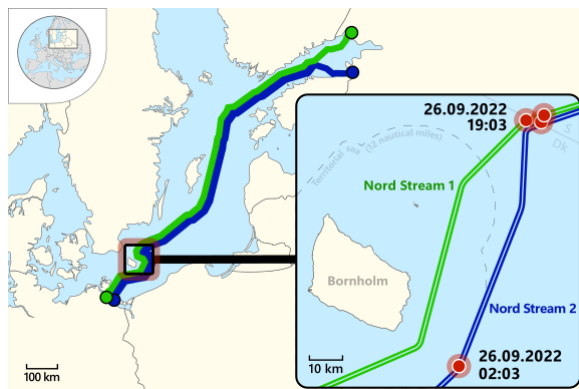


Sabotáž ropovodu Nord Stream v roce 2022

W en.wikipedia.org/wiki/2022_Nord_Stream_pipeline_sabotage

Mapa znázorňující umístění explozí plynovodů Nord Stream 1 a Nord Stream 2 poblíž Bornholmu . Oba běží většinu cesty blízko sebe, ale odchýlí se poblíž míst sabotáže. ^[1]



datum	26. září 2022
Umístění	<u>Střední Baltské moře</u> , poblíž <u>Bornholmu</u> , Dánsko
Souřadnice	<ul style="list-style-type: none">• <u>54°52,6′N 15°24,6′V﻿•﻿[2]</u>• <u>55°32,1′N 15°41,9′V﻿•﻿[3]</u>• <u>55°33,4′N 15°47,3′V﻿•﻿[3]</u>• <u>55°32,45′N 15°46,74′V﻿•﻿[3]</u>
Typ	<ul style="list-style-type: none">• <u>Průmyslová katastrofa</u>• Po <u>explozích uniká plyn</u>
Způsobit	<u>Sabotáž</u> ^{[4].[5].[6].[7]}
Motiv	Neznámý
cílová	<u>Nord Stream 1</u> a <u>Nord Stream 2</u>
Pachatel	Neznámý
První reportér	<u>Nord Stream AG</u>
Poškození majetku	<ul style="list-style-type: none">• Potrubí A i B NS1 jsou nefunkční• Potrubí A NS2 je nefunkční. Trubka B zůstává nepoškozená.

2022 sabotáž plynovodu Nord Stream

Dne 26. září 2022 došlo na plynovodech Nord Stream 1 a Nord Stream 2 k sérii tajných bombových útoků a následným únikům plynu pod vodou . Oba plynovody byly vybudovány pro přepravu

zemního plynu z Ruska do Německa přes Baltské moře a jsou většinou vlastněny ruskou státní plynárenskou společností Gazprom. Identita pachatelů a motivy sabotáže zůstávají diskutovány.

Před úniky nebyly plynovody v provozu kvůli sporům mezi Ruskem a Evropskou unií v důsledku ruské invaze na Ukrajinu, ale byly naplněny zemním plynem. Dne 26. září ve 02:03 místního času (SELČ) byla zjištěna exploze pocházející z Nord Stream 2; byl hlášen pokles tlaku v potrubí a zemní plyn začal unikat na povrch jihovýchodně od dánského ostrova Bornholm. O sedmnáct hodin později se totéž stalo Nord Stream 1, což vedlo ke třem samostatným únikům severovýchodně od Bornholmu. ^{[8].[9]} Všechna tři postižená potrubí byla vyřazena z provozu; Rusko potvrdilo, že jedno ze dvou potrubí Nord Stream 2 je provozuschopné, a je tak připraveno dodávat plyn přes Nord Stream 2. ^[10] K únikům došlo jeden den předtím, než Polsko a Norsko otevřely baltské potrubí vedoucí přes Dánsko a přivádějící plyn z Severní moře, spíše než z Ruska, jak to dělají plynovody Nord Stream. ^{[11].[12]} Úniky se nacházejí v mezinárodních vodách (není součástí teritoriálního moře žádného národa), ale v ekonomických zónách Dánska a Švédska. ^[13]

Nord Stream AG, provozovatel Nord Streamu vlastněný Gazpromem, uvedl, že potrubí utrpělo během jednoho dne „bezprecedentní“ škody. ^[14] Dne 29. září ruský prezident Vladimir Putin označil útok na ropovod za „bezprecedentní akt mezinárodního terorismu“. ^{[15].[16]}

Pozadí

Hlavní článek: Rusko v evropském energetickém sektoru

V roce 2021 Rusko dodávalo zhruba 45 % zemního plynu dováženého státy Evropské unie. ^[17] Spojené státy byly hlavním odpůrcem plynovodů Nord Stream. Bývalý americký prezident Donald Trump v roce 2019 prohlásil, že Nord Stream 2 by mohl proměnit Evropu v „rukojmí Ruska“ a uvalil sankce na jakoukoli společnost, která pomáhá Rusku dokončit plynovod. ^[18] V prosinci 2020 pak nově

zvolený prezident Joe Biden úrazně vystoupil proti otevření nového ropovodu a dopadu, který by to mělo na potenciální ruský vliv. V roce 2021 Bidenova administrativa sankce zrušila s tím, že ačkoli byla „neochvějně“ v opozici vůči Nord Stream 2, odstranění sankcí bylo věci národního zájmu, aby se udržely pozitivní vztahy s Německem a dalšími spojenci USA v Evropě. [19] Druhý plynovod byl dokončen v září 2021. [20]



Hlavní stávající a plánované plynovody dodávající ruský plyn do Evropy v roce 2021, včetně plynovodů Yamal–Europe , Brotherhood , TurkStream , Blue Stream a Nord Stream přes Bělorusko, Ukrajinu, Turecko a Německo.

