entsog

european network
of transmission system operators
for gas

ANNUAL REPORT

2022

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Picture courtesy of Teréga

PRESIDENT'S FOREWORD

The exceptional circumstances of 2022 have reflected considerably in ENTSOG's activities during the past year, and the organisation's ability to rapidly adapt to increasing workloads and build even closer relationships between the gas TSOs and our stakeholders.

While the war rages on in Ukraine, policy makers and energy market participants alike are working to strengthen energy security for consumers in Europe, driven by an urgent need to diversify supply sources. European Commission President Ursula von der Leyen's declaration during her 2022 State of the Union speech starkly outlined the precarious situation: Russia's invasion of Ukraine had resulted in "a war on our energy, a war on our economy, a war on our values and a war on our future."

> *I am proud of ENTSOG's important role with respect to regional cooperation and providing transparent analysis and data sharing on Europe's security of supply status.*

The European Commission (EC) were quick to respond, publishing its REPowerEU Plan in May. In this proposal, goals to reduce Europe's dependence on Russian gas and accelerate the rollout of renewable gases were clearly laid out. The EC also looked at other regulatory mechanisms to deal with the immediate and short-term impacts: increasing storage of gas and decreasing gas demand. In June, a new Gas Storage Regulation was adopted, requiring EU Member States with underground gas storages to fill to at least 80 % of their storage capacity before the winter of 2022/2023 and to 90 % before the following winter periods. The most urgent objective was achieved, with underground storage facilities reporting a record 94.9 % filling level on 1 November 2022.

I am proud of ENTSOG's important role with respect to regional cooperation and providing transparent analysis and data sharing on Europe's security of supply status. This was especially evident in ENTSOG's facilitation of the Regional Coordination System for Gas (ReCo), an information exchange platform in place to miminise risks to gas flow and infrastructure as far as possible and prepare for any planned and unforeseen disruption. ENTSOG delivered ad hoc analyses to the EC and Gas Coordination Group (GCG), providing helpful tools to determine measures such as demand reduction, storage targets, and storage filling trajectories, amongst others.

ENTSOG also looked to the energy transition future. To ensure a comprehensive and up-to-date overview of all projects, ENTSOG reopened TYNDP 2022 project collection to allow submission of not only new projects to meet needs of security of supply and change in direction of gas flows, but also encouraging project promoters to update their submissions to better consider inclusion of hydrogen projects. In parallel, ENTSOG was tasked as part of the revised TEN-E Regulation to develop an updated Cost-Benefit Analysis (CBA) methodology for energy system-wide analysis and facilitate investment in the energy infrastructure, including hydrogen infrastructure, to support the Projects of Common Interest (PCI) selection process. This preliminary draft CBA is currently published for consultation and stakeholder feedback.

ENTSOG continued in its role as facilitator for the roundtable on clean hydrogen transmission and distribution, as part of EC's European Clean Hydrogen Alliance. ENTSOG also addressed specific technical challenges through the Prime Movers' Group on Guarantees of Origin and Certificates and the Prime Movers' Group on Gas Quality and Hydrogen Handling. More broadly, ENTSOG's Advisory Panel for Future Gas Grids allowed for timely discussion between relevant industry stakeholders on the repurposing of gas infrastructure to a hydrogen and biomethane-ready system. In December, stakeholders discussed security of supply and the gas grids' readiness for hydrogen at ENTSOG's Annual Conference 2022 "In The Pipeline: Secure Winter, Sustainable Future'. Viewpoints were shared on the progress of the forthcoming Hydrogen and Decarbonised Gas Market Package legislation and the constructive role that gas grids, in particular the European Hydrogen Backbone and hydrogen corridors can play in facilitating the transition for the European hydrogen economy.

I would like to thank the ENTSOG team for their extremely hard work and dedication during 2022. Their efforts and our close working relationship with the gas TSOs have enabled ENTSOG to play a pivotal role to support key decision-making and implement swift actions during this ongoing energy crisis. The structure of ENTSOG, with the embedded expertise of its members as well as of its Brussels office, will continue in the development of a secure, sustainable and affordable European gas market (including biomethane and hydrogen) for many years to come.

BART JAN HOEVERS
President, ENTSOG

BART JAN HOEVERS
President, ENTSOG

PIOTR KUŚ
General Director, ENTSOG

GENERAL DIRECTOR'S FOREWORD

The current European energy crisis presents huge challenges, but undoubtedly also significant opportunities – to diversify supply from Russia and to really focus on building a robust framework to support transport of renewable and low-carbon gases, including hydrogen. The tough decisions taken by policy makers in 2022 have shielded EU citizens from the worst impacts during the past winter and have made Europe's energy system more resilient for the future. ENTSOG fully supports these collective efforts and the objectives of the "Fit for 55" package, as well as those included in the REPowerEU Plan.

In response to the invasion of Ukraine on 24 February 2022, ENTSOG and European gas TSOs took immediate and robust actions to ensure efficient and continued gas transport in unprecedented circumstances. The Regional Coordination System for Gas (ReCo) facilitated daily calls between EU and non-EU TSOs to exchange information of gas flows' patterns and periods of non-operation due to maintenance, and to monitor gas market behaviour. During the year, ReCo teams also undertook joint hypothetical exercises with the European Commission (EC) to determine how to optimise flows and deal with dynamic situations, including the possibilities for West-East flows, e. g., UK to Belgium and Netherlands, and Belgium and Netherlands to Germany. ENTSOG will continue to liaise with the EC and Gas Coordination Group (GCG) to provide the technical options available to maintain adequate gas flow and ensure a stable security of supply.

> *In response to the ongoing situation and to satisfy the urgent need for clear and relevant analysis, ENTSOG decided to exceptionally publish the Yearly Supply Outlook 2022/2023 in July 2022.*

Furthermore, ENTSOG undertook numerous assessments to support the EC in their assessments and to provide relevant and up-to-date analysis to gas market stakeholders. ENTSOG's Summer and Winter Supply Outlook reports assessed the dependence of the EU on Russian supply to satisfy the gas demand, as well as injection in the European gas storages. Importantly, they also included an assessment of a Russian supply disruption scenario as well as the benefits of new infrastructure projects commissioned during the winter and additional LNG import capacities. In response to the ongoing situation and to satisfy the urgent need for clear and relevant analysis, ENTSOG decided to exceptionally publish the Yearly Supply Outlook 2022/2023 in July 2022 – an ad hoc report focused on the impacts of the scenario of a full gas year disruption of Russian gas supply to Europe.

ENTSOG's Transparency Platform (TP) and our newly published gas flow and seasonal supply dashboards were highly valuable tools to update gas market stakeholders quickly. Unique views of the TP data increased by 60 % in 2022, when compared to 2021. General queries handled by the ENTSOG communication team rose by over 100 %. Clearly, efficient and timely sharing of good quality data and information was a key component of the ENTSOG teams work during 2022, across all business areas.

The ENTSOG team also provided expertise during the development of emergency measures to deal with the energy crisis, e. g., "Enhancing solidarity through better coordination of gas purchases, reliable price benchmarks and exchanges of gas across borders" regulation and the regulation for "Establishing a market correction mechanism to protect citizens and the economy against excessively high prices".

Concurrently, ENTSOG and its Members made concrete and proactive steps to further support Europe's focus on addressing climate change and reforming its energy system. ENTSOG's activities in the Advisory Panel for Future Gas Grids focused on stakeholder dialogue relating to implementation of measures for gas grids decarbonisation. In 2022, these measures were outlined in the "Recommendation Report: Repurposing Framework for gas grids".

On the basis of the conclusions of the 36th European Gas Regulatory Forum in 2022, ENTSOG published its joint Hydrogen Infrastructure Map together with Eurogas, CEDEC, Geode, GD4S and GIE, undertaken in cooperation with the European Hydrogen Backbone Initiative. This public interactive map of hydrogen infrastructure projects, including submitted TYNDP hydrogen projects as well as projects from DSOs, LSOs, SSOs, was well received by energy stakeholders and will continue to add more relevant projects as they become established. Under the Clean Hydrogen Alliance, ENTSOG managed the transmission and distribution roundtable work, sharing with project promotors best practices and recommendations for specific geographic and economic conditions coexisting in the EU for the emerging hydrogen economy.

In the past, ENTSOG has proven its ability to successfully deliver Network Codes, progress the integration of the European gas market and implement measures for security of energy supply. The unprecedented demands of the past year have shown that ENTSOG can respond to the numerous challenges presented. Now and in the months and years ahead, there is no doubt that we have the tools and the tenacity to innovate. ENTSOG will provide the needed support for stability of network operations and enable an affordable and low-carbon energy future, for us all as European citizens. I believe that ENTSOG can play its part to ensure an integrated energy system which includes hydrogen, as well as enabling a secure and reliable energy system.

PIOTR KUŚ
General Director, ENTSOG

Picture courtesy of Gas Connect Austria

1

ORGANISATIONAL STRUCTURE AND MEMBERSHIP

The role of the European Network of Transmission System Operators for Gas (ENTSOG) is to facilitate and enhance cooperation between national gas transmission system operators (TSOs) across Europe, and to ensure the development of a pan-European transmission system in line with European Union energy and climate goals.

ENTSOG operations are governed by its General Assembly (GA), which leads the Association and has full powers to enable it to achieve its objectives. Its tasks include the admission of Members; the appointment of the Management Board, the General Director and business area Directors; the establishment of working and regional groups; and the adoption of ENTSOG deliverables.

Internally, ENTSOG is divided into four business areas: System Operation, System Development, Market, and Strategy, Policy and Communication. These areas manage the many activities with which ENTSOG is tasked – cooperation for security of supply and providing transparency, ensuring REMIT compliance and technical cooperation **(System Operation and System Development)**; activities associated with scenario building and future gas infrastructure planning **(System Development)**; the development and implementation of Network Codes and guidelines and assessment of current and future gas market design **(Market)**; and the coordination of strategic topics and policy processes within ENTSOG and communication of ENTSOG activity outside the organisation **(Strategy, Policy and Communication)**. The management team has five support groups which provide compliance, financial and other services across the association. These are Legal, HR, Finance, IT and Administration.

ENTSOG Working Groups (WG), Kernel Groups (KG) and Task Forces (TF) associated with delivering tasks are assigned to the four business areas. The main WGs are shown in Figure 1.

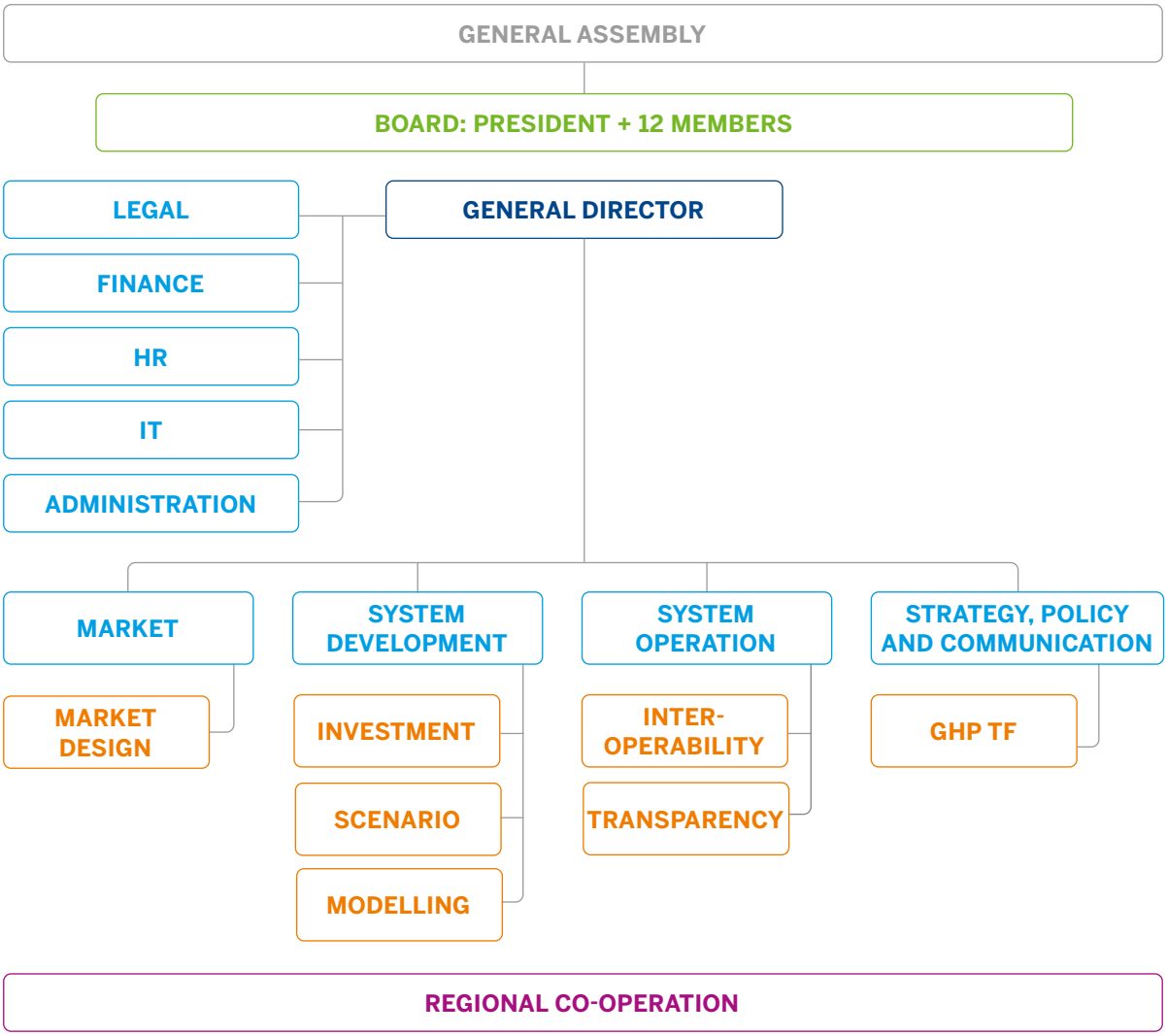

Figure 1: ENTSOG internal organisational structure (as of 31 December 2022)

A WG is the primary means for the management and delivery of ENTSOG's main content development and output (e. g., Summer/Winter Outlooks, TYNDP, Network Codes monitoring reports, position papers, responses, etc.) before their validation at Board and approval at GA level.

A KG is a more specialised group set up within a WG for the preparation of documents, proposals or for discussion of specific technical issues to prepare and facilitate the WG discussions. A TF is established specifically for particular activities that do not fit within the scope of existing WGs or due to the cross-functional nature of the activity. It is established by the Board upon recommendation of the General Director, including the specification of its Terms of Reference.

