share of total energy supply (TES) in the Baltics and Finland

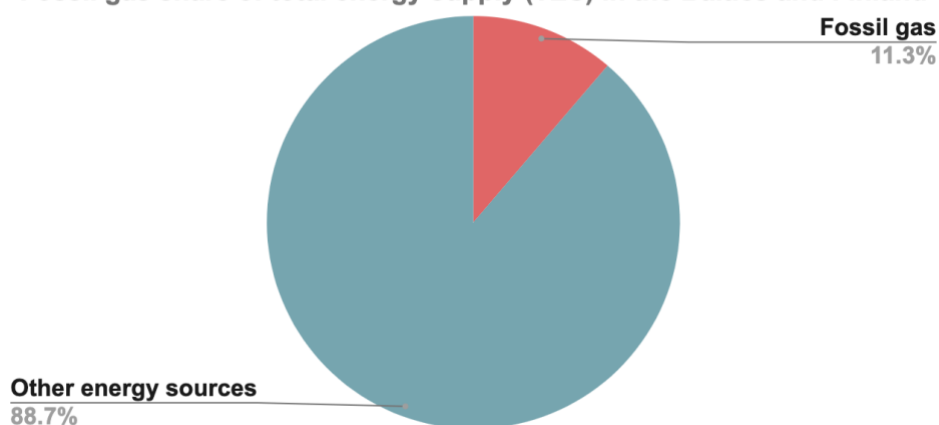


Figure 1: Fossil gas share of total energy supply (TES) in the Baltics and Finland<sup>4</sup>

Table 1: Fossil gas demand by country<sup>5</sup>

|                             | Finland  | Estonia  | Latvia   | Lithuania | Region   |
|-----------------------------|----------|----------|----------|-----------|----------|
| <b>2021</b>                 | 2.10 bcm | 0.43 bcm | 1.05 bcm | 2.02 bcm  | 5.60 bcm |
| <b>2022</b>                 | 1.01 bcm | 0.34 bcm | 0.77 bcm | 1.40 bcm  | 3.52 bcm |
| <b>% change<sup>6</sup></b> | -48%     | -22%     | -27%     | -31%      | -37.1%   |

Table 2: Existing fossil gas infrastructure in the region

| Country | Infrastructure                                    | Capacity (bcm/year) | Status      |
|---------|---|---------------------|-------------|
| FI      | Inkoo FSRU (floating storage regasification unit) | 5.0                 | Operational |
| FI      | Manga LNG terminal                                | 0.4                 | Operational |
| FI      | Pori LNG terminal                                 | 0.1                 | Operational |
| FI      | Hamina LNG terminal                               | 0.3                 | Operational |
| FI-EE   | Balticconnector                                   | 2.6                 | Operational |

<sup>4</sup> International Energy Agency, [Countries and Regions](#), International Energy Agency, 2021.

<sup>5</sup> Oxford Institute for Energy Studies, [‘The Baltic gas market: a microcosm of Europe’s struggle to quit Russian gas’](#), Oxford Institute for Energy Studies, September 2022.

<sup>6</sup> Ben McWilliams and Georg Zachmann, [‘European natural gas demand tracker’](#), Bruegel, 13 January 2023.

|       |  |                        |             |
|-------|--|------------------------|-------------|
| EE-LV | EE-LV interconnector capacity                | 2.2                    | Operational |
| LV    | Incukalns UGS (underground storage facility) | 4.47                   | Operational |
| LV-LT | LV-LT interconnector (ongoing enhancement)   | 2.3 (4.8 in 2023)      | Operational |
| LT    | Klaipeda LNG terminal                        | 4.0                    | Operational |
| LT-PL | GIPL interconnector                          | PL→LT 2.4<br>LT→PL 1.9 | Operational |
| LV    | Skulte LNG terminal                          | 4.1                    | Planned     |
| EE    | Paldiski LNG terminal                        | unknown                | Planned     |

EE – Estonia, FI – Finland, LT – Lithuania, LV – Latvia, PL – Poland

## Fossil gas consumption scenarios in Estonia and Latvia

A base scenario from a 2021 study following trends in Estonia’s fossil gas demand (Figure 2) depicted a steady one to two per cent decrease in gas consumption year on year until 2030, after which a steep decline was forecast due to alternative technologies becoming cost efficient (3.8 terawatt hours (TWh) per year).<sup>7</sup> The low gas consumption scenario showed a two-to-three per cent decline year on year until 2030, also followed by a steep decline like that predicted for the base scenario (3.2 TWh/year). However, the new reality in 2022 rendered the predicted timelines of these scenarios irrelevant, with Estonian gas demand dropping 22 per cent compared to the average demand from 2019 to 2021.<sup>8</sup>