Časová osa

Geologická služba Dánska uvedla, že seismometr na Bornholmu ukázal 26. září dva hroty: první vlna P ve 02:03 místního času (SELČ) ukazovala magnitudu 2,3 a druhá v 19:03 magnitudu 2,1. [21]

Podobné údaje poskytl seismometr ve Stevens a několik seismometrů v Německu, Švédsku (až ke stanici v Kalix 1300 kilometrů nebo 810 mil severně), Finsku a Norsku. [22] Seismická data byla charakteristická pro podvodní exploze, nikoli pro přírodní události, a ukázala, že k nim došlo poblíž míst, kde byly úniky později objeveny. [23].[21].[24] Přibližně ve stejnou dobu poklesl tlak v neprovozním potrubí z 10,50 na 0,70 megapascalů (105 až 7 barů), jak zaznamenal Nord Stream v Německu. [25].[23].[26]

Po počáteční zprávě Německa o ztrátě tlaku v Nord Stream 2 byla dánská zásahová jednotka F-16 jihovýchodně od Dueodde v Bornholmu objevena únik plynu z potrubí . [27].[28] Nord Stream 2 se

skládá ze dvou paralelních linií a k úniku došlo v lince A uvnitř dánské ekonomické zóny.^[29] Dánský námořní úřad s odvoláním na nebezpečí pro lodní dopravu uzavřel moře pro všechna plavidla v zóně 5 námořních mil (9,3 km; 5,8 mil) kolem místa úniku a doporučil letadlům, aby zůstala alespoň 1 000 m (3 300 stop) nad ním. .^{[28].}^[30] Potrubí, které nebylo v provozu, mělo 300 milionů metrů krychlových (11 miliard krychlových stop) stlačeného plynu v přípravě na své první dodávky.^[31]

Posouzení vlivu NS2 na životní prostředí bylo provedeno v roce 2019. Do roku 2012 docházelo k únikům koroze pouze ve dvou velkých potrubích po celém světě. Úniky v důsledku vojenských akcí a nehod byly považovány za „velmi nepravděpodobné“. Největší únik v analýze byl definován jako „protržení s plným vývrtem (>80 mm [3,1 palce])“, například od potápějící se lodi, která narazila na potrubí. Takový nepravděpodobný velký únik z hloubky vody 54 metrů (177 stop) by mohl vést ke vzniku oblaku plynu o šířce až 15 metrů (49 stop) na povrchu.^[32]

Pro NS2 mají trubky vnější průměr přibližně 1200 milimetrů (48 palců) a tloušťku ocelové stěny 27–41 milimetrů (1,1–1,6 palce) – nejtlustší na vstupu potrubí, kde je provozní tlak 22 megapascalů (220 bar) a nejtenčí na výstupu z potrubí, kde je provozní tlak 17,7 megapascalů (177 bar), při přepravě plynu. Pro ztížení trubky (pro zajištění záporného vztlaku) obklopuje ocel vrstva betonu o tloušťce 60–110 milimetrů (2,4–4,3 palce).^[33] Každá řada potrubí byla vyrobena z asi 100 000 ocelových trubek potažených betonem, z nichž každá o hmotnosti 24 tun (53 000 lb) byla svařena a položena na mořské dno. Pro usnadnění prasat Podle Nord Stream mají potrubí konstantní vnitřní průměr 1 153 milimetrů (45,4 palce). Sekce leží v hloubce kolem 80-110 metrů (260-360 stop).^[25]

Několik hodin poté, co německá kancelář Nord Stream AG oznámila ztrátu tlaku v Nord Stream 1, byly švédskými úřady objeveny dva úniky plynu na tomto potrubí.^{[24].}^[34] Obě paralelní linie Nord Stream 1 jsou protržené a místa jeho dvou úniků jsou od sebe

vzdálena asi 6 km (3,7 mil), přičemž jedna je ve švédské ekonomické zóně a druhá v dánské ekonomické zóně. [9].[29] Dne 28. září švédská pobřežní stráž objasnila, že původně hlášený únik ve švédské ekonomické zóně byly ve skutečnosti dva úniky umístěné blízko sebe, čímž se celkový počet úniků na potrubí Nord Stream zvýšil na čtyři (dva v švédská ekonomická zóna, dvě v dánské). [9].[35]



Stoh trubek, které tvoří plynovod Nord Stream 2, vyrobený z oceli s betonovým pláštěm

Zatímco žádný z plynovodů nedodával dodávky do Evropy, Nord Stream 1 i 2 byly natlakovány plynem. [36]

Dánská obrana zveřejnila na svých webových stránkách video úniku plynu, které ukázalo, že k 27. září největší z úniků způsobil turbulenci na vodní hladině o průměru přibližně 1 kilometr (0,62 mil).

Nejmenší únik vytvořil kruh o průměru asi 200 metrů (660 stop). [27] Analytici zaznamenali mnohem větší oblaky jako znamení, že prasknutí je velmi velké [22] ve srovnání s předpokládaným technickým netěsným oblakem 15 metrů (49 stop). [32]


Napájecí kabel SwePol mezi Švédskem a Polskem prochází poblíž dvou míst úniku a byl vyšetřován kvůli poškození. [37] Testy Svenska Kraftnät zveřejněné 4. října ukázaly, že kabel nebyl poškozen. [38]

Lodě švédského námořnictva prováděly průzkum po dva dny v blízkosti, kde byly později Nord Stream 1 a 2 podrobeny sabotáži. Pátrání probíhalo mezi čtvrtkem a sobotou, ale od noci z neděle na pondělí se na místě nenacházely žádné švédské lodě. [39].[40]

Dne 1. října oznámila Dánská energetická agentura, že jeden ze dvou plynovodů, Nord Stream 2, zřejmě přestal unikat plyn, protože tlak uvnitř potrubí se stabilizoval. [41] Následující den stejná agentura oznámila, že se tlak ustálil i v obou potrubích Nord Stream 1, což

naznačuje, že úniky se zastavily. ^[42] Naproti tomu švédské úřady dne 2. října oznámily, že plyn nadále uniká ze dvou úniků v jejich ekonomické zóně, i když v menší míře než před několika dny. ^[43]

Úniky

 Tato část **necituje žádné zdroje**. Pomozte prosím vylepšit tuto sekci přidáním citací ke spolehlivým zdrojům. Nezdrcovaný materiál může být napaden a odstraněn. (říjen 2022) (Zjistěte, jak a kdy odstranit tuto šablonu zprávy.)