WGs and TFs typically meet on a monthly basis and KGs meet on an ad-hoc basis, as required.

ENTSOG **MEMBERSHIP**

Since its foundation on 1 December 2009, ENTSOG Member TSOs have provided wide coverage of the European gas market, operating in Member States of the European Union. ENTSOG's Articles of Association were modified in December 2010 to admit TSOs from EU countries derogated from the Third Energy Package, as Associated Partners. This allows such TSOs to participate in ENTSOG activities.

In February 2011, TSOs from Third Countries (candidates for EU accession, members of the Energy Community, EEA or EFTA), interested in following development of ENTSOG activities, were also admitted to the Association as Observers.

Following Brexit and in accordance with the established EU-UK Trade and Cooperation Agreement, the UK Members (National Grid plc, GNI(UK) and Premier Transmission Limited) are no longer ENTSOG Members as of 1 January 2022.

As of 31 December 2022, ENTSOG's membership was comprised of:

43 TSO Members, 2 Associated Partners from EU countries, and 10 Observers from non-EU countries.

MEMBERS (43)

Austria	– Gas Connect Austria GmbH
	– TAG GmbH
Belgium	– Fluxys Belgium S. A.
	– Interconnector Limited
Bulgaria	– Bulgartransgaz EAD
	– ICGB AD
Croatia	– Plinacro
Czech Republic	– NET4GAS, s.r.o
Denmark	– Energinet
Finland	– Gasgrid Finland Oy
France	– GRTgaz
	– TERÉGA
Germany	– bayernets GmbH
	– Fluxys TENP GmbH
	– GASCADE Gastransport GmbH
	– Gastransport Nord GmbH
	– Gasunie Deutschland Transport Services GmbH
	– GRTgaz Deutschland GmbH
	– NEL Gastransport GmbH
	– Nowega GmbH
	– Ontras Gastransport GmbH
	– Open Grid Europe GmbH
	– terranets bw GmbH
	– Thyssengas GmbH

Greece	– DESFA S. A.
Hungary	– FGSZ Natural Gas Transmission
Ireland	– Gas Networks Ireland
Italy	– Infrastrutture Trasporto Gas S.p.A. – Snam Rete Gas S.p.A. – Società Gasdotti Italia S.p.A
Latvia	– Conexus Baltic Grid
Lithuania	– AB Amber Grid
Luxembourg	– Creos Luxembourg S. A.
Netherlands	– BBL Company V.O.F. – Gasunie Transport Services B. V.
Poland	– Gas Transmission Operator GAZ-SYSTEM S. A.
Portugal	– REN – Gasodutos, S.A.
Romania	– Transgaz S.A.
Slovak Republic	– eustream, a.s.
Slovenia	– Plinovodi d.o.o.
Spain	– Enagás S.A. – Reganosa S.A.
Sweden	– Swedegas AB

ASSOCIATED PARTNERS (2)

Estonia	– Elering Gaas AS*
Switzerland	– Trans Adriatic Pipeline AG (Greece, Albania, Italy)

OBSERVERS (10)

Albania	– Albgaz
Bosian and Herzegovina	– BH-Gas Ltd. Sarajevo
North Macedonia	– GA-MA AD
Moldova	– Moldovatransgaz
Norway	– Gassco AS
Switzerland	– Swissgas AG – Erdgas Ostschweiz AG – Transitgas AG – FluxSwiss Sagl
Ukraine	– LLC Gas Transmission System Operator of Ukraine

Status as of 31 December 2022

During 2022, the ENTSOG General Assembly approved the following:

- FluxSwiss Sagl as Observer
- ICGB AD as full Member

* Elering became a full member of ENTSOG in early 2023

MEMBERS MAP

STATUS: DECEMBER 2022

43 Members

2 Associated Partners

10 Observers

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Since its foundation, ENTSOG member TSOs have provided wide coverage of the European gas market. In addition, according to ENTSOG's articles of association TSOs from EU countries currently derogated from the Third Energy Package, such as two of the Baltic States, are associated partners and are able to participate in its activities.

Since 2011, TSOs from Third Party countries (candidates for EU accession, members of the Energy Community or EFTA) interested in following development of the network codes were also admitted to the association as observers.

Following Brexit and in accordance with the established EU-UK Trade and Cooperation Agreement, the UK Members (National Grid plc, GNI(UK) and Premier Transmission Limited) are no longer ENTSOG Members as of 1 January 2022.

AUSTRIA, GERMANY AND SWITZERLAND

Picture courtesy of Enagás

2

SUMMARY OF ENTSOG'S **ACTIVITIES AND DELIVERABLES** IN 2022

The Annual Report assesses ENTSOG's work and achievements retrospectively for each given year and provides an opportunity to assess the status of work when comparing the executed results against those planned in the Annual Work Programme.

Since its establishment, ENTSOG's regulatory tasks and deliverables have been within the remit of Gas Regulation (EC) No 715/2009, TEN-E Regulation (EU) No 347/2013, and Security of Gas Supply Regulation (EU) 2017/1938, and have included:

1. **Delivering common operational tools to ensure network security and reliability.**
2. **Providing regular information on gas supply and demand for the European market.**
3. **Elaborating Ten-Year Network Development Plans (TYNDPs).**
4. **Developing network codes and guidelines for market and system operation.**

More recently, ENTSOG activities also fall within the scope of updated Regulation (EU) 2022/869 (TEN-E Regulation) and emergency security of supply measures associated with the energy crisis due to the invasion of Ukraine by Russia, namely: the Gas Storage Regulation (2022/1032); the Enhancing Solidarity Regulation (2022/2576), and the Market Correction Mechanism Regulation (2022/2578).

While ENTSOG's focus remains on fulfilling the tasks as required by the established regulatory framework in parallel it strives to meet the objectives associated with the European Green Deal and REPowerEU Plan, to ensure a secure, competitive and sustainable European gas market. It will continue to assess the longer term horizons for European scenarios, to meet EU energy and climate goals.

A summary of the key ENTSOG activities is provided in the sections below.

The key deliverables are outlined in → **ENTSOG DELIVERABLES 2022** (page 20).

The status of the activities and deliverables which had been planned and included in the AWP 2022 are provided in Section: → **Work Programme status** (page 22).

SECURITY OF SUPPLY AND REGIONAL COOPERATION

Russia's war against Ukraine at the beginning of 2022 has caused an energy crisis with significant challenges to European and global energy security. In parallel, with the EU and global collective efforts to minimise potential risks related to security of gas supply, ENTSOG and European gas TSOs took immediate and robust measures to ensure efficient and continued gas transport in unprecedented circumstances.

On 24 February, the day the invasion began, the **ENTSOG ReCo System for Gas** was activated so that information could be shared immediately. Since then, European TSOs have been having regular ReCo calls to monitor the gas market behaviour, gas flows" patterns, usage of underground gas storage facilities, and exchange of information about any potentials risks for security of gas supply. In addition, ENTSOG and the TSOs carried out four tabletop exercises during 2022 to test the gas system's resilience and readiness to address relevant supply disruptions. In December 2022, ENTSOG participated in an exercise organised by the European Commission (EC) and JRC (Join Research Centre) to assess how Member States and gas industry players may react in case of crisis events, including applying solidarity measures. With respect to the COVID-19 pandemic in 2022, ENTSOG and EU TSOs took measures to minimise any potential negative impact on system operations and business continuity.

In its **Summer Supply Outlook 2022**, ENTSOG additionally assessed EU dependence on Russian gas supply during summer 2022 to satisfy the gas demand, as well as to inject in the gas storages. **The Summer Supply 2021 Review, Winter Supply 2021–2022 Review reports** – which give an overview of the supply and demand balance, usage of the European network, storages and potential gas supply usage – were published in 2022.

In response to the situation, ENTSOG decided to publish in July 2022 an extraordinary report focused on the scenario of a full gas year disruption of gas supply from Russia to Europe, called the **Yearly Supply Outlook 2022/2023**.

Additionally, ENTSOG undertook a **Union-wide simulation of gas supply and infrastructure disruption scenarios**, including scenarios of a prolonged disruption of a single supply source. ENTSOG used a sensitivity analysis to check if the European gas system could handle different demand conditions during the winter season and also investigated a full Russian supply disruption case.

In 2022, ENTSOG was observing decreasing gas supply to Europe from Russia, rising energy prices and their correlation with security of supply, in particular the usage of storage capacities and gas flows to the EU from exporters. ENTSOG shared these observations with the EC and the Gas Coordination Group (GCG) on a regular basis and supported by providing operational and gas system expertise, knowledge, and information relevant to security of gas supply. ENTSOG provided support to the EC for the analysis of annual dependence on Russian gas, for the purpose of their **REPowerEU Plan** published in May 2022.

SYSTEM DEVELOPMENT SCENARIOS AND INFRASTRUCTURE

Throughout 2022, ENTSOG continued with activities related to scenario development and TYNDP processes. As part of **TYNDP 2022 development**, ENTSOG undertook analysis of the first TYNDP 2022 project submission, and collected new and updated infrastructure projects during a second submission period.

In addition, throughout 2022, ENTSOG commenced the assessment of the requirements of the European energy policies relating to natural gas and hydrogen infrastructure and the identification of infrastructure gaps and mitigation of these gaps by current and planned infrastructure projects. Work also progressed with ENTSO-E on the project for electricity and gas interlinkages. In April 2022, the **final TYNDP 2022 Scenario Report** was published. The TYNDP 2024 scenario building process was initiated in May 2022.

In May 2021, ENTSO-E and ENTSOG published the **Interlinked Model investigation, screening and dual assessment Progress Report**, which considers the outcomes of the Interlinked Model Focus Study. The Interlinked Model has progressed into an integrated PLEXOS model consisting of electricity and hydrogen infrastructure, on which CBA analysis on projects submitted to ENTSOG and ENTSO-E can be performed.

In May 2022, ENTSOG launched the second project data collection for TYNDP 2022.

In September 2022, the EC launched the first PCI process under the revised TEN-E Regulation. Throughout 2022, ENTSOG was involved in the different deliverables of the PCI selection process through Cooperation Platform, including the PCI project collection of hydrogen infrastructure through the TYNDP process.

Picture courtesy of Plinacro

SYSTEM OPERATION, INTEROPERABILITY AND TRANSPARENCY REQUIREMENTS

The Interoperability team worked to close the **Functionality (FUNC) Platform issue**, relating to the potential extension of the Business Requirements Specifications (BRS) by adding information about balancing processes.

In 2022, ENTSOG continued to cooperate with CEN and other stakeholders in normative work and to include recommendations and considerations related to the definition of future gas quality management and hydrogen handling principles.

ENTSOG also continued its cooperation with relevant stakeholders on **gas quality and hydrogen handling via a dedicated prime movers' group** which was established in 2020 together with DSO organisations Eurogas, GEODE, CEDEC, and GD4S.

ENTSOG produced and published the 4th **INT NC Implementation Monitoring Report (IMR)** for 2020–2021 in 2022.

ENTSOG actively supported EC's initiative on **Methane Emissions Reduction**, one of the urgent topics of the EU Green Deal agenda, participating in discussions on the development of technical recommendations for a "Regulation on methane emissions reduction in the energy sector" proposal.

Furthermore, the ENTSOG EIC **Local Issuing Office services** continued in 2022.

The ENTSOG Transparency Team and the Transparency Working Group undertook work in 2022 to improve the **ENTSOG Transparency Platform (TP)**, maintaining and improving the continuous provisions of transparency information required by the Tariff (TAR), Interoperability (INT) and Capacity Allocation Mechanism (CAM) Network Codes and Transparency Guidelines and the data provision required by REMIT. Additionally, ENTSOG and the gas TSOs have been active in several ACER fora discussing the continued **implementation and improvements to REMIT**. In 2022, an exceptional high interest in the TP data was also accommodated by means of increased support of users.

MARKET

In October 2022, the Market Development Working Group and Market Code Working Groups were merged into a single Market Working Group (MAR WG). This was done to gain efficiency and benefit from synergies across the business area. For the matter of simplicity, MAR WG is used to describe the activities of the joint activities covering network codes and market development.

ENTSOG has developed Network Codes containing rules on how to further integrate the EU gas market as well as for system operation and development. The EC is focused on correct implementation of the existing market rules in all Member States, and the MAR WG continues to **monitor and analyse the implementation of the existing Network Codes and the EC Guidelines** and their effect. Further development of the existing Network Codes, or development of new ones is not expected until the Hydrogen and Decarbonised Gas Market package is finalised. The EC consulted on their Priority List from February 2023, advising to continue with implementing the existing gas Network Codes, without developing new ones for the time being.

The following list outlines the timeline for publication and implementation of each of the Network Codes and Guidelines:

Publication	Implementation
Guidelines on Congestion Management Procedures (CMP GLs) and on Transparency	Published as Annex I to Regulation (EU) No 715/2009, entry into force on October 2013. Only one ENTSOG member has not yet fully implemented the CMP GLs1.
CAM NC – Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems	Published on 14 October 2013 as Regulation (EU) No 984/2013, entered into force on November 2015. CAM NC – Amendment for Incremental capacity. Regulation (EU) 2017/459, the first amendment of the NC, entering into force on 6 April 2017. Implementation of the NC has been completed by the majority of TSOs. In some specific cases implementation is still on going2.
BAL NC – Network Code on Gas Balancing of Transmission Networks	Published 26 March 2014 as Regulation (EU) No 312/2014. Implementation of the NC has been completed by the majority of TSOs. In some specific cases implementation is still ongoing3.
INT NC – Network Code on Interoperability and Data Exchange Rules	Published on 30 April 2015 as Regulation (EU) No 703/2015, implemented by May 2016. Compliance with the NC is very high and fluctuates between 95–100 %. Fluctuations are due to continuously changing nature of the network4.
TAR NC – Network Code on Harmonised Transmission Tariff Structures for Gas	Published on 16 March 2017 as Regulation (EU) No 460/2017, entry into force on 6 April 2017, implementation still ongoing.5

Table 1: TheTable outlines the timeline for publication and implementation of each of the Network Codes and Guidelines

During 2022, the ENTSOG Market team, together with the ENTSOG Members, worked on publication of the Implementation and Effect monitoring reports for BAL NC and TAR NC in May 2022. The publication of the CAM NC and CMP GLs reports is planned for Q2 2023. Work commenced in Q4 2022.

Additionally, the MAR WG was active in the following workstreams: developing solutions to issues raised through the jointly managed ACER and ENTSOG **Functionality (FUNC) Process**, with the objective of facilitating the implementation of the Network Codes and improving the functioning of gas markets; preparation of the **Capacity Auction Calendar for 2023/2024** published in January 2023; supporting the Interoperability WG with updates on the **Business Requirement Specifications (BRS) for BAL, CAM NC and CMP GLs** and **developing policy solutions to enable the uptake of renewable and decarbonised gas market** with other WGs and TFs.