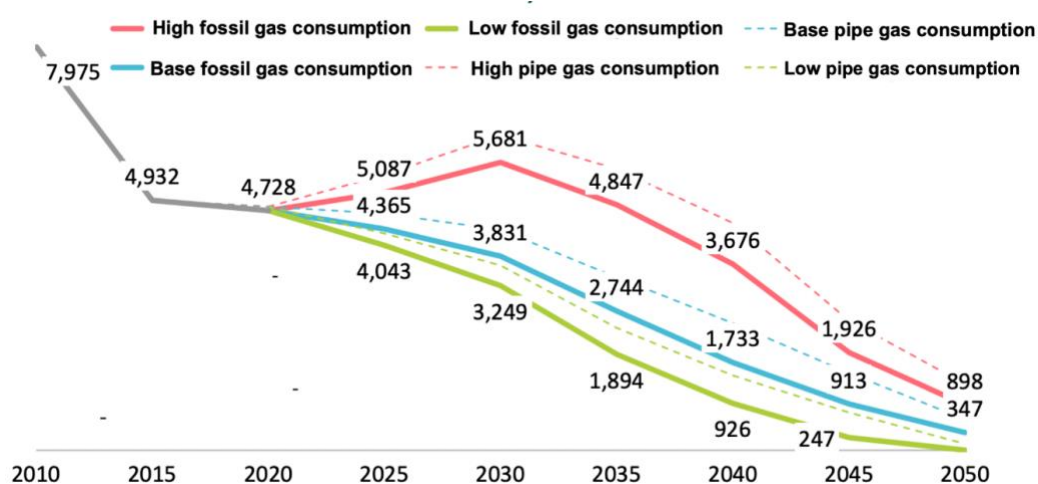


Figure 2: Fossil gas consumption (in gigawatt hours (GWh)) scenarios for Estonia<sup>9</sup>

<sup>7</sup> Civitta, ‘Gaasitarbimise puhtale energiale ülemineku uuring: eesti gaasitarbimise prognoos kuni 2050 aastani’, Civitta, 4 June 2021.

<sup>8</sup> Ben McWilliams and Georg Zachmann, ‘European natural gas demand tracker’.

<sup>9</sup> Civitta, ‘Gaasitarbimise puhtale energiale ülemineku uuring: eesti gaasitarbimise prognoos kuni 2050 aastani’.

In Latvia, fossil gas consumption from January to October 2022 was about 36 per cent lower compared to consumption during the same period in 2021,<sup>10</sup> with an overall decline of 27 per cent for the whole year. Latvia’s gas demand in 2021 was already in line with the global climate action scenario (Figure 3), but the 2022 gas demand (0.77 bcm) fell much further than that predicted in the global climate action gas consumption forecast for 2027 (0.98 bcm).

These figures demonstrate the unexpected scale and speed of the gas consumption decline in Estonia and Latvia.

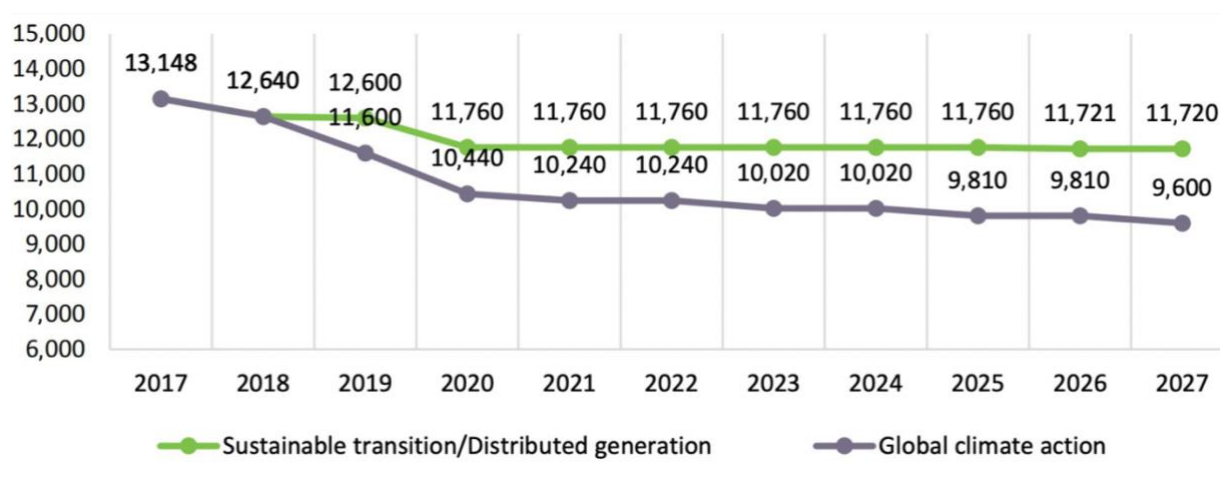


Figure 3: Fossil gas consumption (GWh) forecast for Latvia until 2027<sup>11</sup>