Trubka	Umístění	Komentář
Nord Stream 2 potrubí A	výlučná ekonomická zóna Dánska	objevila dánská zásahová jednotka F-16 jihovýchodně od Dueodde v Bornholmu
Nord Stream 2 potrubí A	exkluzivní ekonomická zóna Švédska	objevily na tomto potrubí švédské úřady
Nord Stream 1 potrubí A	exkluzivní ekonomická zóna Švédska	objevily na tomto potrubí švédské úřady
Nord Stream 1 potrubí B	výlučná ekonomická zóna Dánska	objevily na tomto potrubí švédské úřady

2022 úniky Nord Stream

Možnost oprav

Dne 27. září 2022 společnost Nord Stream AG, provozovatel Nord Stream, uvedla, že není možné odhadnout, kdy bude infrastruktura opravena. ^[44] Německé úřady uvedly, že pokud nebudou urychleně opraveny, je nepravděpodobné, že by tři poškozená vedení, a to jak vedení v Severním proudu 1, tak vedení A v Severním proudu 2, nikdy znovu zprovoznili kvůli korozi způsobené mořskou vodou. ^[1] The Washington Post uvedl, že incidenty pravděpodobně trvale ukončí oba projekty Nord Stream. ^[45]

Mezi možné způsoby opravy potrubí by podle inženýrů patřila kompletní výměna potrubních segmentů a sevření poškozených úseků. Očekává se, že pokud budou provedeny, opravy potrvají několik měsíců. ^[46]

V únoru 2023 The Times uvedl, že Rusko začalo odhadovat náklady na opravy, odhadované na zhruba 500 milionů dolarů. [47]

Způsobit

Švédská premiérka Magdalena Anderssonová uvedla, že šlo pravděpodobně o sabotáž, a zmínila také detonace. [48] Geological Survey of Denmark uvedl, že otřesy, které byly zjištěny, byly na rozdíl od těch zaznamenaných během zemětřesení, ale podobné těm, které byly zaznamenány během explozí. [49] Švédská veřejnoprávní stanice SVT uvedla, že měřicí stanice ve Švédsku i Dánsku zaznamenaly silné podvodní exploze v blízkosti potrubí Nord Stream. Björn Lund, docent seismologie ve Švédské národní seismické síti, řekl, že „není pochyb o tom, že to byly exploze“ v odhadovaném ekvivalentu 100 kilogramů (220 lb) TNT. [24] Představitelé Evropské unie obvinili ze sabotáže, stejně jako generální tajemník NATO Jens Stoltenberg a polský premiér Mateusz Morawiecki. [50].[51].[52]

Kreml uvedl, že nevyloučil sabotáž jako důvod poškození ropovodů Nord Stream. [53] Dmitrij Peskov, mluvčí Kremlu, řekl: "V tuto chvíli nemůžeme vyloučit žádnou možnost. Je zřejmé, že došlo k nějakému zničení potrubí. Před výsledky vyšetřování není možné vyloučit žádnou možnost." " [54].[55]

The German newspaper Der Tagesspiegel wrote that the leaks are being investigated for whether they may have been caused by targeted attacks by submarine or clearance divers. [56]

According to German Federal Government circles, photos taken by the Federal Police with the support of the navy show a leak 8 metres (26 ft) long, which could only be the result of explosives. [57]

On 11 November 2022, Wired reported that satellite imagery revealed two large unidentified ships which had turned off their AIS trackers and had appeared around the site of the leaks in the days before the gas leaks were detected. [58]

On 18 November 2022, Swedish authorities announced that remains of explosives were found at the site of the leaks, and confirmed that the incident was the result of sabotage.^{[6][7]}

Investigations

The day after the leaks occurred, the Swedish Police Authority opened an investigation of the incident, calling it "major sabotage". The investigation is conducted in cooperation with other relevant authorities as well as the Swedish Security Service.^[59] A similar investigation was opened in Denmark. The two nations were in close contact, and had also been in contact with other countries in the Baltic region and NATO.^{[48][60]} Because it happened within international waters (not part of any nation's territorial sea, although within the Danish and Swedish economic zones), neither the Danish Prime Minister nor the Swedish Prime Minister regarded it as an attack on their nation.^{[61][48]} On 2 October, Nancy Faeser, German Minister of the Interior and Community, announced that Germany, Denmark and Sweden intend to form a joint investigation team to investigate these seeming acts of sabotage.^[5]

Russia reportedly dispatched naval vessels to join Swedish and Danish maritime experts at the leak sites. *Foreign Policy* reported that since the pipelines are Russian-state owned and since the sabotage is not considered a military attack, investigations may be complicated by Russian involvement.^[62] Moscow demanded to be part of the investigations conducted by Denmark and Sweden, but both countries refused, telling Russia to conduct its own investigations.^[63]

On 6 October, the Swedish Security Service said its preliminary investigations in the Swedish exclusive economic zone showed extensive damage and they "found evidence of detonations",^[64] strengthening "the suspicions of serious sabotage".^[65]