MAR WG also provided expertise in the development of the EU emergency security of supply measures in response to the European energy crisis. The ENTSOG Market team input on the regulation to increase gas storage filling in the EU before the 2022/2023 winter season. Furthermore, the team covered topics on enhancing solidarity through better coordination of gas purchases, reliable price benchmarks and exchanges of gas across borders and regulation establishing a market correction mechanism to protect citizens and the economy against excessively high prices.

Finally, ENTSOG Market team worked also on **position papers** dealing with RED III (revision of recast Renewable Energy Directive), Guarantees of Origin (GO) and Union Database.

1 See the latest findings in CMP GL Implementation & Effect Monitoring Report published in 2023 in Chapter 2.

2 See the latest findings in CAM NC Implementation & Effect Monitoring Report published in 2023 in Chapter 3.

3 See latest findings of the BAL NC Implementation & Effect Monitoring Report published in 2022 in Chapter 2.

4 See the latest findings in the INT NC 4th Implementation monitoring report published in 2022 in Chapter 3.

5 Out of the 50 TSOs from 28 countries (including two non-Member States) covered in ENTSOG's latest Tariff Monitoring report on 2021 data, published in 2022, 45 TSOs from 23 countries (including one non-Member State) applied the "new" tariff rules (i. e., following TAR NC provisions) as of 1 October 2021. Two TSOs (from two Member States) still applied the "old" tariff rules (either due to their long multi-year tariff period, or due to delays in NRA's decision-making). Three TSOs (from two Member States and one non-Member State) benefitted from a general derogation. See latest findings of the TAR NC Implementation & Effect Monitoring Report 2021 in Chapter 3.1.2.1.

STRATEGY, POLICY AND COMMUNICATION

In 2022, the GHP TF (formerly G2021 TF) facilitated the coordination of ENTSOG's activities on REPowerEU, analysing the **"Fit for 55" Package focusing on relevant legislative files** impacting the grid infrastructure, and provided strategic input and **coordinated the work on the Hydrogen and Decarbonised Gas Market package**. The TF, in conjunction with ENTSOG business areas, specifically worked on analysing and developing responses to the recast Gas Directive and Gas Regulation, the revision of the Renewable Energy Directive (RED III), as well as monitoring other relevant legislative files from "Fit for 55" and the developments on Delegated Acts on Renewable Fuels of Non-Biological Origin (RFNBOs).

The TF also worked on the requested inputs on the fast-tracked regulations proposed by the European Commission under Art 122 TFEU of the Gas Storage Regulation (2022/1032); the new Enhancing Solidarity Regulation (2022/2576), and the new Market Correction Mechanism Regulation (2022/2578).

In 2022, the TF in cooperation with relevant WGs monitored EU policy developments and provided regular updates to the ENTSOG Members, GA and ENTSOG Board. The main focus of the TF was on actions stemming from the REPowerEU Communication and to facilitate contributions to the Hydrogen and Decarbonised Gas markets legislation.

The TF was also involved in setting priorities for engagement with stakeholders in bilateral and multilateral fora. The TF was informed and regularly updated on **ENTSOG activities in the Advisory Panel for Future Gas Grids** focusing on stakeholder dialogue on how to decarbonise the gas grids, which developed a Recommendation Report on Repurposing Framework for gas grids in 2022. In addition, the TF was informed on ENTSOG activities in facilitating the **Roundtable on Clean Hydrogen Transmission and Distribution under the European Clean Hydrogen Alliance**, addressing the topic of hydrogen corridors, as introduced under REPowerEU.

The Strategy, Policy and Communication Team managed the development and publication of the **joint Hydrogen Infrastructure Map** – a public interactive map of hydrogen infrastructure projects. It included submitted TYNDP hydrogen projects, as well as projects from DSOs, LSOs, SSOs from Eurogas, CEDEC, Geode, GD4S and GIE, undertaken in cooperation with European Hydrogen Backbone Initiative.

External communications were particularly important in 2022, given stakeholder interest in ENTSOG activities and assessments on security of supply and how gas TSOs exchange up-to-date information of gas flows and storage filling levels.

ENTSOG **MANAGEMENT SUPPORT**

ENTSOG's Management Support team continued working in 2022 with ENTSOG teams and management and working with ENTSOG members. Support was via the **Legal, HR, Finance, IT and Administration** functions to ensure a robust platform for the activities and deliverables of ENTSOG.

The ENTSOG Legal Team ensured the proper working of the day-to-day activities from the legal perspective.

ENTSOG Human Resources continued with a well-prepared recruitment process, so that the relevant resources and competences were in place to perform the required activities.

Working with several IT providers, vendors and IT contractors, the IT Team plans, manages, builds and operates IT systems to support ENTSOG advisors and their activities. In 2022, they provided IT support to ENTSOG stakeholders in the use of ENTSOG's data and systems.

ENTSOG **DELIVERABLES 2022**

JANUARY

04 // CAM Network Code "Capacity Auction Calendar" for 2022/2023

12 // ENTSOG and GIE's System Development Map 2020/2021

MARCH

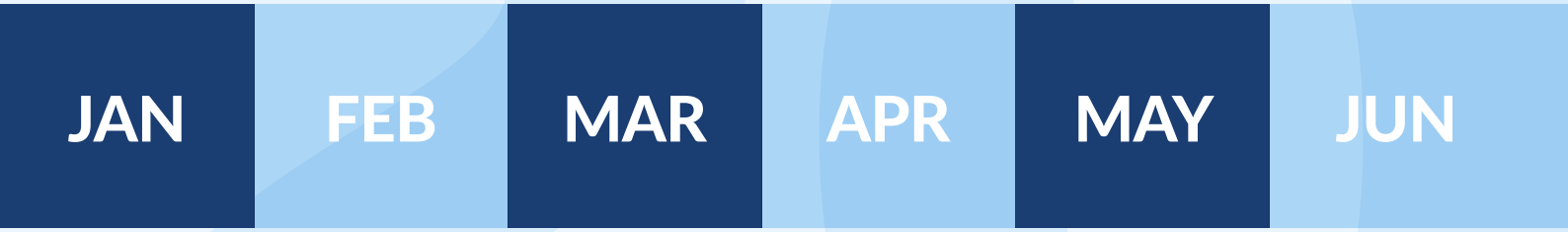
17 // Interactive Seasonal Supply Outlook monitoring dashboard

MAY

06 // Annual Report 2021

06 // Implementation and Effect monitoring report for the Balancing Network Code

06 // Implementation and Effect monitoring report for Tariff Network Code



FEBRUARY

24 // High-level position paper on EC's Hydrogen and Decarbonised Gas Market Package

APRIL

05 // Interactive European gas flow data dashboard

11 // ENTSO-E and ENTSOG's Joint Scenarios for TYNDP 2022

28 // Summer Supply Outlook 2022

28 // Summer Supply Review 2021

JULY

20 // Draft Annual Work Programme (AWP) 2023 for public consultation

27 // Yearly Supply Outlook 2022/2023 in response to disruption of Russian gas supply

DECEMBER

13 // Joint Hydrogen Infrastructure Map

20 // Final Annual Work Programme 2023

OCTOBER

21 // Updated list of projects to be included in its Ten-Year Network Development Plan 2022

24 // Winter Supply Outlook 2022/23

24 // Winter Supply Review 2021/22

WORK PROGRAMME STATUS

These tables provide an overview of the activities in ENTSOG's four main business areas –System Development, System Operation, Market, and Strategy, Policy and Communication (SPC). The listed tasks originate (and are supplemented in some cases) from the Annual Work Programme 2022.

SYSTEM DEVELOPMENT

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
TYNDP 2022	Ad-hoc Project collection TYNDP 2022 (New project submissions and update of projects already submitted to the 1st window TYNDP 2022 project collection)	Ad-hoc TYNDP 2022 project collection (May–June 2022) Update of TYNDP 2022 Annex A List of projects (October 2022)	Webinar with project promoters. Data check with ACER/NRAs on collected project information.	Project data collection and support of project promoter in their submission.
TYNDP 2022	Assess the infrastructure against the European Energy Policies to identify infrastructure gaps and mitigation of these gaps by projects on the basis of the CBA Methodology in force.	Draft TYNDP 2022 Infrastructure report (process ongoing) Draft TYNDP 2022 Map (process ongoing) Draft TYNDP 2022 System assessment Report (process ongoing) Relevant draft TYNDP 2022 Annexes (Process ongoing)	TSOs	TYNDP 2022 Process ongoing
CBA Methodology update to include hydrogen infrastructure	Preparation and publication of ENTSOG draft CBA Methodology to include hydrogen infrastructure	Identification of the improvements to be included in the preliminary draft CBA Methodology for consultation (Q4 2022)	TSOs, ACER	Draft CBA Methodology (Process ongoing)
Support to Regional Groups	Provide technical expertise during the 1st PCI selection process under revised TEN-E	1st PCI Project Collection (October–December 2022) Publication of supporting material for PCI project collection (October 2022) Contribution to the EC/ACER/ENTSOs Cooperation Platform for the 1st PCI selection process (Process ongoing)	EC ACER TSOs Project promoters	Support to 1st PCI selection process under revised TEN-E, started in September 2022 and will be ongoing until Q2–Q3 2023. PCI Project data collection and support of project promoter and EC during project submission phase (October–December 2022)
ENTSO-E/ ENTSOG consistent and Interlinked Model	Task force Interlinked Model (TF ILM) to review the project assessment methodology based outcomes of the outcomes of the 2021 progress study. TF ILM to develop a dual assessment methodology and electricity and hydrogen integrated model (ongoing).	Testing of cost benefit analysis methodology and dual assessment (completed) Publication of a Progress Report (ongoing)	EC TYNDP Project promotors	Assessment of electrolyser CBA due by the end of march based on interlinked model. Drafting of 2022 Interlinked model progress report ongoing.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
TYNDP 2022 scenario development process	Joint scenario development process between both ENTSOs	Final TYNDP 2022 joint scenario report (ENTSOG/ ENTSO-E)	TSOs TYNDP 2022 scenarios consulted with EC, ACER, external stakeholders.	Draft report published in October 2021. Final Report was published in April 2022
TYNDP 2024 scenario development process	Joint scenario development process between both ENTSOs	Final TYNDP 2024 joint scenario report (ENTSOG/ ENTSO-E)	TSOs TYNDP 2024 scenarios consulted with EC, ACER, external stakeholders.	Draft Scenario report expected to be published in Summer 2023
Union-wide simulation of gas supply and infrastructure disruption scenarios, including scenarios of a prolonged disruption of a single supply source	Regulation 2017/1936 under Art. 7(1) of Regulation (EC) 2017/1938 defines that ENTSOG should undertake an assessment Union-wide simulation of gas supply and infrastructure disruption scenarios, including scenarios of a prolonged disruption of a single supply source.	The prolonged supply disruptions scenarios were delivered in the Winter Supply Outlook 2022/23 and published after approval by the Gas Coordination Group. (completed)	TSOs Gas Coordination Group	Completed
Summer Outlook 2022	Provide view on injection period ahead	Publication April 2022	TSOs ACER	Completed
Summer Review 2021	Analyse previous summer	Publication April 2022	TSOs	Completed
Yearly Supply Outlook 2022/2023	Extraordinary report focused on the full gas year disruption of the gas supply from Russia to Europe	Publication July 2022	TSOs ACER	Completed
Winter Outlook 2022/23	Provide view on supply-and-demand balance for winter ahead	Publication October 2022	TSOs ACER	Completed
Winter Review 2021/22	Analyse previous winter	Publication October 2022	TSOs	Completed
System Development Map (periodical)	Provide project map and graphic representation of supply-and-demand for past year	Publication January 2023	TSOs	Approved in December 2022 and published in January 2023