## LNG terminal plans

### Finland

In May 2022, Finland signed a 10-year EUR 500 million contract for a floating storage and regasification unit to cover their fossil gas demand and fill the gap in their gas infrastructure. The regasification capacity of the terminal is 5.2 bcm per year, which at a full utilisation rate is enough to cover the demand of Finland, Estonia and Latvia. The import capacity infrastructure for the terminal was completed in October 2022 and the terminal has been operational since January 2023.

### Estonia

Estonia built their hauling pier for LNG to allow for the possibility of the floating storage and regasification unit chartered by Finland being stationed in Estonia. The construction of the dock for the floating terminal started in May 2022 and was completed in October 2022 by Alexela, a private sector company that had previously planned construction of an onshore terminal. The Estonian gas and electricity transmission system operator, Elering, constructed a 1.2-kilometre pipeline to connect the floating terminal to Balticconnector. The import capacity infrastructure was completed in November 2022. As of February 2023, there are no clear plans whether a floating storage and regasification unit will be chartered. On 10 March

<sup>10</sup> Argus, 'Latvia falls short of EU 80pc storage ambition', Argus, 2 November 2022.

<sup>11</sup> Conexus, 'Joint-stock company Conexus Baltic grid: medium-term strategy for 2019-2023', Conexus, accessed 13 March 2023.

2023, the Estonian stockpiling agency purchased the Paldiski quay along with the port infrastructure and property from Alexela for EUR 31.5 million (excluding VAT), a price previously determined in a guarantee agreement between the government and Alexela in July 2022.<sup>12</sup>

## Latvia

In Latvia, the government decided to support the building of an LNG terminal to improve the country's energy security. To that end, the Ministry of Economics invited project developers to apply in May 2022. Of the three applications received, the Riga and Skulte terminal projects passed on to the second stage, where the risks and economic feasibility of the plans were assessed. On 29 September, the government granted the Skulte LNG terminal the status of a national priority project through special law,<sup>13</sup> thus simplifying and accelerating procedures for the assessment and implementation of the project. The bill states that the terminal should be completed by 15 September 2024.<sup>14</sup> In January 2023, media reported that if uncertainties regarding necessary guarantees and strategic investors in the private LNG project persist, the state may make provisions to construct the terminal on its own.<sup>15</sup>

## Inevitable decline of the regional gas market

According to the environmental think tank E3G, full implementation of the REPowerEU plan will reduce fossil gas demand in the EU by 52 per cent by 2030.<sup>16</sup> Although the EU-wide plan has yet to be integrated into the national energy plans in the region, an update of national energy and climate plans (NECPs) in 2023 should address this need. The sought-after acceleration of the green transition in the energy sector will reduce the demand for fossil gas in the region, which will in turn reduce the utilisation and profitability of the proposed terminals. Multiple large-scale wind projects are already underway in the Baltic Sea region with the aim of supplying 19.6 GW in renewable electricity by 2030.<sup>17</sup> These efforts support the decarbonisation pathways of sectors that consider electrification the most effective way of reducing dependence on fossil gas.

The sharp 37 per cent decline in fossil gas consumption in 2022 across the region compared to previous years signals that a 52 per cent reduction in demand in each country by 2030 is a distinct possibility. Although the drop is to some extent impacted by unexpected factors such as the weather and temporarily reduced demand due to high prices, a growing trend among consumers to switch from gas-based heating to alternative solutions should contribute to a permanent reduction in gas consumption. The CEO of Utilitas, the largest district heating company in Tallinn, stated that they are facing the highest-ever demand from

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<sup>12</sup> ERR, '[State buys Paldiski LNG quay from Pakrineeme Port](#)', *ERR*, 10 March 2023.

<sup>13</sup> Likumi, '[Par Skultes sašķidrinātās dabasgāzes termināli](#)', *Likumi*, 4 October 2022.

<sup>14</sup> Ibid.

<sup>15</sup> Baltic News Network, '[Latvian PM says Skulte gas terminal's construction may be financed by the state](#)', *Baltic News Network*, 8 February 2023.