On 10 October, the German Public Prosecutor General launched an investigation into suspected intentional causing of an explosion and anti-constitutional sabotage. The procedure is directed against unknown persons. According to the federal authority, it is responsible because it was a serious violent attack on national energy supply, likely to impair Germany's external and internal security. The Federal Criminal Police Office and the Federal Police were commissioned to investigate.^[66] The Federal Police had already started an investigative mission with assistance from the German Navy. Investigators took photos with a Navy underwater drone that showed a leak 8 metres (26 ft) long. This could only have been caused by explosives, it was said in government circles.^[57]

On 14 October, Russia's foreign ministry summoned German, Danish and Swedish envoys to express "bewilderment" over the exclusion of Russian experts from investigations and protesting reported participation of the United States, saying that Russia would not recognise any "pseudo-results" without the involvement of its own experts.^[67]

Also on 14 October, the Swedish prosecutor announced that Sweden would not set up a joint investigation team with Denmark and Germany because that would transfer information related to Swedish national security. German public broadcaster ARD also reported that Denmark had rejected a joint investigation team.^[68] On 18 November, the Swedish Security Service concluded that the incident was an act of "gross sabotage", stating that traces of explosives were found on the pipes.^[69] Also on 18 October, the Swedish newspaper Expressen released photos it had commissioned of the Nord Stream 1 damage, showing at least 50 m (160 ft) of pipe missing from its trench, as well as steel debris around the site.^{[70][71]}

On 15 October the left-wing German party Die Linke made a parliamentary inquiry to the government. The German government claimed that no on-site investigation had taken place yet, and refused

to disclose information about the presence of NATO or Russian ships near Bornholm on the day of the presumed sabotage, citing state secret.^[72]

In February 2023, The Times stated that none of the three separate investigations had publicly assigned responsibility for the damage.^[47]

On 17 February 2023, Russia formally submitted a proposal to the Security Council of the United Nations calling for an investigation into the Nord Stream sabotage, and reiterated its request on 20 February 2023.^[73]

Speculation

Swedish and Danish Prime Ministers were both unwilling to speculate on who was responsible for the incidents.^[74] Russia first accused the United Kingdom,^[75] and later the United States, of being responsible for the sabotage.^[47]

Involvement by Russia

CNN reported that European security officials observed Russian Navy support ships nearby where the leaks later occurred on 26 and 27 September. One week prior, Russian submarines were also observed nearby.^[76]

In September 2022, the former head of Germany's Federal Intelligence Service (BND), Gerhard Schindler, alleged that Russia sabotaged the gas pipelines to justify their halting of gas supplies prior to the explosion and said Russia's "halt in gas supplies can now be justified simply by pointing to the defective pipelines, without having to advance alleged turbine problems or other unconvincing arguments for breaking supply contracts."^[77]

Finland's national public broadcasting company Yle compared the incident to the two explosions on a gas pipeline in North Ossetia in January 2006, which were caused by remote-controlled military-

grade charges.^[78] The explosions halted Russian gas supply to Georgia after the country had started seeking NATO membership.^[78]

In December 2022, The Washington Post reported that after months of investigation, there was no conclusive evidence that Russia was behind the attack, and many European and US officials no longer suspected that Russia was involved.^[79]

Involvement by the United States

Der Spiegel reported that the United States Central Intelligence Agency had warned the German government of possible sabotage to the pipelines weeks beforehand.^[80] The New York Times reported that the CIA had warned various European governments sometime in June.^[81]

In a widely shared post on Twitter, Polish MEP and former foreign affairs and defence minister Radek Sikorski stated simply, "Thank you, USA", next to a photo of bubbling water above the pipeline damage. He followed up to clarify that this was only speculation on his part,^[82] and that his view was based in part on a February joint press conference of US President Joe Biden and German Chancellor Olaf Scholz, during which Biden stated, "If Russia invades ... again, there will no longer be a Nord Stream 2. We will bring an end to it."^[83]^[47] Sikorski's post was criticized by many politicians and government officials. Polish government spokesman Piotr Müller said it was harmful and served Russian propaganda.^[82] US State Department spokesman Ned Price characterized the idea of US involvement in the pipeline damage as "preposterous".^[84] Der Spiegel commented that Nord Stream 2 was already stopped entirely without explosives two days before Russia invaded Ukraine, and that what happened is exactly what Biden and Scholz had said would happen.^[85] Sikorski deleted the original and all follow-up tweets several days later.^[84]

At a United Nations Security Council meeting convened for the incident, Russian Federation representative Vasily Nebenzya suggested that the United States was involved in the pipeline damage.^[86] Deutsche Welle fact check concluded that the Russian claim "that an American helicopter was responsible for the gas leaks is untenable and misleading." The helicopter never flew along the pipeline and the gas leak areas were at least 9 and 30 km away, respectively, from its flight path.^{[87][88]}

On 2 February 2023, Russian foreign minister Sergei Lavrov said on Russian state television the U.S. had direct involvement in the explosions intended to help preserve U.S. global dominance.^[47]

On 8 February 2023, American investigative journalist Seymour Hersh published an article on his Substack page in which he alleged that the attack was ordered by the White House and carried out utilizing American and Norwegian assets.^{[89][90][91][92]} The post relied on a single anonymous source, whom Hersh described as having "direct knowledge of the operational planning."^[93] The White House responded to the story by calling it "utterly false and complete fiction".^[94] Norwegian Ministry of Foreign Affairs said that those allegations are "nonsense".^[95] Russian Deputy Foreign Minister Sergei Ryabkov told Russian state-owned media RIA Novosti that "Our assumption was that the US and several NATO allies were involved in this disgusting crime." He also threatened unspecified "consequences" for the US.^[96] Norwegian commentator Harald S. Klungtveit has challenged the accuracy of Hersh's claims, such as that Alta-class mine sweepers had participated in BALTOPS 22, or that Jens Stoltenberg has been cooperating with U.S. intelligence services since the Vietnam War (Stoltenberg was a teenager at the time).^[97]