Table 2: System Development Work Programme Status

SYSTEM OPERATION

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
TRANSPARENCY				
Data consistency support to TSOs	Ensure a high data completeness and consistency on the TP	ENTSOG staff monitors the data publications daily and reports to the TSOs on a monthly basis.	Gas TSOs	Over the course of the year, data completeness has continuously improved and is stable around 93 %.Two cyber security attacks on TSOs impacted the completeness during the year.
Continuous platform improvements	Ensure user friendliness and usability of the published data	In 2022, several new features were implemented	Gas TSOs and TP Users	On-going
Facilitate required data collection processes	Ensure timely and effective data deliveries	The data needed for ACER's monitoring obligations was delivered on 21 February 2023.	Gas TSOs, ACER Gas Market Department	Completed
Follow up on REMIT requirements	Ensure proper application of REMIT requirements	Ongoing effort.	Gas TSOs, ACER REMIT department, ACER REMIT User groups	ENTSOG and gas TSOs have participated in numerous discussions in the REMIT area in 2022. In PCs for ACER REMIT documentation updates. ENTSOG and gas TSOs supported ACER and Esaeeg@s in finalising Version 2 of the GasCapacityAllocation document (REMITTable 4). The updated ACER requirements for REMIT implementation have been considered and implemented, if relevant. The TSOs have expressed their concerns for the planned addition of VPN tunnels to the reporting setup for ARIS.
Discuss updated UMM concept related to publication in IIP and backup-solutions.	Ensure good practice and integrity for publication of inside information as UMMs	ENTSOG discussed the existing UMM-setup amongst the members and updated internal governance rules.	Gas TSOs, ACER REMIT department	The TP has been approved as eligible for IIP services and an informal collaboration with GIE provides mutual back-up systems.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
Analyse legal transparency requirements coming from EU legislation, including the gas Network Codes	Ensure proper application of the transparency requirements	Ongoing effort	Gas TSOs, EC, TP users and other stakeholders	On-going.
Cooperate with ENTSOG business areas to fulfil transparency requirements coming from relevant NCs	Ensure proper application of the publication requirements	Ongoing effort.	Gas TSOs, other ENTSOG Working Groups, TP users and other stakeholders	On-going
Facilitate and support other areas inside ENTSOG with projects concerning TP	Ensure good usage of the available data and functionalities on the TP	N/A	Gas TSOs, other ENTSOG Working Groups,	On-going.
Stakeholder satisfaction survey on the TP	Ensure a transparent and user-friendly channel for providing feedback on using the TP	In 2022, only 10 responses were received to the public standing satisfaction survey.	Gas TSOs, TP users, ACER, EC, and other stakeholders	In addition to the stakeholder satisfaction survey, more than 900 questions from TP users were handled by ENTSOG and TSO staff in 2022.
Public workshop on Transparency	Ensure transparent dialog with stakeholders	No workshop was held in 2022.	Gas TSOs, TP users, ACER, EC, and other stakeholders	Not completed.
Develop ENTSOG and gas TSOs' positions on transparency and REMIT related issues and respond to reports from stakeholders	Develop positions on transparency and REMIT related issues that can be presented to stakeholders	Ongoing effort	Gas TSOs, ACER, other stakeholders	In 2022, TSOs engaged in dialogues on changes of electronic formats for reporting of REMIT Table 4 data and new RRM requirements for communication channels with ACER ARIS.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
INTEROPERABILITY AND DATA EXCHANGE				
Follow up on INT NC Implementation Monitoring	Monitor the implementation and functioning of the INT NC	The complete 4th INT NC Implementation Monitoring Report (IMR) covering years 2020–2021 with Annex "Detailed assessment of the Interconnection Agreements" for third list of IPs (2021) published in August 2022.	TSOs, ACER	An Annex for the 4th Implementation Monitoring Report with a detailed analysis of IAs' compliance with the INT NC for a selected group of TSOs expected to be published in the second half of 2023.
Development of the Gas Quality Outlook report	Publish the fourth edition of the Gas Quality Outlook report for the TYNDP 2022	Ongoing	TSOs involvement	Following the timeline of the TYNDP process, the next edition of gas quality outlook 2022 will be published in 2023
Continue discussion on gas quality and H_2 handling	Gathering information on how the gas transmission network readiness to integrate hydrogen and other renewable and decarbonised gases	Ongoing	TSOs involvement	Set out ENTSOG's current understanding of the opportunities and challenges on increased penetration of hydrogen and other renewable gases in the gas grids
Continue discussion on gas quality standardisation with CEN	Cooperate with gas sector regarding gas quality standard and regulation	Contribute towards the revision of EN 16726 to include WI and revision of other quality parameters (e. g., oxygen, relative density, hydrogen, etc)	Stakeholders from the whole gas value chain participate in the process	ENTSOG continues cooperating with CEN
Continue discussions on H_2 quality standardisation with CEN	Cooperate with gas sector in the development of a European H_2 technical specification for repurposed natural gas grids (Gas infrastructure: Quality of gas – Hydrogen used in converted/rededicated gas systems)	Ongoing	TSOs involvement	ENTSOG continues cooperating with CEN
Continue discussion on gas and hydrogen quality and handling with industry associations	Cooperate with gas sector regarding gas and hydrogen quality standard, handling and regulation	Ongoing	Stakeholders from the whole gas value chain participate in the process	Marcogaz, EASEE-gas, GERG, GIE, DSOs associations and other industry associations in this field.
Prime movers' group on GQ & H2 handling	Assess the need for new or updated tools to efficiently ensure system interoperability, security of supply and meet end-users' needs and safety requirements	Finished	Stakeholders from the whole gas value chain participate in the process	Joint initiative facilitated by ENTSOG with DSO associations CEDEC, Eurogas, GEODE and GD4S

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
Public workshop on GQ & H2 handling	Dialogue with stakeholders along the gas value chain in the field of gas quality and hydrogen	A stakeholder workshop was held in 2022	All public could participate	Once per year
Facilitating WI framework discussion	Provide ENTSOG views for the proper implementation of the CEN SFGas GQS proposal in the CEN gas quality standard EN 16726	Ongoing	TSOs involved in the process	ENTSOG set up a Task Force to gather information on WI values in their networks to provide analysis that support positions on the WI process in CEN
Smart Grid solution & digitalisation for Gas Quality and H_2 handling	Exploring the possibilities of deploying "smart gas grid" services to improve the interoperability of systems and technologies	Ongoing	TSOs involved in the process	Ongoing
Follow up on the SoS and technical cooperation	Follow up on the existing ReCo System for Gas as a CNOT for emergency conditions	Ongoing	TSOs	Ongoing
Follow up on technical cooperation with third-country TSOs	Continue cooperating with Energy Community and third-country TSOs	External contact platform meetings twice per year	EnC Secretariat and stakeholders	Ongoing. ENTSOG and EnC Secretariat established a communication channel to be used in case of crisis events
Follow up on FUNC issues	Complete outstanding FUNC issues	BRS BAL FUNC issue solution note was completed and issued on the FUNC platform 14 October 2022	ACER, Submitter, ITC KG, ENTSOG Market group.	FUNC issue regarding balancing is resolved and completed.
Follow up on data exchange	Manage and review CNOTs	Updated the CDES table with new recommended data exchange solutions for various information flows. 5 April 22 published	ACER, TSOs, SSOs, Market Area Managers and network users, public consultation.	Amendment of the Common Data Exchange Solution Table as part of the CNOTs with the input provided by the market participants and a public consultation.
CNOT update: CAM/CMP BRS update	Update the BRS CAM CMP to reflect edig@s® 6.1 changes	Added additional parameters to indicate the changes in the new edig@s(R) 6.1 version 5 April 22 published	ACER, TSOs, Market Area Managers, public consultation	CAM/CMP BRS was updated, passed public consultation and was published on the ENTSOG website.
CNOT update: Nominations & Matching BRS update	Update the BRS for Nominations & Matching to reflect 6.1 edig@s® changes	Added additional parameters to indicate the changes in the new edig@s® 6.1 version 17 Jan 2022 published	ACER, TSOs, Market Area Managers, public consultation	Nominations & Matching BRS was updated, passed public consultation and was published on the ENTSOG website.
Follow up on data exchange	Organise Data Exchange and Cyber Security workshop	Organised Annual Workshop on Data Exchange and Cyber Security in the gas sector on 3 November 2022	ENTSOG, GIE, EASEE-gas, ENISA, ENCS, ACER	A hybrid event that combined Data exchange and cyber security workshop was held on 3 November 2022 in collaboration with ENTSOG, EASEE-gas and GIE held at the ENTSOG offices

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
Follow up on cyber security	Organise bi-monthly Cyber security calls with the GIE/ ENTSOG Joint Cyber Security Task Force	Organised bi-monthly cyber security task force calls.	GIE, ENTSOG, ACER, TSOs, ENISA	Virtual bi-monthly joint task force calls were held with a range of speakers from ENISA, ACER, ENTSOG, GIE etc. The calls were well attended by TSOs and discussed the approaches regarding the NIS 2 directive and potential NC on cyber security for the gas sector.
Follow up of EASEE-gas collaboration	Collaborate on CNOT issues and advise on data exchange	Participated and contributed to the EASEE-gas groups: MWDWG & TSWG. Reviewed the current EASEE-gas collaboration model and devised a new framework to be completed 2023.	ENTSOG, EASEE-gas Board/management team and MWDWG & TSWG	Participated in the relevant groups run by EASEE-gas and collaborated on the joint Data exchange and data security workshop. Developed a new EASEE-gas collaboration framework for further consultation in 2023.
Continuation of the dialogue with stakeholders on European and national level on security algorithms for AS4 and the development of a new updated AS4 profile.	Establish a common definition of secure security algorithms for AS4 and produce a new version for gas sector adoption with state of the art encryption	Developed a draft AS4 profile with increased security core.	GIE, BDEW, EASEE-gas, EC eDelivery program, ITC KG	A draft version was developed and shared with the ENTSOG ITC KG for comments. Road map for the documentation updates, service e provider communication and testing to be put in place for 2023.
Review Data exchange CNOTS' readiness for new gases	Initiate a dialogue with relevant stakeholders and create a document that discusses the fit-for-purpose credentials of the current ENTSOG CNOTS when applied to new gases	ENTSOG (ITC KG) completed work drafting an analysis on the suitability of current CNOTs and edig@s(R) solutions in the context of new gases and will assess if they are fit for purpose.	ENTSOG's ITC KG, EASEE-gas, MWDWG (edig@s®), TSWG, GIE	A final analysis has been completed which stated that the CNOTs currently in place are fit for purpose for new gases. The document is now ready for further build-out in 2023 with new input from the hydrogen sector.
Follow up on EIC scheme	Deliver Local Issuing Office service	Ongoing	ENTSO-E, LIOs, EIC users	Further cooperation with ENTSOE (CIO) and other LIOs from the gas sector on harmonisation of EIC functions & definitions
Cooperation with GIE, Marcogaz and GERG on methane emissions reduction strategy	Dissemination of information on the progress of the EC's methane emissions reduction strategy	Ongoing	GIE, Marcogaz, GERG	Ongoing

Table 3: System Operation Work Programme Status

MARKET

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
BALANCING NETWORK CODE				
Support ENTSOG members with the implementation of the BAL NC	Successful implementation of the BAL NC provisions by ENTSOG members	Ongoing throughout 2022	TSOs	Ongoing
Publish the BAL NC implementation and effect monitoring reports as of 1 October 2021	Monitor the implementation and effects of the BAL NC	Published on ENTSOG website on 6 May 2022.	TSOs and ACER	Completed
Respond to queries from Members and stakeholders on balancing issues	Reply to requests, on topics such as implementation of the BAL NC or good practices in Europe, in a timely manner	Ongoing throughout 2022	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on balancing related issues and respond to consultations and queries from stakeholders	Develop ENTSOG positions on balancing-related issues that can be presented to stakeholders and the wider market, as well as internal material to support other areas	Ongoing throughout 2022	TSOs, stakeholders, ACER	Ongoing
Participation in external events on balancing	Present ENTSOG's positions and results regarding balancing towards external stakeholders	On-going throughout 2022	TSOs, stakeholders, ACER	Ongoing
TARIFFS NETWORK CODE				
Support ENTSOG members with the implementation of the TAR NC	Successful implementation of the TAR NC provisions by ENTSOG members	Ongoing throughout 2022	TSOs	Ongoing
Publish the TAR NC implementation and effect monitoring report as of 1 October 2021	Monitor the implementation and effects of the TAR NC	Published on ENTSOG website on 6 May 2022.	TSOs and ACER	Completed
Respond to queries from Members and stakeholders on tariff issues	Reply to requests, on topics such as implementation of the TAR NC or good practices in Europe, in a timely manner	Ongoing through 2022	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on tariff related issues and respond to consultations and queries from stakeholders	Develop ENTSOG positions on tariff-related issues that can be presented to stakeholders and the wider market, as well as internal material aimed at analysing the evolution of tariffs and revenues.	Ongoing throughout 2022	TSOs, stakeholders, ACER	Ongoing
Participation in external events on tariffs	Present ENTSOG's positions and results regarding tariffs towards external stakeholders	On-going throughout 2022	TSOs, stakeholders, ACER	Ongoing

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
CAPACITY NETWORK CODES AND CONGESTION MANAGEMENT GUIDELINES				
Support ENTSOG members with the implementation of the CAM NC	Successful implementation of the CAM NC provisions by ENTSOG members	Ongoing throughout 2022	TSOs	Ongoing
Develop the CMP GL and CAM NC implementation and effect monitoring reports covering gas years 2020/2021 and 2021/2022	Monitor the implementation and effects of the CAM NC and CMP GL	Publication on ENTSOG website expected in May 2023.	TSOs	Ongoing
Development of CAM NC auction calendar 2023/2024	Publish the auction calendar for 2023/2024	Publication on ENTSOG website on 13 January 2023	TSOs	Completed
Respond to queries from Members and stakeholders on capacity issues	Reply to requests, on topics such as implementation of the CAM NC or good practices in Europe, in a timely manner	Ongoing through 2022	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on capacity related issues and respond to consultations and queries from stakeholders	Develop ENTSOG positions on capacity-related issues that can be presented to stakeholders and the wider market, as well as internal material to support other areas	Ongoing throughout 2022	TSOs, stakeholders, ACER	Ongoing
Participation in external events on capacity	Present ENTSOG's positions and results regarding capacity towards external stakeholders	On-going throughout 2022	TSOs, stakeholders, ACER	Ongoing
FUNCTIONALITY				
Support the Functionality Process and any related issues to the Network Codes and Guidelines that arise	Provide assistance to the successful establishment and operation of the Functionality Process	Ongoing	Stakeholders, TSOs, ACER	Ongoing
MARKET ASSESSMENT				
Evaluate any proposed changes to the current regulatory framework in the EU gas sector and provide feedback.	Ensure that the stakeholders (including the EC) are aware of ENTSOG's positions and views regarding the legislative and policy proposals developed for the EU gas sector	On-going throughout 2022	TSOs, EC, stakeholders	Ongoing
Provide opinion and/or responses on issued reports, public consultations, and papers.	Support members and stakeholders	Ongoing through 2022	TSOs	Ongoing

Table 4: Market Work Programme Status

STRATEGY, POLICY AND COMMUNICATION

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/Comments
Policy and legislative files analysis	Monitor key energy & climate policy/regulatory developments put forward by EU institutions on Fit for 55 package	Q2–Q4	TSOs	Completed
	Contribute and develop position on security of supply legislations, namely the Gas Storage Regulation (2022/1032); the new Enhancing Solidarity Regulation (2022/2576), and the new Market Correction Mechanism Regulation (2022/2578).	Q1–Q4	TSOs	Completed
	Analyse and develop positions on revision of Renewable Energy Directive and Implementing Act on voluntary schemes with the Guarantees of Origin Prime Movers	Q1–Q4	TSOs	Ongoing
	Analyse and develop positions on the Hydrogen and Decarbonised Gas Markets package	Q2–Q4	TSOs	Ongoing
Strategy proposals	Identify strategic priorities relevant Fit for 55 legislative files, recast TEN-E Regulation, and Hydrogen and Decarbonised Gas Market package as requested by the ENTSOG Board.	Ongoing throughout 2022	TSOs	On-going
	Map the priorities of the European Commission and European Parliament	Ongoing throughout 2022	TSOs	On-going
External Engagement	Engage in the European Clean Hydrogen Alliance's Roundtable on Clean Hydrogen Transmission & Distribution	Q1–Q4 2022	TSOs	Established and on-going
	Engage in the Advisory Panel for Future Gas Grids	Q1–Q4	TSOs	Established and on-going
Communication proposals	Provide recommendations on ENTSOG's priorities in dialogue with the European Commission, Parliament and ACER.	Ongoing throughout 2022	TSOs	On-going
	Propose external and internal communication.	Ongoing throughout 2022	TSOs	On-going
	Engage in dialogue with industry, gas and other key EU stakeholders.	Ongoing throughout 2022	TSOs	On-going
Information sharing	Provide information material to TSOs in their discussions on gas regulatory framework held at national level.	Throughout the whole 2022	TSOs	On-going
	Report to Members on all ENTSOG bilateral, multilateral and public engagement	Throughout the whole 2022	TSOs	On-going

Table 5: Strategy, Policy and Communication Work Programme Status

Picture courtesy of Nowega

3

SYSTEM OPERATION:

SECURITY OF SUPPLY, REMIT, TRANSPARENCY AND INTEROPERABILITY

The primary work of the System Operation business area includes developing and monitoring technical network codes, evaluating activities related to gas quality standardisation, developing and maintaining existent Common Network Operation Tools (CNOT), the ReCo System for Gas and the exchange of information on security of supply, and the maintenance and continuous development of ENTSOG's Transparency Platform (TP), including activities referring to REMIT.