<sup>16</sup> E3G, '[Repowering towards EU gas demand reduction: are we on track?](#)', *E3G*, 21 October 2022.

<sup>17</sup> Wind Europe, '[Baltic Sea countries sign declaration for more cooperation in offshore wind](#)', *Wind Europe*, 30 August 2022.

consumers wanting to switch from fossil gas to district heating, naming the high price of gas as the main motivation.<sup>18</sup>

## Why LNG is not the answer to the crisis?

### 1. Unproven hydrogen readiness, lock-in effect and stranded assets

According to a recent analysis by the Fraunhofer Institute for Systems and Innovation Research on the technical feasibility of converting LNG terminals to liquid hydrogen or ammonia, assurances of H<sub>2</sub> readiness given by companies planning new LNG terminals are uncertain and unproven at best.<sup>19</sup> This is due to a lack of experience with these technologies at an industrial scale, confusion about future demand for these fuels, and a gap in the knowledge regarding the suitability of component materials. Thus, there is a clear risk of these terminals becoming stranded assets in the medium term, given their future role as renewable energy carriers remains unclear. Furthermore, a hydrogen-ready LNG terminal must still be considered a fossil fuel terminal as long as there is no green hydrogen to supply it. Currently, only 0.04 per cent of global hydrogen production is green hydrogen.<sup>20</sup>

Considering the low feasibility of repurposing infrastructure, there is a significant risk that the countries would be locked in to producing high levels of emissions or assets becoming stranded before their 'useful' lifetime is up.

In the context of regional infrastructure capacities, decreasing fossil gas demand, and commitments to climate goals and decarbonisation, further investments in the expansion of regional LNG capacity would be short-sighted.

### 2. LNG is harmful to the climate

Fossil gas consists mostly of methane, a greenhouse gas that is 84 times more potent in the atmosphere than CO<sub>2</sub> over a short term of 20 years. Methane leaks from every part of the fossil gas supply chain and LNG is considered significantly more harmful to the climate compared to pipeline gas, especially due to the energy-intensive upstream process, liquefaction (including purification) and LNG carrier transport, with some studies estimating anywhere from two- to ten-fold higher emissions compared to pipeline gas.<sup>21,22</sup> Methane leakage from anthropogenic methane emissions is higher than previously thought. The latest United Nations' Intergovernmental Panel on Climate Change (IPCC) reports underline the urgent need for drastic reductions in greenhouse gas emissions and a rapid exit from fossil fuels in scenarios which depend

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<sup>18</sup> ERR, '[Kaugkütte huviliste arv kasvab, kuid liitumisega võib minna aega](#)', ERR, 27 June 2022.

<sup>19</sup> Fraunhofer Institute for Systems and Innovation Research, '[Conversion of LNG terminals for liquid hydrogen or ammonia: analysis of technical feasibility under economic considerations](#)', Fraunhofer Institute for Systems and Innovation Research, 3 November 2022.

<sup>20</sup> International Energy Agency, '[Global Hydrogen Review 2022](#)', International Energy Agency, September 2022.

<sup>21</sup> BBC, '[Climate change: hidden emissions in liquid gas imports threaten targets](#)', BBC, 3 November 2022.

<sup>22</sup> Thinkstep, '[Life cycle emissions of natural gas transported by TurkStream](#)', Thinkstep, 1 October 2020.

less on unproven carbon dioxide removal technologies to avoid more catastrophic climate change scenarios.<sup>23</sup>

As the US plays a major role in Europe's gas source diversification, it must be noted that the main gas production method in the US is hydraulic fracturing, which is well-known for its destructive impacts on nearby communities, the environment and the climate. Due to the sudden gap in the European gas market, the US is already planning to expand its LNG export capacity and open new gas fields, which are not compliant with any climate targets and would increase methane emissions for many years to come. The International Energy Agency (IEA) *Net Zero by 2050* report<sup>24</sup> underlines that no new gas fields should be approved as of 2021 on the pathway to carbon neutrality.

### 3. LNG is not a moral alternative to Russian pipeline gas

While it is a step forward to recognise that, in directly financing the crimes in question, trading with war criminals and authoritarian regimes is immoral, that logic has somehow been narrowly confined to Russia. Due to the wider association of fossil fuels to wars, violence and human rights abuses, finding a lawful partner for mass diversification is difficult. The obvious controversy of picking, for example, Qatar, Egypt, Azerbaijan and Algeria as acceptable partners for Europe could not be a clearer display of the European Union's own self-delusion and duplicity.