Involvement by other countries

On 29 October 2022, Russia accused a unit of the United Kingdom's Royal Navy of sabotaging the gas pipeline. This claim was denied by the UK Ministry of Defence which released a statement saying: "To detract from their disastrous handling of the illegal invasion of Ukraine, the Russian Ministry of Defence is resorting to peddling false claims of an epic scale".^[75]

In late 2022, another former head of the BND, August Hanning, said that Russia, Ukraine, Poland and Britain had a plausible interest in disabling the pipelines, as well as the U.S.^[47]

Aftermath

On 27 September 2022, European gas prices jumped 12 percent after news spread of the damaged pipelines,^{[98][99]} despite the fact that Nord Stream 1 had not delivered gas since August and Nord Stream 2 had never gone into service.^[100]

The Danish Navy and Swedish Coast Guard sent ships to monitor the discharge and keep other vessels away from danger by establishing an exclusion zone of 5 nautical miles (9.3 km; 5.8 mi) around each leak.^{[44][101]} Two of the ships are the Swedish Amfitrite and the Danish Absalon, which are specially designed to operate in contaminated environments such as gas clouds.^{[101][102]} Vessels could lose buoyancy if they enter the gas plumes, and there might be a risk of leaked gas igniting over the water and in the air, but there were no risks associated with the leaks outside the exclusion zones.

The president of the European Commission, Ursula von der Leyen, wrote on Twitter that "Any deliberate disruption of active European energy infrastructure is unacceptable & will lead to the strongest possible response."^[103] After the leaks, Norwegian authorities increased the security around their gas and oil infrastructure.^[104] As of 29 September 2022, eastward flow of gas from Germany to Poland through the Yamal–Europe pipeline was stable,^{[105][106]} as was transmission through Ukraine as of 2 October 2022,^[107] although

concerns remained that Russia may introduce "sanctions against Ukraine's Naftogaz [...] that could prohibit Gazprom from paying Ukraine transit fees [... that] could end Russian gas flows to Europe via the country."^{[105][106][108][109]}

On 5 October, Nord Stream 2 AG reported that Gazprom had begun pulling gas back out of the undamaged pipe for consumption in Saint Petersburg, reducing pipe pressure.^[110] Infrastructure in the North Sea was being inspected for anomalies.^[111]

On 11 January 2023, EU and NATO announced the creation of a task force on making their critical infrastructure more resilient to potential threats, citing "Putin's weaponising of energy" and the sabotage of the Nord Stream pipelines.^[112]

Environmental impact

In the area, the leaks would only affect the environment where the gas plumes in the water column are located. A greater effect is likely to be the climate impact caused by the large volumes of escaping methane, a potent greenhouse gas.^{[25][113]} The released volume is approximately 0.25% of the annual capacity of the pipelines, an amount nearly equal to the total release from all other sources of methane in a full year across Sweden.^[114] A Danish official said these Nord Stream gas leaks could emit a CO₂ equivalent of 14.6 million tonnes (32 billion pounds), similar to one third of Denmark's total annual greenhouse gas emissions.^{[115][116]}

The methane emissions from the leaks are equal to a few days of the emissions from regular fossil fuel production.^[117] However, the leaks set a record as the single largest discharge of methane, dwarfing all previously known leaks, such as the Aliso Canyon gas leak.^{[117][118]}

Equipment measured no increase in atmospheric methane at Bornholm.^[119] A weather station in Norway logged an unprecedented 499 parts per billion (ppb) increase from a base level of 1800 ppb.^[120]

Scientists from several European countries have analyzed the impact on marine ecosystems. The shockwave is stated to have killed marine life within a radius of 4 kilometers and have damaged the hearing of animals up to 50 kilometers. An estimated 250,000 metric tons of seafloor sediment containing lead and tributyltin used in anti-fouling paint have been lifted up.^[121] Additionally, the area is contaminated from the dumping of ammunitions and chemical weapons.^[122]

See also

[2022 Urengoy–Pomary–Uzhhorod pipeline explosion](#)

References

- ^{1.} [^] [Jump up to: **a b** "Große Schäden an Gasleitungen: Nord-Stream-Röhren wohl für immer zerstört – Bundespolizei verstärkt Meeresschutz" \(in German\). *Der Tagesspiegel*. 28 September 2022. Archived from the original on 28 September 2022. Retrieved 28 September 2022.](#)
- ^{2.} [^] ["Denmark. The Baltic Sea. Bornholm SE. Gas leakage. Danger to navigation. Prohibited area established" \(PDF\). *Søfartsstyrelsen*. 26 September 2022. Archived \(PDF\) from the original on 3 October 2022. Retrieved 5 October 2022. "A gas leakage has been observed in pos. 54° 52.60'N – 015° 24.60'E."](#)
- ^{3.} [^] [Jump up to: **a b c** "Denmark. The Baltic Sea. Bornholm NE. Gas leakages. Danger to navigation. Prohibited areas established" \(PDF\). *Søfartsstyrelsen*. 29 September 2022. Archived \(PDF\) from the original on 30 September 2022. Retrieved 5 October 2022. "Gas leakages have been observed in pos. 55° 33,40'N – 015° 47,30'E, pos. 55° 32,10'N – 015° 41,90'E and pos. 55° 32,450'N 015° 46,470'E."](#)
- ^{4.} [^] [Aitken, Peter \(2 October 2022\). "NATO chief: 'All evidence' points to pipeline sabotage, dodges question on Ukraine membership". *Fox News*. Archived from the original on 3 October 2022. Retrieved 3 October 2022.](#)