In 2022, System Operations comprises two main working groups: Interoperability (INT WG) and Transparency (TRA WG).

WORK STRUCTURE

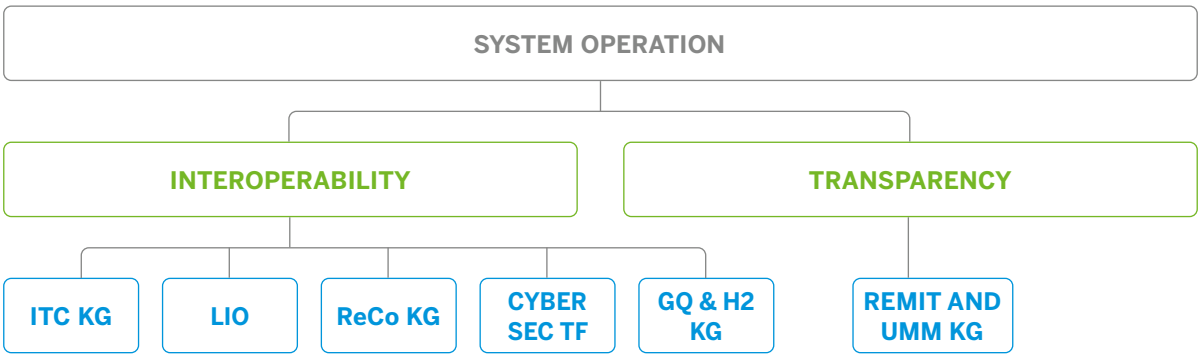


Figure 2: Interoperability and Transparency Working Groups and associated KGs/TFs


Picture courtesy of Elering

INTEROPERABILITY

The Interoperability Working Group (INT WG) monitors the implementation of the INT NC and oversees the work of the groups mentioned below.

ENTSOG Members' work on interoperability topics is structured around the following groups within the System Operation area:

- The Regional Coordination System for Gas KG (ReCo KG) includes four ReCo Teams: Europe, North-West, East and South and focuses on operational and dispatching cooperation for the security of gas supply.
- The Information Technologies and Communications KG (ITC KG) develops and maintains the ENTSOG Common Network Operation Tools (CNOTs) for normal conditions, as stated in Art. 24 of the INT and Data Exchange NC, including Business Requirement Specifications (BRS), Implementation Guidelines and communication profiles (edig@s®). Furthermore, the ITC KG is working in collaboration with other European organisations (e. g., ENISA, ENCS, EC eDelivery/DEP, GIE, EASEE-gas-MWDWG, TSWG), on new developments and specifically with the EC eDelivery programme in developing a new version and state of the art AS4 communication protocol to ensure safe and secure communication in the gas sector by updating the ENTSOG AS4 profile.
- The Cyber Security Task Force is jointly managed by GIE and ENTSOG. This group reviews how to best position the gas industry from potential cyber-attacks by reviewing topics such as: Active input for NIS 2.0, Cyber resilience act software certification scheme, create awareness for Cyber security best practices and discuss with stakeholders a resilience plan for vulnerable infrastructure.
- The Gas Quality and Hydrogen KG (GQ & H_2 KG) provides expertise, support, and proposals on ENTSOG activities related to gas quality while also building ENTSOG vision on the technical aspects of hydrogen injection. Additionally, it coordinates the cooperation with CEN, Marcogaz, EASEE-gas, and GIE. It also prepares the TYNDP Gas Quality Outlook reports. The ENTSOG team and Members contribute with inputs and expertise in GQ & H_2 handling for the development of recommendations to facilitate the on-going processes related to GQ & H_2 standardisation in CEN, including establishing basic rules and procedures needed for the implementation of a Wobbe-Index classification system, based on the proposal developed by CEN SFGas "Pre-normative Studies of H-Gas quality parameters" (CEN SFGas GQS). The GQ & H2 KG is also a platform to exchange information between TSOs regarding GQ topics.
- ENTSOG's Energy Identification Codes' (EIC) Local Issuing Office (LIO) together with other gas LIOs organised by several European TSOs are involved in handling the process of issuing and maintenance of EICs. Gas LIOs cooperate with the Central Issuing Office (CIO) managed by ENTSO-E for harmonising the process' rules and exchange of experience. Representing all gas TSOs' LIOs, ENTSOG participates in discussions of ENTSO-E's Gas Role Models/Harmonised Electricity Market Role Model harmonisation group and provides technical input for amending EIC functions and role models' definitions.

These groups meet monthly (and ad hoc, as required) and comprise participants representing Member TSOs across Europe.

TRANSPARENCY

The Transparency Working Group (TRA WG) ensures compliance with the transparency requirements and is supported by the REMIT Kernel Group (KG), following the activities in ACER's RRM User Group, ACER's REMIT Expert Group, ACER Roundtable for inside information disclosure, ACER AEMP Roundtable and general REMIT developments.

The TRA WG meets monthly, and the REMIT KG meets biweekly or ad hoc as required and comprise participants representing Member TSOs across EU Member States.

ACTIVITIES

SECURITY OF SUPPLY AND REGIONAL COOPERATION

REGIONAL COORDINATION SYSTEM FOR GAS (RECO SYSTEM)

In 2017, Regulation (EU) 2017/1938 concerning measures to safeguard the security of gas supply came into force. It states that the regional cooperation should gradually be complemented with a stronger European perspective and overview, allowing recourse to all available supplies and tools in the entire internal gas market.

Regional cooperation and coordination between TSOs play an important and significant role in security of gas supply, handling emergencies, and helping to minimise negative effects.

To address the above-mentioned objectives, the EU's TSOs, under the umbrella of ENTSOG, have established specific ReCo Teams. Each ReCo Team is a community of TSOs for one of the supply corridors, which are explained in Reg. (EU) 2017/1938: "Union gas supply routes that help Member States to better mitigate the effects of potential disruption of supply or infrastructure". These include TSOs from the relevant gas supply risk groups defined in Annex 1 of Regulation 2017/1938 as well as other EU TSOs, if reasonable. Non-EU TSOs can also be invited by ENTSOG (after approval by ENTSOG's Board) to become a member of a ReCo Team. The ReCo system has been functioning and progressing since 2014 and currently unites 53 TSOs (including non-EU ones).

ReCo Teams can provide operational expertise on an ad-hoc basis to the concerned TSOs in case of a crisis or need to provide relevant information, via ENTSOG to other stakeholders such as the Gas Coordination Group (GCG), the EC, and the Member States.

Regarding measures adopted for the COVID-19 pandemic, ENTSOG and EU TSOs continued in 2022 to assess the situation and risks, such as the impact on system operations, work of dispatching teams and security of gas supply. There was no impact on business continuity.

On 24 February, the day Russia's war against Ukraine begun, the ReCo System for Gas was activated to address the subsequent impacts to the gas transmission operations, Since then, "ReCo Team Europe" TSOs (EU and non-EU) has been having regular joint calls to monitor the gas market behaviour, gas flows' patterns, usage of underground storage facilities, and exchange of information about potentials risks for the security of gas supply. The outcomes of the calls were communicated to the EC, ACER, Energy Community Secretariat, and EFET. Since the impact of the war is relevant for all TSOs, "ReCo Team Europe" was developed with Fluxys Belgium taking on a facilitator role.

CHANGE IN GAS FLOW PATTERNS AND DIVERSIFICATION OF SUPPLY SOURCES

During 2022, there were several events with potential risks to Europe's security of gas supply. At the start of the war, the continuation of the gas flows via Ukraine was very uncertain. Russian shelling damaged gas pipelines, gas distribution stations, and production and gas storage facilities in East and South of Ukraine. A part of Ukrainian gas transmission facilities were located in the invaded territories. In February and March, the gas supply to the EU via Ukraine increased. However in April and May, it was significantly reduced by around 60 % was relatively stable by the end of 2022.

In January to April, the flows to Poland via Yamal pipeline were fluctuating between zero and 40 % of maximum capacities, and on 11 May they stopped and have not resumed. The supply from the East was reduced, but ultimately with no overall negative impact on the security of gas supply status in Europe, due to diversification of supply sources.

In June 2022 the flows via Nord Stream 1 significantly decreased, by around 60 %. The second decrease occurred in July, with the pipeline at a level of 20 % of maximum capacity. From September the flows decreased to zero. On 26 September 2022, a series of underwater gas leaks (caused by undersea damages) occurred on the Nord Stream 1 and Nord Stream 2 natural gas pipelines. The damages of the pipelines resulted in no further gas flows.

The abovementioned decreases and fluctuations of the flows from East-Europe triggered changes in the gas flows' patterns and gas supply to the EU. The reduction of flows from the East was compensated by higher flows from LNG, and supplies from Norway, the UK, and North Africa, as well as lower gas consumption in the EU.

At the same time, the gas market participants increased efforts to fill underground storage facilities in preparation for the coming winter season, which resulted in reaching a record 94.9 % filling level of the EU underground storage facilities on 1 November 2022, in comparison to 77 % on 1 November 2021.

New gas infrastructure projects such as the LNG terminals in the Netherlands, Germany and Finland; the Baltic Pipe project; interconnector Poland-Lithuania; interconnector Greece-Bulgaria; interconnector Poland-Slovakia; and the availability of capacities from France to Germany were very quickly completed in 2022 strengthening Europe's security of gas supply and the gas transmission system's flexibility.

GAS FLOW AND STORAGE DASHBOARDS

In order to have a more detailed overview of the gas market situation, ENTSOG developed data dashboards to assess the European gas market behaviour and gas flow patterns, which were published on ENTSOG's website for stakeholders' use. By the end of 2022, the first phase of the web platform for visualisation of gas flows' operational data was developed and used by TSOs dispatching teams to monitor daily physical flows between TSOs, import flows, flows from and to underground storage facilities, from production and to distribution, and directly connected consumers.

ENTSOG and TSOs undertook four tabletop exercises to test the gas system's resilience and readiness to face supply disruptions. The results of the exercises show that the TSOs' systems are ready to tackle the disruptions, despite some identified challenges.

ENTSOG SYSTEM OPERATION SECURITY OF SUPPLY ASSESSMENTS

Throughout 2022, European gas TSOs noticed an increase of cyber-attacks on their IT systems. Considering the relevance of cyber security risks for TSOs operational and dispatching procedures, ENTSOG and the TSOs agreed to include cyber-attacks and cyber security risks to the incident classification scale: Annex 1 to the Regional Coordination System for Gas as a common network operation tool to ensure coordination of network operation in emergency conditions.

On 5 to 7 December 2022, the EC and JRC undertook an additional exercise for 11 Member States to assess how governments, regulators, and businesses would cope with crisis events based on previously developed scenarios, including applying solidarity measures. ENTSOG supported the EC in developing the scenarios, took part in the exercise, and provided input.

In 2022, ENTSOG and TSOs were systematically analysing maintenance works that may impact capacities at the most strategic Interconnection Points (Ips) and assessed their impact on availability of capacities and gas flows, in particular from West to East Europe. TSOs from Northwest Europe, with ENTSOG's assistance, coordinated more closely. They endeavour to synchronise maintenance works schedules for 2023 in order to shorten periods of capacity interruptions.

Even though 2022 was an intense year to help manage security of gas supply aspects, gas TSOs and the gas market succeeded in navigating many hurdles, to assist meeting consumers' gas demand, enabling transportation to and from underground gas storage facilities, ensuring high a storage filling level, and commissioning new infrastructure projects to satisfy the requirement for new supply sources.

Importantly, and aiming to support Ukraine with the existing challenges presented during an extraordinary year, a number of EU TSOs in coordination with ENTSOG and Energy Community Secretariat provided their technological and expert assistance to Gas TSO of Ukraine during difficult operational conditions.

SUPPORT TO THE EC IN TERMS OF SECURITY OF SUPPLY

The ENTSOG team continued cooperating closely with the EC and participated in the scheduled GCG meetings in 2022. The outcomes of the regular "ReCo Team Europe" calls were communicated to the EC, ACER, and Energy Community.

ENTSOG provided operational and system-development expertise during the year, in particular with its observations of the gas flows' patterns, fluctuations of the gas flows and usage of TSOs capacities, gas storage filing levels, updates about commissioning of the infrastructure projects, information about events with risks to the security of gas supply, defined threats, and communicating findings during the tabletop exercises.

ENTSOG presented to the GCG and the EC their simulations, assessments, and reports as requested. More details on these can be found in Section **➜ Support to Gas Coordination Group and European Commission** (see page 51).

RECOMMENDATIONS ON TECHNICAL COOPERATION WITH THIRD COUNTRIES.

In 2018, ENTSOG adopted "Recommendations relating to the coordination of technical cooperation between Community and third-country transmission system operators" ("Third-country TSOs")[1].

The document describes the three key areas of technical cooperation: Security of Supply and the ReCo System, Expert Knowledge on Interoperability, and the External Contact Platform. Furthermore, the criteria to categorise third country TSOs have been developed and the corresponding groups identified: Energy Community and EFTA countries, countries with specific agreements to accommodate or implement EU legislation, and others. For each category, different recommendations for the key areas of cooperation are given.

ENTSOG and the TSOs followed the provisions of the document. Together with the Energy Community Secretariat, two meetings with third country TSOs were held in 2022 within the framework of the External Contact Platform to exchange expert knowledge and deepen further cooperation.

ENTSOG also invited TSOs from non-EU countries to participate in several workshops and conferences on the relevant processes and developments in the EU gas transmission sector. Non-EU TSOs (from the ReCo Teams) also took part in regular daily "ReCo Team Europe" calls on the evolving situation in the European gas network after 24 February and the emerging energy crisis.

ENTSOG and the Energy Community Secretariat continued to exchange information and support coordination between EU and non-EU TSOs. Cooperation with the Energy Community Secretariat was added to the Regional Coordination System for Gas as a common network operation tool to ensure coordination of network operation in emergency conditions.