### 4. LNG market and volatile fossil gas prices

Since the blatant lack of alternative fossil gas import infrastructure has been the main concern in the region, the cost and projections of the LNG market have not been a point of discussion. Energy analysts expect gas prices to remain high in 2023 and 2024,<sup>25</sup> having hit historical record highs as recently as August 2022 (EUR 345 / megawatt hour (MWh)).<sup>26</sup> Europe is in an even tougher spot in 2023 compared to 2022, considering gas storage sites will need to be filled without Russian gas this time. This is set to increase demand for LNG even further alongside recovering demand for LNG in Asia, which is likely to contribute to sustained high prices.<sup>27</sup>

Although the unavoidable immediate necessity in 2022 was to make sure enough fossil gas could be secured and imported from alternative sources, greater and more urgent action is required. The high and volatile price of gas, whether coming via pipeline or ship, will continue to affect households and industries alike. Given the worsening energy and cost-of-living crisis, it is almost criminal for governments to avoid supporting transformational changes that can protect households from these burdens. Since it stands to profit, the fossil gas industry understandably downplays the issue of high prices and has no qualms about

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<sup>23</sup> Intergovernmental Panel on Climate Change, '[Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change](#)', *Intergovernmental Panel on Climate Change*, 28 February 2022. Intergovernmental Panel on Climate Change, '[Climate Change 2022: Mitigation of Climate Change. Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change](#)', *Intergovernmental Panel on Climate Change*, 4 April 2022.

<sup>24</sup> International Energy Agency, '[Net Zero by 2050](#)', *International Energy Agency*, October 2021.

<sup>25</sup> U.S. Energy Information Administration, '[Short-term energy outlook: natural gas](#)', *U.S. Energy Information Administration*, 7 February 2023.

<sup>26</sup> CNBC, '[European natural gas prices return to pre-Ukraine war levels](#)', *CNBC*, 29 December 2022.

<sup>27</sup> International Energy Agency, '[Natural gas markets expected to remain tight into 2023 as Russia further reduces supplies to Europe](#)', *International Energy Agency*, 3 October 2022.



promoting long-term LNG contracts as a potential way of securing gas at a lower price, without specifying whether this reduction will be low enough to be bearable for households and governments.

## Conclusion

These are only the latest concerning developments in the small Baltic-Finnish gas market, which will increase the region's dependency on fossil fuels due to the lock-in effect. Around EUR 500 million in public money has been used for capital expenses associated with this purpose alone. Instead of setting up costly, polluting and soon-to-be obsolete LNG terminals in each country, governments in the region should direct more funds at much-needed structural changes in the energy system to help reduce dependency on fossil gas. There is a serious threat of creating unnecessary new LNG capacity in the region, which simply shifts our import reliance to other countries instead of solving the core issue of energy dependence.

Despite these problematic developments, the Baltic countries have taken several big steps in the right direction in the past year, which should help foster a positive transformation in our energy system. For example, Estonia implemented a law in October 2022 to supply 100 per cent electricity from renewable sources by 2030,<sup>28</sup> and Latvia has created a Ministry of Climate and appointed a dedicated Minister.<sup>29</sup> In addition, the 8-country partnership of the Baltic Sea region, which includes Estonia, Latvia, Lithuania and Finland, is striving to speed up large offshore wind projects and increase intra-regional cooperation in this respect.<sup>30</sup>

## Policy recommendations

- Address current regional fossil gas demand through closer regional cooperation and the existing infrastructure.
- Withdraw support and investment in permanent LNG infrastructure and new long-term contracts for fossil gas imports. The current LNG infrastructure – the floating storage and regasification units in Inkoo and Klaipeda – is sufficient for regional needs and should be treated as a temporary buffer whilst intentionally reducing gas demand.
- Create a detailed action plan for a regional phase-out of fossil gas in a socially just manner as soon as possible. Regional cooperation is key for reducing reliance on energy imports.
- Increase public financing for energy savings, energy efficiency measures, electrification and replacement of fossil gas with renewables-based alternatives.



*Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.*

<sup>28</sup> Riigikogu, '[Energiamajanduse korralduse seaduse muutmise seadus 656 SE](#)', *Riigikogu*, 12 October 2022.

<sup>29</sup> Public Broadcasting of Latvia, '[Latvia's Climate and Energy Ministry begins work](#)', *Public Broadcasting of Latvia*, 3 January 2023.

<sup>30</sup> Wind Europe, '[Baltic Sea countries sign declaration for more cooperation in offshore wind](#)', *Wind Europe*, 30 August 2022.