5. ^ Jump up to: [a](#) [b](#) [c](#) "Kustbevakningen: Fyra läckor på Nord Stream". Svenska Dagbladet. 28 September 2022. Archived from the original on 3 October 2022. Retrieved 28 September 2022.
6. ^ Hemicker, Lorenz; Käppel, Janina (5 October 2022). "Russland beståtigt Einsatzbereitschaft von Nord Stream 2" [Russia confirms Nord Stream 2 is operable]. Frankfurter Allgemeine Zeitung (in German). Archived from the original on 6 October 2022. "Ende September kam es zu Explosionen unter Wasser an der Ostseepipeline. Dabei wurden beide Stränge der Pipeline Nord Stream 1 und ein Strang von Nord Stream 2 leck geschlagen."
7. ^ Scislowska, Monika; Olsen, Jan M.; Keyton, David (28 September 2022). "Blasts precede Baltic pipeline leaks, sabotage seen likely". ABC News. American Broadcasting Company. Archived from the original on 1 October 2022. Retrieved 28 September 2022.
8. ^ "Gas Infrastructure Europe – System Development Map 2022/2021" (PDF). European Network of Transmission System Operators for Gas (ENTSO-G). December 2021. Archived (PDF) from the original on 24 September 2022. Retrieved 7 October 2022.
9. ^ "Nord Stream-selskab: Skader er uden fortilfælde" (in Danish). Berlingske. 27 September 2022. Archived from the original on 1 October 2022. Retrieved 27 September 2022.
10. ^ "Путин заявил Эрдогану о "беспрецедентной диверсии" на "Северных потоках"". РБК (in Russian). Archived from the original on 30 September 2022. Retrieved 29 September 2022.
11. ^ International Energy Agency (3 March 2022). "How Europe can cut natural gas imports from Russia significantly within a year". IEA. Retrieved 10 February 2023.
12. ^ Markind, Daniel (21 May 2021). "Nord Steam 2 Saga Ends as Biden Waives Sanctions". Forbes. Retrieved 10 February 2023.

13. [^] Soldatkin, Vladimir (10 September 2021). "Russia completes Nord Stream 2 construction, gas flows yet to start". Reuters. Retrieved 10 February 2023.
14. [^] Jump up to: ^a ^b "GEUS har registreret rystelser i Østersøen" (in Danish). Geological Survey of Denmark and Greenland. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
15. [^] Jump up to: ^a ^b Viseth, Ellen Synnøve (27 September 2022). "Havet bobler: Universitetslektor frykter "meget stor eksplosjon"". Tu.no (in Norwegian). Teknisk Ukeblad. Archived from the original on 27 September 2022.
16. [^] Jump up to: ^a ^b "Scandinavian seismic stations register explosions near pipelines, raising fears of sabotage". PBS. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
17. [^] Jump up to: ^a ^b ^c
18. [^] Jump up to: ^a ^b ^c Chestney, Nina (27 September 2022). "Q+A What is known so far about the Nord Stream gas pipeline leaks". Reuters. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
19. [^] Sanderson, Katharine (30 September 2022). "What do Nord Stream methane leaks mean for climate change?". Nature. doi:10.1038/d41586-022-03111-x. PMID 36180742. S2CID 252645440. Archived from the original on 1 October 2022. Retrieved 1 October 2022.
20. [^] Jump up to: ^a ^b "Gaslækage i Østersøen". Danish Defence (in Danish). Archived from the original on 27 September 2022. Retrieved 27 September 2022.
21. [^] Jump up to: ^a ^b "Læk på Nord Stream 2 rørledning i Østersøen". Danish Energy Agency (in Danish). 26 September 2022. Archived from the original on 30 September 2022. Retrieved 27 September 2022.

22. ^ Jump up to: ^a ^b "Læk på gasledninger: Det ved vi, og det mangler vi svar på" (in Danish). TV 2. 28 September 2022. Archived from the original on 27 September 2022. Retrieved 28 September 2022.
23. ^ "Nord Stream pipelines hit by gas leaks". Sveriges Radio. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
24. ^ Jump up to: ^a ^b "Offentlig høring af miljøkonsekvensrapport – Nord Stream 2 sydøst om Bornholm (Environmental impact assessment)". Energistyrelsen (in Danish). 3 May 2019. Archived from the original on 23 April 2022. "click "Nord Stream 2 – Environmental Impact Assessment, Denmark. South-Eastern Route. April 2019""
25. ^ "Nord Stream 2 Public Hearing, presentation" (PDF). Nord Stream 2. 19 June 2019. p. 15. Archived (PDF) from the original on 17 May 2021.
26. ^ Ringstrom, Anna; Jacobsen, Stine (27 September 2022). "Sweden issues warning of two gas leaks on Nord Stream 1 pipeline". Reuters. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
27. ^ Solsvik, Terje (29 September 2022). "Fourth leak found on Nord Stream pipelines, Swedish coast guard says". Reuters. Archived from the original on 29 September 2022. Retrieved 29 September 2022.
28. ^ Nyheter, S. V. T.; Jönsson, Oskar; Wikén, Johan; Jensen Karlsson, Pontus (29 September 2022). "Explosionerna skedde nära svensk-polska elkabeln – specialister inkallade". SVT Nyheter (in Swedish). Archived from the original on 30 September 2022. Retrieved 30 September 2022.
29. ^ Johan Zachrisson Winberg, Johan Wikén (4 October 2022). "Polenkabeln oskadd efter Nord Stream-läckorna" (in Swedish). SVT Nyheter. Retrieved 4 October 2022.