1 in accordance with Article 8.3(c) Regulation (EC) No 715/2009

Picture courtesy of ENTSOG

INTEROPERABILITY AND DATA EXCHANGE

INTEROPERABILITY AND DATA EXCHANGE NETWORK CODE

As required by biennial reporting obligations of Article 8(8) of Regulation (EC) No 715/2009 and Article 25 INT NC, ENTSOG published in August 2022 the 4th complete Implementation Monitoring Report (IMR) with an overview of all EU Interconnection Points (IPs)' compliance with INT NC. The report is based on TSOs input covering 2021–2022. As a complementary part of the IMR-2021, a third list of IPs had been selected and agreed between ENTSOG and ACER to document detailed evidence of Interconnection Agreements' (IA) compliance with the INT NC and formed the report's Annex "Detailed assessment of the Interconnection Agreements" . The third list for detailed assessment included 15 IPs. ENTSOG proactively added to the list three new IPs with IAs signed during 2020–2021. The detailed evidence of 18 IAs is summarised in Annex to IMR-2021.

For collection of input updates on the implementation of the INT NC by TSOs, the ENTSOG INT WG and ENTSOG INT team continue to use the questionnaire created for IMR-2017. This approach facilitates the data review required from TSOs as well as ENTSOG's data analysis. The TSOs provided detailed evidence of IAs compliance with the INT NC and clarified comments to ENTSOG's questions about the implementation work.

The analysis confirms that during the last two years since the third IMR-2019, the adjacent TSOs have continued working on improving cooperation for documenting in IAs their new steps towards harmonisation and reaching consensus on the main terms and conditions envisaged in INT NC. With minor procedures that are still in progress at new IPs, all analysed IPs are operated in accordance with the INT NC. A continuous tendency of merging physical IPs into Virtual Interconnection Points (VIPs) has been observed. The report was shared with ACER for review and feedback. Comments from ACER were positive and acknowledged their overall satisfaction with the results of the work executed by ENTSOG and the TSOs.

UPDATES OF CNOTs

In 2022, ENTSOG continued to improve the common network operation tools (CNOTs), with special attention to the AS4 communication profile.

- The ENTSOG AS4 profile update: The EC eDelivery Digital Europe Programme is working on an update to their AS4 communication protocol (on which the ENTSOG profile is based) to improve core security features. On that basis, ENTSOG chose to work in conjunction with this activity to ensure that the ENTSOG profile has the necessary updated security features to safeguard the gas sector's communication for the next five to ten years. The AS4 profile provides not only interoperability guidance for the required AS4 functionality (i. e., which requirements are mandatory or optional) but also security guidance based on state-of-the-art best practices following ENISA recommendations and best practices implemented by the EC eDelivery programme.As of end of 2022, the DEP project is on track to deliver a new AS4 profile definition after many rounds of consultation and feedback involving the EC and ENTSOG contributions.
- ENTSOG completed work on three CNOT documents in 2022: (CDEST) Common data exchange solution table, BRS for CAM and CMP and BRS NOM for nomination and matching procedures, adding additional parameters to indicate the changes that came from the publication of the new Edig@s® version 6.1. The amended versions of all documents were published in January and April of 2022 after public consultation.

FOLLOW-UP OF EASEE-GAS DEVELOPMENTS

ENTSOG cooperated closely with EASEE-gas in 2022 on data exchange as a participant in the relevant EASEE-gas groups: The Message Workflow and Design Working Group and the Technology Standards Working Group.

On the basis of the collaborative work undertaken in 2022 and as described in the previous section, ENTSOG, EASEE-gas and GIE organised and held another joint workshop on data exchange and cyber security in 2022.

In 2022, ENTSOG and EASEE-gas started to develop a framework for a deeper collaboration in data exchange and cyber security. This work is currently ongoing and will be completed in 2023.


Picture courtesy of Plinacro

FUNCTIONALITY ISSUES RELATING TO DATA EXCHANGE

ENTSOG completed the solution note on 14 October 2022 for the FUNC issue regarding the "BRS for Balancing", connected to the data exchange article of the INT NC and BAL NC.

The issue was posted on the FUNC Platform in February 2019 and was resolved with the comment that amending the existing BRS for Nomination and Matching or drafting a new BRS is not warranted at this point in time. Adopting a Union-wide data exchange format could however bring benefits for the parties involved in the balancing processes. Therefore, ENTSOG have issued a recommendation note addressed to TSOs recommending the use of the latest version of edig@s®, currently the edig@s® 6.1 version.

OPERATION OF THE LOCAL ISSUING OFFICE (LIO)

Energy Identification Codes (EIC), which are standardised and maintained by ENTSO-E, provide a unique identification of market participants and other entities that are active within the Internal European Energy Market. EICs are widely used in Electronic Data Interchange to identify parties and objects for REMIT. ENTSOG operates a Local Issuing Office (LIO) and now manages more than 1260 EICs for market participants across Europe. In 2022, ENTSOG continued cooperating with ENTSO-E via the joint Central Issuing Office (CIO)/LIO meetings and contributed in harmonising EIC functions' definitions and addressing challenging urgent issues caused by the changing gas flows in the European gas market. In addition, ENTSOG maintained its participation in discussions of ENTSO-E's Gas Role Models/Harmonised Electricity Market Role Model Harmonisation Group and provided technical input for amending definitions of roles and EIC functions.

ANNUAL WORKSHOP ON DATA EXCHANGE AND CYBER SECURITY

ENTSOG organised an online Annual Workshop on 3 November 2022 covering data exchange and cyber security topics. The workshop presenters consisted of multiple experts from ACER, ENTSOG, ENISA, ENCS, GIE, EASEE-gas and several TSOs and shippers. These experts presented on a range of data exchange issues such as AS4 and practical implementation of edig@s®. In the cyber security session regulatory, technical and legal dimensions in the gas sector were addressed. Additionally, ACER presented its view on the potential of developing Network Codes for the gas sector and also reviewed the NIS 2.0 Directive.

The main topics included AS4 as protocol and edig@s® xml, part of the document-based data exchange solution. The workshop included two sessions on data exchange and cyber security.

Data exchange session of the workshop consisted of:

- GIE's vision and developments.
- ENTSOG's AS4 profile major deliverable.
- Update edig@s. 6.1.
- Update on EASEE-connect.
- EASEE-gas Certificate Agreement Update.
- Questions and answers round up.

The cyber security session of the workshop consisted of:

- Current cyber security in challenging times.
- ENTSOG Joint Cyber security Task Force.
- Ransomware phenomenon.
- Legal framework: NIS 2.0 Directive. NC Cyber Security Gas.
- Cyber security threats in the energy sector.
- Critical infrastructure protection.
- Cyber security in the gas sector.
- Questions and answers round up.

All presentations and summary notes are available on **ENTSOG's website**.

The workshop included an interactive session at which the workshop participants were asked their opinion on the topics that had been presented. The hybrid workshop was attended by almost 100 participants from over 25 countries.

GAS QUALITY AND HYDROGEN

COOPERATION WITH CEN AND MARCOGAZ AND EASEE-GAS

During 2022, ENTSOG continued cooperating actively with CEN, Marcogaz and EASEE-gas on the topics of gas quality and renewable, and low-carbon gases. As part of the pre-normative research carried out within the GQ study within the Subgroup 1 of the Prime Movers' group, ENTSOG contributed to the proposal of a Wobbe Index (WI) entry range recommendation and a requirement for a classification system at exit points, proposed by CEN SFGas GQS. Subgroup 2 worked on a whole gas value chain "roadmap" based on recommendations, best practices, and lessons learnt about existing and potential gas quality and hydrogen handling issues, options, and tools . After the work developed, the Prime Movers' group decided to suspend activity until further interest of the participants in discussing specific issues or proposals arises.

ENTSOG is also monitoring standardisation activities regarding the injection of hydrogen into the gas grid through the CEN Sector Forum Energy Management Working Group Hydrogen. ENTSOG is a member of the Marcogaz Working Group Gas Quality and Renewable Gases and Hydrogen TF. ENTSOG is also a member of the EASEE-Gas Gas Quality Harmonisation Working Group.

HYDROGEN IN THE TRANSMISSION SYSTEM

In 2022, ENTSOG continued it focus on assessing the possibilities to inject hydrogen into the transmission system via internal assessments among ENTSOG Members and the ENTSOG team. This is to further progress in assessing the tolerance for different levels of hydrogen concentration in the gas grid system and analyse the feasibility and verification of all pathways (hydrogen backbone, methane backbone, and hydrogen/methane blended networks).

Furthermore, to support the cost-effective integration of renewable and low carbon gases such as biogas, biomethane, and hydrogen, in the network in accordance with consumers' needs and gas quality requirements, ENTSOG is committed to further work in analysing the possibilities of deploying smart grid solutions and digital tools for gas quality and hydrogen handling. This could include digital systems for online gas quality tracking and forecasting, sensor technologies for interactive and intelligent metering, among others.

ENTSOG continued its dialogue with stakeholders along the gas value chain in the field of gas quality and hydrogen and delivered a workshop at the end of 2022. ENTSOG also contributed to the work developed in the Marcogaz H_2 TF.

METHANE EMISSIONS REDUCTION

ENTSOG actively supported EC's initiative on Methane Emissions Reduction, one of the urgent topics of the EU Green Deal agenda, participating in discussions on the development of technical recommendations for a "Regulation on methane emissions reduction in the energy sector" proposal. This work was undertaken by the Methane Emissions Expert Group organised under the umbrella of GIE and included five associations: ENTSOG, Eurogas, GERG, GIE, MARCOGAZ, representing the operators of the European gas mid/downstream infrastructure. These recommendations were developed in two phases and delivered as initial feedback on the Regulation proposal in a position paper, and later in a more detailed document.

CYBER SECURITY

ENTSOG has collaborated with GIE on the Cyber security task force to build a common understanding on the key areas of policy as identified by the EC regarding the new NIS 2.0 Directive and a potential Network Code on cyber security for the gas sector.

ENTSOG has also engaged with ENISA to provide gas TSOs (in 2023) a "train the trainer" programme which has been developed by ENISA. This is to raise awareness on cyber security issues in the gas community by running cyber security hands-on workshops which will progress cyber security knowledge acquisition.

In 2022, ENTSOG (ITC KG) embarked on discussions with several systems' providers of malware information sharing platforms with a view to potentially offering ENTSOG Members a more proactive method of cyber-attack information dissemination. This work is currently ongoing and will continue to be evaluated in 2023.

Picture courtesy of Terega

ENTSOG TRANSPARENCY PLATFORM (TP)

ENTSOG's Transparency Platform (TP) provides technical and commercial data on the gas transmission systems, which includes relevant points, such as interconnection points and storage connections, LNG facilities, distribution networks, final consumers and production facilities depending on the NRA decision. The current version of ENTSOG TP was launched on 1 October 2014. It was developed with the aim of improving transparency, user friendliness and data publication capabilities. It is a powerful tool providing the means for ENTSOG's Members and Associated Partners to fulfil their data publication obligations1. Observers are also invited to publish data voluntarily on the TP. ENTSOG received strong support from many stakeholders with regards to TP functionality and the information provided therein. In the extraordinary circumstances of 2022, ENTSOG's Transparency Platform became an important data source for many internal and external users, which resulted in significant increase of users' queries.

The Transparency Platform is available at this link: **https://transparency.entsog.eu/**

RELEASED FUNCTIONALITIES AND IMPROVEMENTS

Developments during 2022 included:

- Creation of FAQ for user questions
- Announcement section
- Completed Data Archive
- Improvement of default settings
- Updated logic for Status Indicators
- Updated maps and layers

ENTSOG TP approved as Inside Information Platform

Since 1 October 2014, a solution for publishing Urgent Market Messages (UMMs) has existed on the ENTSOG TP. In 2021, ENTSOG updated the format for the UMMs to comply with the changed layouts published by ACER.

Publications of inside information via UMMs is open to ENTSOG Members, Associated Partners, Observers, Booking Platforms, and Market Area Managers. These users utilise a SharePoint form for creating new (versions) of the UMMs as well as an XML solution to transmit the information to the ENTSOG TP automatically.

In 2022, ENTSOG Transparency Planform successfully completed the 2nd phase of application to be listed as an IIP in line with ACER's process of registering Inside Information Platforms based on their compliance with the minimum quality requirements for effective disclosure of inside information, as defined in Section 7.2.2 of the ACER Guidance[2].

TP User support

TP user requests are addressed continuously. TP User questions have been answered with expertise and support of ENTSOG and TSOs. More than 900 questions were answered in 2022.

1 https://entsog.eu/sites/default/files/2023-01/INT2424_22_DE and CS joint workshop 2022_11_03 Final_0.pdf

See Chapter 3, Annex I, Regulation (EU) No 715/2009. Additional obligations for transparency publications are laid out in the Tariff, Capacity Allocation Management and Interoperability Network Codes

2 https://www.acer-remit.eu/portal/list-inside-platforms

TP USAGE, STAKEHOLDER INVOLVEMENT AND DATA PUBLICATION

ENTSOG and TSOs work closely together to achieve the highest quality and comprehensiveness of the data published on the platform. To satisfy and serve the market expectations of data quality and transparency, an internal monitoring process is established to facilitate the joint efforts of ENTSOG and its Members. This process is continuously evaluated and updated, to keep up with the constant changes in functionalities and reporting requirements.

In 2022, two TSOs experienced cyber security attacks on their IT infrastructure, which caused significant delays in the data publications.

Besides TSO publications, ENTSOG is also supplying the EC and ACER with customised reports for specific tasks.

TP Usage statistics

Usage statistics for calendar year 2022 are included below:

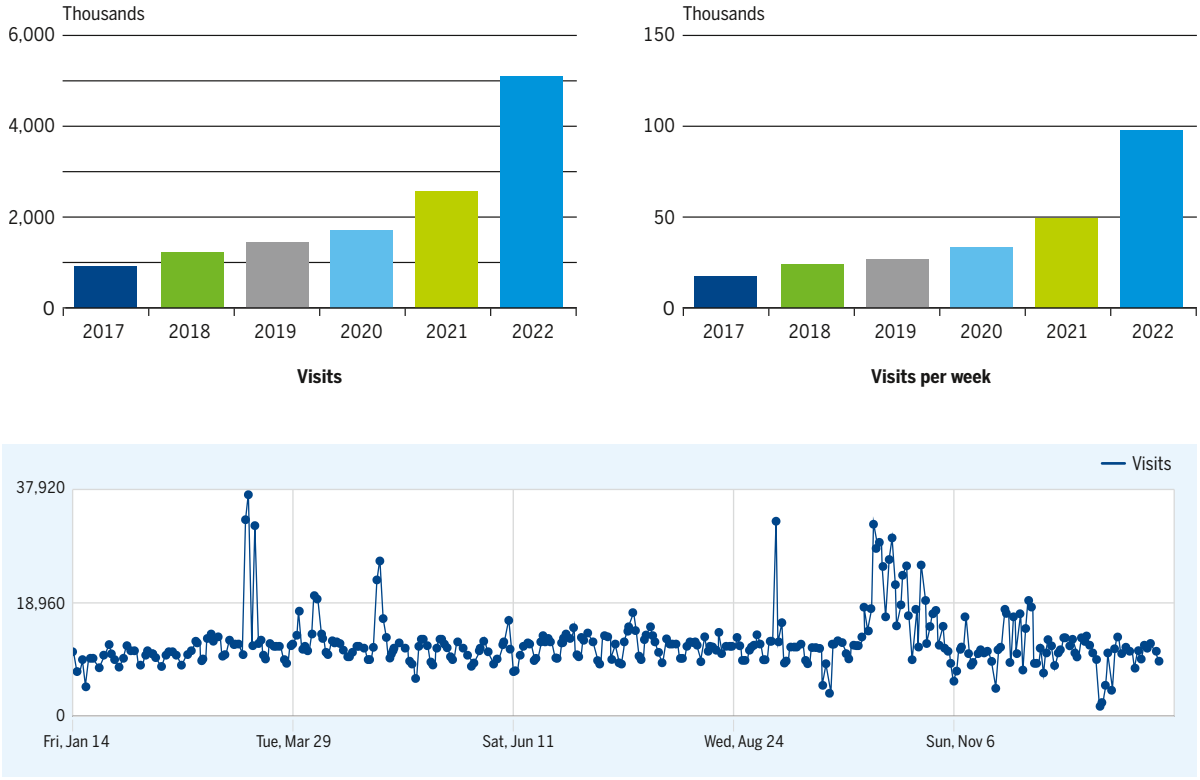


Figure 3 and 4: Usage statistics

The number of visits has increased to a total of 5,062,739 in 2022 and to 97,360 for the average amount of visits per week. The highest number of visits was reached on 13 January 2022 with 10,001 unique visits.

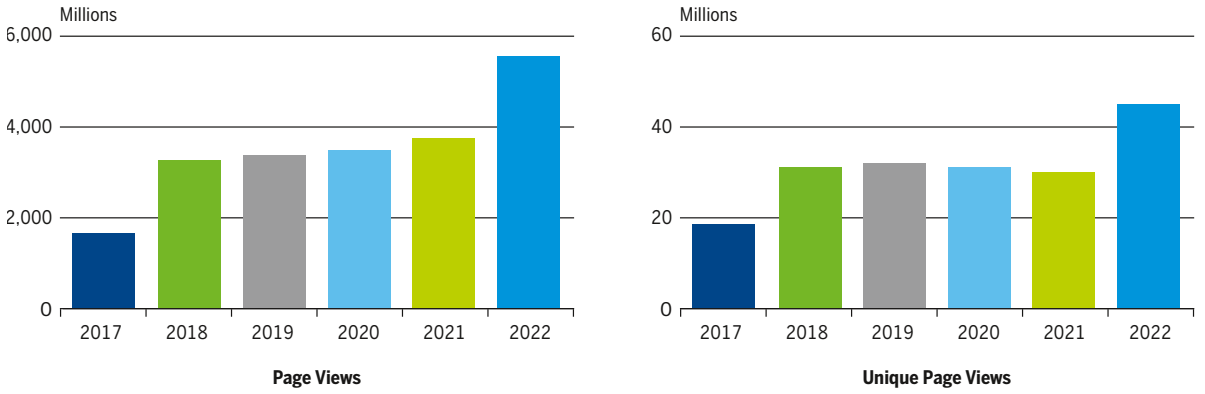
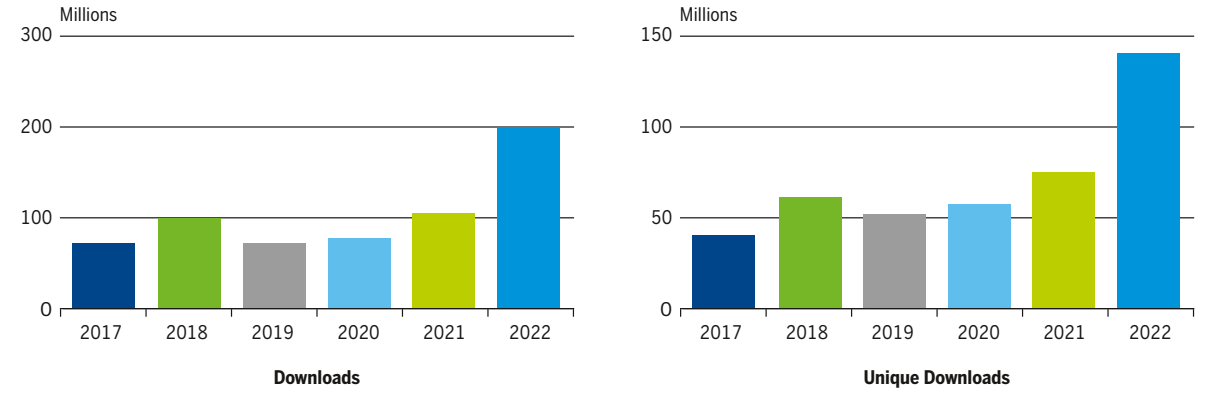


Figure 5: Usage statistics

Compared to 2021, the number of page views has increased to a total of 138,706,328 in 2022, with a 60 % increase in the total number of unique page views in 2022. It should be noted that API calls for fetching data from the TP GUI are also counted as page views.



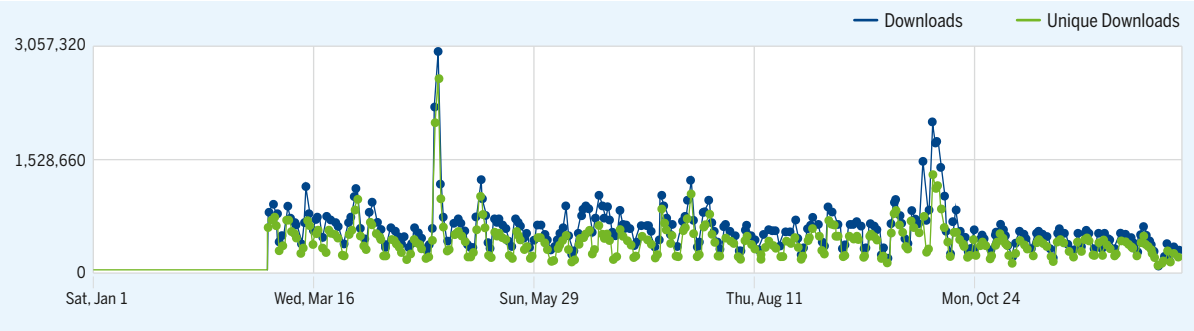


Figure 6 and 7: Usage statistics

The number of downloads[1] has increased significantly compared to 2021, to a total of 199,752,340 in 2022 and an increase to 141,07,1991 for the total number of unique downloads in 2022.

In 2022, users of TP were retrieving data from the TP through GUI-based as well as dedicated API calls.

1 The line graph related to the Downloads and Unique Downloads start from 1st of March 2022.

REMIT ACTIVITIES

Regulation (EU) No 1227/2011 Regulation on Energy Market Integrity and Transparency (REMIT) establishes rules prohibiting abusive practices affecting wholesale energy markets and providing more transparency regarding price-relevant (inside) information. It provides for the monitoring of wholesale energy markets by the ACER in close collaboration with NRAs. The goal of REMIT, through strong cross-border market monitoring, is to detect and avoid market manipulations and to facilitate the completion of a fully functioning, interconnected and integrated internal energy market.

EC Implementing Regulation (EU) No 1348/2014 stipulates the information that is required to be reported and defines the rules to be followed by the market participants with regards to their REMIT reporting to ACER.

ENTSOG's ACTIVITIES AS RRM

Since 2015, ENTSOG has been a Registered Reporting Mechanism (RRM) as required by the REMIT regulation. On behalf of gas TSOs, ENTSOG reports **aggregated fundamental** data to ACER with regards to the capacity and use of facilities for the transmission of natural gas, including planned and unplanned unavailability of these facilities1.

The ENTSOG reporting system was developed according to the provisions of EC Implementing Regulation (EU) No 1348/2014 and other supportive documentation issued by ACER with regards to REMIT. Since 7 October 2015, ENTSOG has been reporting the following set of aggregated fundamental data to ACER, for each TSO that is publishing data on the ENTSOG Transparency Platform:

- Aggregated day-ahead nominations
- Aggregated final re-nominations
- Actual physical flow
- Technical capacity
- Available firm capacity
- Contracted firm capacity
- Total interruptible capacity
- Available interruptible capacity
- Contracted interruptible capacity
- Planned interruption of interruptible capacity
- Actual interruption of interruptible capacity
- Planned interruption to firm capacity
- Unplanned interruption to firm capacity

ENTSOG submits the required information to ACER as it was received on the TP, to ACER's REMIT Information System (ARIS).

As for the data reporting performed by ENTSOG on behalf of gas TSOs, ENTSOG provides the following information to its members:

- Segregated access (per TSO) to report files submitted to ACER Reporting Information System for Applying REMIT (ARIS)
- Segregated access (per TSO) to return receipts received by ENTSOG Reporting system from ARIS
- Daily report (per TSO) on the status of files reported to ACER

As part of the REMIT Reporting process, ENTSOG is responsible for the following:

- Submitting ENTSOG TP data to ARIS
- Rectifying and (re)submitting data in case of technical reporting issues between ENTSOG and ARIS.

In the light of the above-mentioned tasks of ENTSOG the TSOs, are responsible for carrying out the following:

- Performing complete, high-quality, and timely data publications on ENTSOG Transparency Platform
- Monitoring information provided by ENTSOG on data reported on TSOs' behalf to ARIS
- If ACER rejects TSO REMIT data due to content/functional reasons, the respective TSO are required to resend the relevant information to the ENTSOG TP. It will then be transmitted to ACER through the ENTSOG Reporting System

1 as defined in Article 9(1) of Commission Implementing Regulation (EU) No 1348/2014

TSOs' IMPLEMENTATION OF REMIT REPORTING

EC Implementing Regulation (EU) No 1348/2014 stipulates that gas TSOs are required to report the following disaggregated information per market participant to ACER:

- Transaction data: natural gas transportation contracts within EU between two or more locations or bidding zones, concluded because of a primary explicit capacity allocation by or on behalf of the TSO, specifying physical or financial capacity rights or obligations.
- Fundamental data: day-ahead nominations, final re-nominations of booked capacities, specifying the identity of the market participants involved, and the allocated quantities.

The TSOs reporting obligations under REMIT commenced on 7 April 2016.

To facilitate the TSOs' continued activities under REMIT, ENTSOG undertakes the following:

- Regular REMIT discussions at Transparency Working Group meetings
- Ad hoc discussion sessions between ENTSOG's Transparency Team, TSOs and members of ACER's REMIT Team. The discussions revolve around reported gas transportation contracts under REMIT Table 4.

During 2022, ENTSOG Transparency Team and Transparency Working Group participated in the following events:

- ACER REMIT Expert Group meetings
- ACER RRM User Group meetings
- ACER ENTSOG TSOs' ad-hoc stakeholder webinars
- ACER Roundtables on inside information disclosure and REMIT reporting for AEMPs, IIPs and OMPs
- ACER Public consultations on its REMIT data reporting guidance.


Picture courtesy of FGSZ

Picture courtesy of Moldovatransgaz

4

SYSTEM DEVELOPMENT SCENARIOS AND INFRASTRUCTURE

The System Development business area covers ENTSOG activities related to scenario development, investment planning and infrastructure assessment for the EU energy system. The main deliverables are short and medium to long-term assessments such as the joint Scenario Report, the Ten-Year Network Development Plan (TYNDP) and Supply Outlooks. In addition, the ENTSOG maps show commitment to transparency and to providing stakeholders with easily accessible and high added-value information. All these deliverables aim at developing a vision of the integrated European energy market and in particular its infrastructure component. This vision is especially important in view of completing the pillars of European Energy Policy to achieve the European energy and climate targets and commitments of the Paris Agreement, the EU Green Deal, and the REPowerEU Plan.

WORK STRUCTURE

The activities within the System Development Area are managed via the Scenario Working Group (SCN WG) and the Investment Working Group (INV WG) and supplemented by the Network Model Kernel Groups (NeMo KG).

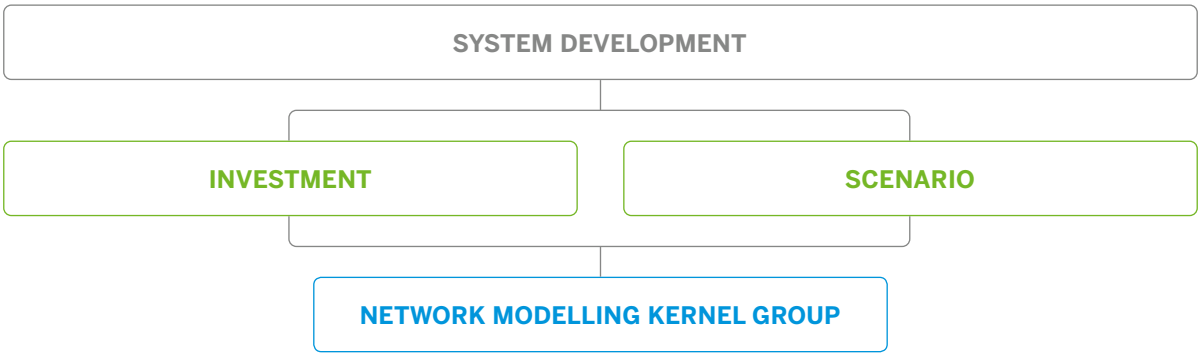


Figure 8: Investment and Scenarios Working Groups and associated KG

As shown above, the Working Groups (WGs) are supported in their objectives by the Network Modelling Kernel Group (NeMo KG), which was established to develop and enhance ENTSOG's modelling tool and perform the simulations for ENTSOG deliverables in accordance with defined Scenarios for TYNDP.

INVESTMENT

The Investment Working Group (INV WG) is responsible for developing regulatory deliverables such as: The Union-wide Ten-Year Network Development Plan (TYNDP), the Winter and Summer Outlooks and the implementation of ENTSOG Cost-Benefit Analysis (CBA) Methodology, including the joint gas and electricity projects CBA methodology (as part of the Interlinked Model). It is also responsible for non-regulatory deliverables such as: Winter and Summer reviews, the Transmission Capacity Map and the System Development Map developed in collaboration with Gas Infrastructure Europe (GIE). To produce the above-mentioned deliverables, INV WG is supported by the NEMO KG, that produces and analyse simulation results.