30. [^] ["Svenska marinen hade fartyg på plats före explosionerna"](#). DN.SE (in Swedish). 30 September 2022. [Archived](#) from the original on 30 September 2022. Retrieved 30 September 2022.
31. [^] ["Marinen på plats dagarna före explosionerna"](#). Omni (in Swedish). [Archived](#) from the original on 30 September 2022. Retrieved 30 September 2022.
32. [^] ["Danes: Nord Stream 2 pipeline seems to have stopped leaking"](#). [Associated Press](#). 1 October 2022. [Archived](#) from the original on 1 October 2022. Retrieved 1 October 2022.
33. [^] ["Nord Stream 1 har slutat att läcka gas"](#). [Sveriges Radio](#). 2 October 2022. [Archived](#) from the original on 2 October 2022. Retrieved 2 October 2022.
34. [^] ["Kein Gasaustritt mehr aus Pipeline-Lecks?"](#). [Frankfurter Allgemeine Zeitung](#) (in German). 2 October 2022. [Archived](#) from the original on 3 October 2022. Retrieved 3 October 2022.
35. [^] [Jump up to: ^a ^b "Pressure drop on both strings of the gas pipeline \(update\)"](#). Nord Stream AG. 27 September 2022. [Archived](#) from the original on 27 September 2022. Retrieved 27 September 2022.
36. [^] ["European leaders blame Russian 'sabotage' after Nord Stream explosions"](#). [The Washington Post](#). 27 September 2022. [Archived](#) from the original on 27 September 2022. Retrieved 28 September 2022.
37. [^] [Stokel-Walker, Chris \(3 October 2022\). "Here's how the Nord Stream gas pipelines could be fixed"](#). [MIT Technology Review](#). Retrieved 4 October 2022.
38. [^] [Jump up to: ^a ^b ^c "Regeringen om gasläckagen: "Troligen fråga om ett sabotage""](#) (in Swedish). [Sveriges Television](#). 27 September 2022. [Archived](#) from the original on 1 October 2022. Retrieved 27 September 2022.
39. [^] ["Dansk ekspert: Eksplosion målt ved Bornholm svarer til en større bombe fra Anden Verdenskrig"](#) (in Danish). [Danmarks Radio](#). 27 September 2022. [Archived](#) from the original on 27 September 2022. Retrieved 27 September 2022.

40. [^] "Nord Stream leaks: Sabotage to blame, says EU". BBC. 28 September 2022. Archived from the original on 28 September 2022. Retrieved 28 September 2022.
41. [^] "NATO calls Nord Stream leaks acts of sabotage". Reuters. 28 September 2022. Archived from the original on 28 September 2022. Retrieved 28 September 2022.
42. [^] Ringstrom, Anna; Jacobsen, Stine (27 September 2022). "Gas leaks in Russian pipelines to Europe stoke sabotage fears". Reuters. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
43. [^] "Kremlin: sabotage cannot be ruled out as reason for Nord Stream damage". Reuters. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
44. [^] "Nord Stream: Ukraine accuses Russia of pipeline terror attack". BBC News. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
45. [^] "Huge Nord Stream pipeline leaks could be sabotage, says Danish PM". POLITICO. 26 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
46. [^] "*Alles spricht gegen einen Zufall*": Nord-Stream-Pipelines könnten durch Anschläge beschädigt worden sein". Der Tagesspiegel Online (in German). ISSN 1865-2263. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
47. [^] Burgess, Matt. "*Dark Ships' Emerge From the Shadows of the Nord Stream Mystery*". Wired. Retrieved 13 November 2022.
48. [^] "Polisen utreder sabotage av Nord Stream". Sveriges Radio. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.

49. [^] "Gassen fosser ud i Østersøen, og det er "næppe tilfældigt": Det ved vi om de tre læk, og det mangler vi svar på" (in Danish). Altinget. 27 September 2022. Archived from the original on 30 September 2022. Retrieved 27 September 2022.
50. [^] "Mette Frederiksen: Myndigheder vurderer, at lækager var bevidst sabotage" (in Danish). Danmarks Radio. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
51. [^] Lehto, Essi; Ringstrom, Anna (7 October 2022). "'Gross sabotage': Nord Stream investigation finds evidence of detonations, Swedish police say". Sydney Morning Herald. Retrieved 9 October 2022.
52. [^] "Nord-Stream-Lecks: Bundesanwaltschaft leitet Ermittlungen ein" [Nord Stream Leaks: Federal Attorney Office initiates investigation]. Tagesschau (in German). 10 October 2022. Retrieved 10 October 2022.
53. [^] More, Rachel (14 October 2022). "Sweden Shuns Formal Joint Investigation of Nord Stream Leak, Citing National Security". U.S. News. Reuters. Retrieved 16 October 2022.
54. [^] JARED GANS (18 November 2022). "Swedish say they found evidence of explosives in Nord Stream pipelines". The Hill.
55. [^] "Första bilderna från sprängda gasröret på Östersjöns botten". www.expressen.se (in Swedish). 18 October 2022. Archived from the original on 18 October 2022. "(translation) Our underwater camera documents long tears in the seabed before it reaches the concrete-reinforced steel pipe torn apart in the suspected sabotage. At least fifty meters of the gas line appears to be missing after the explosion ... A deep grave in the seabed where the gas pipeline used to be"
56. [^] Oltermann, Philip (18 October 2022). "Nord Stream 1: first underwater images reveal devastating damage". The Guardian. Retrieved 15 December 2022.

57. ^ Inimicizie (2 October 2022). "Il sabotaggio di Nord Stream e gli strani avvenimenti della primavera 2021". Inimicizie (in Italian). Retrieved 24 October 2022.
58. ^ Kelly, Lidia (21 February 2023). "Russia urges Sweden again to share Nord Stream probe findings". Reuters. Retrieved 23 February 2023.
59. ^ "Sabotage of gas pipelines a wake-up call for Europe, warn officials". Financial Times. 28 September 2022. Archived from the original on 28 September 2022. Retrieved 28 September 2022.
60. ^ "First on CNN: European security officials observed Russian Navy ships in vicinity of Nord Stream pipeline leaks | CNN Politics". 29 September 2022. Archived from the original on 29 September 2022. Retrieved 29 September 2022.
61. ^ Harris, Shane; Hudson, John; Ryan, Missy; Birnbaum, Michael (21 December 2022). "No conclusive evidence Russia is behind Nord Stream attack". The Washington Post. Retrieved 22 December 2022.
62. ^ "CIA warned Berlin about possible attacks on gas pipelines in summer – Spiegel". Reuters. 27 September 2022. Archived from the original on 28 September 2022. Retrieved 28 September 2022.
63. ^ Sanger, David E. and Julian E. Barnes (28 September 2022). "CIA Warned Europe of Potential Attacks on Nord Stream Pipelines". New York Times.
64. ^ Jump up to: ^a ^b "Sikorski skrytykowany za wpis, nie wycofał się. "Cieszy mnie paraliż Nord Stream; to dobre dla Polski"". Dziennik Gazeta Prawna (in Polish). 28 September 2022. Archived from the original on 28 September 2022. Retrieved 28 September 2022.

65. [^] Stöcker, Christian (2 October 2022). "Die Copy-Paste-Propaganda" [The Copy-Paste Propaganda]. *Der Spiegel* (in German). Retrieved 5 October 2022. "Am Ende wurde Nord Stream 2 schon zwei Tage vor dem eigentlichen Einmarsch auf Eis gelegt [...]. Und zwar ganz ohne Sprengsätze. Es war also genau das passiert, was Biden und Scholz angekündigt hatten."
66. [^] Weber, Joscha (30 September 2022). "No proof of US sabotage of Nord Stream pipeline". *Deutsche Welle*. Retrieved 14 December 2022.
67. [^] Zhang, Legu (7 October 2022). "China Lets Nord Stream Sabotage Gossip Run Wild". *Polygraph.info*. Retrieved 14 December 2022.
68. [^] Midolo, Emanuele. "US bombed Nord Stream gas pipelines, claims investigative journalist Seymour Hersh". *The Times*. ISSN 0140-0460. Retrieved 9 February 2023.
69. [^] Scheidler, Fabian. "US Blew Up Nord Stream Pipeline Because Ukraine War Wasn't Going Well for the West: Seymour Hersh". *The Wire (India)*. Retrieved 16 February 2023.
70. [^] Kaspark, Alex (10 February 2023). "Claim That US Blew up Nord Stream Pipelines Relies on Anonymous Source". *Snopes*. Retrieved 12 February 2023.
71. [^] Faulconbridge, Guy; Soldatkin, Vladimir (9 February 2023). "Kremlin says those behind Nord Stream blasts must be punished". *Reuters*.
72. [^] reported, February 9, 2023, *Bloomberg News*
73. [^] Klungtveit, Harald S. (10 February 2023). "Forsvaret ut mot «oppspinn» om Nord Stream-sprengningen: – De norske flyene har aldri vært i området". *Filter Nyheter* (in Norwegian Bokmål). Retrieved 15 February 2023.
74. [^] Mazneva, Elena (27 September 2022). "European Gas Prices Jump After Damage to Idled Russian Pipelines". *Bloomberg*. Retrieved 27 September 2022.

75. ^ Delfs, Arne; Mazneva, Elena; Shiryayevskaya, Anna (27 September 2022). "Germany Suspects Sabotage Hit Russia's Nord Stream Pipelines". Bloomberg. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
76. ^ "Pipeline Breaks Look Deliberate, Europeans Say, Exposing Vulnerability". New York Times. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
77. ^ Jump up to: ^a ^b Eriksson, Mikael; Ljungkvist, Matilda (27 September 2022). "Kustbevakningen rycker ut till gasläckan: Fartyget klarar att gå in i ett gasmoln" (in Swedish). Sveriges Radio. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
78. ^ "Dansk fregat sendes til Bornholm – bygget til at kæmpe i gas" (in Danish). Danmarks Radio. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 27 September 2022.
79. ^ Ursula von der Leyen [@vonderleyen] (27 September 2022). "Spoke to @Statsmin Frederiksen on the sabotage action #Nordstream. Paramount to now investigate the incidents, get full clarity on events & why. Any deliberate disruption of active European energy infrastructure is unacceptable & will lead to the strongest possible response" (Tweet) – via Twitter.
80. ^ "Norway to strengthen security at oil, gas installations". Reuters. 27 September 2022. Archived from the original on 3 October 2022. Retrieved 27 September 2022.
81. ^ "Gazprom says gas exports to Europe via Ukraine steady on Sunday". Reuters. 2 October 2022. Archived from the original on 3 October 2022. Retrieved 2 October 2022.
82. ^ Chestney, Nina (29 September 2022). "Russia's Ukraine gas transit sanction threat a fresh blow for Europe". Archived from the original on 1 October 2022. Retrieved 2 October 2022.

83. [^] "Russian gas transit volume in Ukraine in 2022, by route". Statista. Statista Research Department. 28 September 2022. Archived from the original on 3 September 2022. Retrieved 2 October 2022.
84. [^] "Eksperten om gasudslip: Klimapåvirkning den største effekt". Sveriges Radio. 27 September 2022. Archived from the original on 27 September 2022. Retrieved 28 September 2022.
85. [^] "Gasläckan kan vara stor – påverkar klimatet". Barometern. 27 September 2022. Archived from the original on 30 September 2022. Retrieved 28 September 2022.
86. [^] "The possible climate effect of the gas leaks from the Nord Stream 1 and Nord Stream 2 pipelines". Energistyrelsen. 29 September 2022. Archived from the original on 30 September 2022. Retrieved 30 September 2022.
87. [^] Jump up to: ^a ^b Benshoff, Laura (4 October 2022). "The Nord Stream pipelines have stopped leaking. But the methane emitted broke records". NPR.
88. [^] Amundsen, Bård (29 September 2022). "Gasslekkasjen i Østersjøen: Målestasjon på Sørlandet har registrert ekstrem økning i mengden metan i luften". forskning.no (in Norwegian). Archived from the original on 29 September 2022. Retrieved 30 September 2022.

2022 Russian invasion of Ukraine