The INV WG meet on a monthly basis (and ad hoc, as required) and comprise participants representing Member TSOs across Europe.

SCENARIOS

The Scenarios Working Group (SCN WG) is responsible for developing the supply and demand scenarios for ENTSOG deliverables based on analysis of current situation and potential future trends. SCN WG has been supported by the ENTSOG and ENTSO-E joint Scenario Building Working Group, gathering experts from both electricity and gas TSOs, and tasked with developing joint scenarios for the electricity and gas TYNDPs as the corner stone of their Interlinked Model between gas and electricity.

The SCN WG meets on a monthly basis (and ad hoc, as required) and comprise participants representing Member TSOs across Europe.

ACTIVITIES

INVESTMENT AND SCENARIOS

PROJECT COLLECTION FOR TYNDP 2022

In May 2022, the EC published its REPowerEU action plan to reduce Europe dependency on Russian natural gas and oil, increase diversification of energy supplies, as well as to accelerate the establishment of renewable energy sources, including renewable hydrogen supply.

To support Europe's climate and energy ambitions, and to ensure a comprehensive and up-to-date overview of all projects, ENTSOG carried out a second project collection as part of TYNDP 2022 and reopened the process from 30 May 2022 to 24 June 2022.

Reopening of TYNDP 2022 project collection allowed not only project promoters to update their submissions, but also to submit new projects in the context of security of supply in times of energy crisis due the war in Ukraine and the need for diversification of energy supplies, including hydrogen.

ENTSOG COST BENEFIT ANALYSIS METHODOLOGY UPDATE

As required by Article 11 of Regulation (EU) 2022/869 (revised TEN-E Regulation), ENTSOG worked on the identification of improvements for the preparation of the preliminary single-sector draft CBA Methodology for public consultation. This is the first step in developing the next edition of the ENTSOG CBA Methodology, with additional focus on hydrogen infrastructure. The CBA guidelines are to be applied to projects, and more generally to gas and hydrogen infrastructure, as well as interlinkages with electricity infrastructure. The methodology reflects specific provisions of the TEN-E Regulation and will be complemented by particular input data obligations for each TYNDP cycle.

SEASONAL SUPPLY OUTLOOKS AND REVIEWS

The objective of the Supply Outlooks is to assess the flexibility offered by gas infrastructures for each of the oncoming Summer and Winter seasons, by considering the latest supply and demand trends, which are shown in the corresponding review reports.

Summer Supply Outlook reports in the past focused only on the ability of the gas infrastructure to allow market participants to reach high storage levels at the end of the summer gas season, based on the actual storage levels at the beginning of the injection time horizon. The analysis is completed using sensitivities targeting different stock levels under different supply situations.

In 2022, ENTSOG provided an additional, ad hoc and continuous support to the EC and other stakeholders by providing the assessment of the rapidly evolving situation triggered by the invasion of Ukraine by Russia, resulting in many additional tasks and deliverables. In that context the usual scope of the delivered Outlooks and Reviews was modified, to address how Europe could adapt without Russian gas in a case of full supply disruption and how winter preparedness could be secured.

The Summer Supply Outlook 2022 report identified that in case of supply disruption from Russia starting on 1 April, most European countries could not reach the target of 80 % storage level, with a significant difference between European countries. The assessment identified import capacity limitations in Central Eastern Europe as well as infrastructure limitations in the North-West and in the South of Europe preventing additional gas to flow to Central-Eastern Europe, therefore limiting a possible mitigation of the gas storage deficit. The assessment concluded that some

anticipated preparedness actions can bring a positive effect, e. g., enhanced capacities and reverse flow from France to Germany.

Because of the rapidly evolving situation and stakeholders' need for robust assessments of the market impact, ENTSOG decided to publish a report focused on the full gas year disruption of Russian gas supplies to Europe in July 2022, namely the ENTSOG Yearly Supply Outlook. More details on the content of this report can be found in the following section "Yearly Supply Outlook 2022/23".

The Winter Supply Outlook reports explore the evolution of the underground storage inventories across the winter gas season while ensuring the supply-and-demand balance during specific high-demand situations. The robustness of the report is complemented by a sensitivity analysis on the different climatic profiles of the winter.

The results of the Winter Supply Outlook 2022 analysis, taking into account development of the situation with decreasing Russian supplies, report that on 1 October 2022, the EU storage level (89 % or 985 TWh) was one of the highest on record to date, with different situations among EU countries. This level was higher than the objective set for Member States to inject a minimum of 80% their capacity of storages during the summer 2022, or 35 % of their annual gas demand (when the storages Working Gas Volume allows it). Given the storage levels and the gas infrastructure (including new projects commissioned during the winter), the dependence on Russian supply could be efficiently reduced due to enhanced cooperation and additional LNG import capacities. Cooperation among all European countries is a key, and can partially mitigate the risk of demand curtailment. The assessments show that it is important that all European storages continue to inject gas to the extent possible and that the European gas system continues to use imports to prepare for high demand situations as well as to ensure security of supply in the following periods.

In the Winter Supply Outlook 2022/2023, ENTSOG has undertaken an EU assessment Union-wide simulation of gas supply and infrastructure disruption scenarios, including scenarios of a prolonged disruption of a single supply source, fulfilling the new obligation defined in the Article 7(1) of Regulation 2017/1936.

ENTSOG and ENTSO-E cooperated on their Winter Outlook reports, allowing the ENTSO-E Winter Outlook to reflect the ability of the power system to cope with gas security-of-supply situations that may affect gas-fired generation.

Seasonal reviews are an ENTSOG initiative based on the internal analysis of the supply-and- demand trends used to support the TYNDP and Supply Outlooks. ENTSOG publishes these analyses to share the results with stakeholders.

These reviews establish the basis to define the input data and methodology of subsequent reports. In addition to the focus on the supply-and-demand adequacy, the reviews go further by analysing the trend of the gas demand for power generation as well as of providing an insight on gas prices and traded quantities at the main European hubs.

YEARLY SUPPLY OUTLOOK 2022/2023

In July 2022, ENTSOG published an extraordinary report focused on the full gas year disruption of the gas supply from Russia to Europe, namely the Yearly Supply Outlook 2022/2023. The analysis investigates the possible evolution of the gas supply as well as the ability of the gas infrastructures to meet the demand, the exports and the storage injection needs during the gas year 2022/2023 from 1 October 2022 to 30 September 2023. This report also included an additional sensitivity analysis to assess the impact of a full Russian supply disruption starting from 1 July 2022 and continuing for the entire 2022/2023 gas year. It included the possible measures that could be implemented in the EU to mitigate this.

The report concluded that without immediate market/political reaction most of the European gas storages would be depleted during the winter period and most of the countries would have difficulties in filling storages during the summer season. Therefore, the report concludes the importance for all European storages to continue to inject gas as much as possible during Summer 2022. Capacity enhancement, additional LNG volumes and preparedness for the winter 2023/2024 can also improve the situation. Additionally, it was concluded that as a result of buying behaviour influenced by high prices and policy-based demand measures, demand reduction of approximately average 15 % was possible and Member States cooperation would be required to mitigate the risk demand curtailment in EU.

SYSTEM DEVELOPMENT MAP 2021/2022

The INV WG and the NeMo KG were involved in the work to publish the System Development Map 2021/2022. ENTSOG publishes the System Development Map (in collaboration with GIE) on an annual basis, which focuses on supply and demand trends. The 2021/22 edition was finalised in December 2022 and published in January 2023.

The map clearly shows how unprecedented changes in 2022 have affected the European gas market and triggered the gas TSOs to consider ad-hoc new projects in response to the energy crisis.

ENTSO-E/ENTSOG CONSISTENT AND INTERLINKED MODEL

To achieve EU targets in the most efficient way, it is essential to have a holistic view of the energy system. The Interlinked Model is a key step in this regard, as it aims at ensuring that the interaction of gas and electricity sectors together is considered when assessing the value of infrastructure projects.

Based on the investigations carried out in the period 2019–2020 and the recently adopted European regulations, ENTSO-E and ENTSOG in 2021 and in 2022 have worked on the development of a consistent process for the inclusion of an "infrastructure dual assessment" in TYNDPs as well as of a methodology for its application.

The aim of this exercise is to already implement the main identified improvements to TYNDP 2022 and to make these available for the 6th Project of Common Interest selection process. This will be done without impacting the timeline of ongoing single-sector TYNDPs.

ENTSO-E/ENTSOG JOINT TYNDP SCENARIO REPORT

Since development of TYNDP 2018, and to deliver the consistent and Interlinked Model, ENTSOG and ENTSO-E have joined their scenario building workstreams, building on their combined expertise and modelling capabilities as well as on the input received from dozens of stakeholders from the industry, NGOs, National Regulatory Authorities and Member States. This co-development approach results in a set of ambitious, technically robust and equally realistic scenarios. The joint scenarios outline the quantification of three markedly different storylines, possible paths towards a low-carbon energy system in line with EU targets.

Building on the positive stakeholder feedback received for TYNDP 2020, ENTSOG and ENTSO-E have continued to develop two COP 21 full energy scenarios (Distributed Energy and Global Ambition) in addition to a scenario (National Trends) based on the National energy policies. National Trends captures each Member State's strategy to comply with the EU 2030 climate targets, whereas the full energy scenarios (Distributed Energy and Global Ambition) will ensure an in-depth assessment of sectoral interlinkages, fuel switches and the monitoring of all GHG emissions in line with the 1.5 °C target of the Paris Agreement.

ENTSOG and ENTSO-E published their TYNDP 2022 Scenario Report in April 2022.

This report is the common building block of the future gas and electricity TYNDPs and contains a series of important highlights for the future of Europe's energy system:

- Net-zero can be achieved by 2050 while ensuring the security of energy supply
- Energy efficiency is key to achieve the EU long-term Climate and Energy objectives
- Ambitious development of renewable energy across Europe

Find the complete report on our TYNDP-Scenarios-website:

2022.entsos-tyndp-scenarios.eu


Picture courtesy of GRTgaz

- Sector Integration provides efficient decarbonisation solutions
- Integrated energy systems: hydrogen is a game changer for gas and electricity systems
- Innovation is key to achieve a sustainable energy future

The TYNDP 2024 scenario building process was initiated in May 2022. In July 2022, stakeholders were presented with the draft TYNDP 2024 scenario storyline during a public workshop to collect their feedback. The draft TYNDP 2024 scenario report is planned to be published in summer 2023.

SUPPORT TO REGIONAL GROUPS FOR 1ST PCI SELECTION PROCESS UNDER REVISED TEN-E

Throughout 2022, ENTSOG actively engaged in the PCI Cooperation Platform activities and in providing its technical support to the Regional Groups, through its technical contribution to the activities of the Cooperation Platform. This Platform is composed of the Commission, ACER and the ENTSOs and aims at streamlining the work of Regional Groups.

ENTSOG has provided support to the 1st PCI selection process under the revised TEN-E Regulation by closely cooperating with the EC in configuring and offering its technical platform – the ENTSOG Project Portal – to perform the call for PCI projects as part of the TYNDP process, as well as to provide support to the EC and project promoters by offering technical guidance during project submission process, taking place from October 2022 until December 2022.

SUPPORT TO GAS COORDINATION GROUP AND EUROPEAN COMMISSION

The Gas Coordination Group (GCG) is a platform established by Regulation (EU) 944/2010, introducing measures of safeguarding the security of gas supply.

The role of the GCG is to exchange information and best practices, and to facilitate security of supply standards and to support supply-and-demand balance, especially in case of critical situations. Members include the EC, representatives of EU Member States, ENTSOG, and other international organisations, as well as industry.

In 2022, ENTSOG was fully committed to work on the assessment of the short and midterm impact to the gas market and transmission operations triggered by the invasion of Ukraine by Russia. ENTSOG was presenting results of its assessment, explaining rationale and assumptions, input data, simulation results and also the potential impact of numerous combination of events on the results. ENTSOG delivered all ad hoc analyses for the EC and GCG, providing tools helpful to determine measures such as demand reduction, storage targets, and storage trajectories, amongst other. Additionally ENTSOG provided support to the EC of analysis with respect to annual dependence on Russian gas, for the purpose of their REPowerEU Plan published in May 2022.

Picture courtesy of Gas Connect Austria

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MARKET

The Market team contribute with proposals and analysis of the impact of possible changes to the current regulatory framework for the EU gas market (including hydrogen) and Energy System Integration related activities. Work in 2022 was undertaken to envision what practical and innovative TSOs actions could support the achievement of the EU goals of climate neutrality and energy transition, competitiveness, security of supply and sustainability and to assess their possible impacts on the functioning of the internal gas market. Within these, the Market team also contributed to development of emergency regulation put in place due to energy crisis in Europe.

ENTSOG's Market Team is responsible for providing expertise on the development and monitoring of the market-related Network Codes that enable the good functioning of the internal European gas market. The Market Area also liaises with the Energy Community, providing support in their Network Code development and implementation activities.

In addition to work on the Network Codes, the Market Area is responsible for the jointly managed ACER and ENTSOG Functionality Process, which addresses not only potential adjustments to the implementation of Network Codes, but also to include possible issues which might require future Network Code adaptations.

WORK STRUCTURE

The work within the Market Area is organised within MAR WG and four kernel groups dedicated to specific topics.

Figure 9: Kernel Groups and associated with Market area

The MAR WG meets monthly (and ad-hoc, as required) and comprises participants representing Member TSOs across Europe.

MAR WG is responsible for ENTSOG's activities related to balancing, capacity and tariffs. This includes all topics relating to the CAM NC and the Guidelines on CMP, BAL NC and TAR NC, as well as any further regulation possibly upcoming in relation to these areas.

The work within the MAR WG is managed via their corresponding KGs, with more specialised tasks. The activities of BAL, CAP and TAR KGs are coordinated through the MAR WG.

One of the subgroups of the MAR WG is the GO Kernel Group which deals most specifically with the Guarantees of Origin topic. ENTSOG is also co-chair with GIE of the "GO Prime Movers" Group which coordinates actions on this topic with other associations. Furthermore, MAR WG is responsible for developing ENTSOG's market-related proposals for the future gas market design (including hydrogen), so that these proposals can be considered in the work undertaken by the EC and used to discuss future developments with stakeholders. Going forward, the MAR WG will also contribute with inputs and proposals to the gas-related topics of the new regulatory packages – "Fit for 55" and Hydrogen and Decarbonised Gas Package – developed to achieve the EU Green Deal objectives.

The work areas addressed in the network codes and guidelines Kernel Groups are as follows:

CAPACITY

The Capacity KG (CAP KG) is responsible for ENTSOG's activities related to the allocation of existing and incremental capacity, with a focus on the implementation, application and functioning of the Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems (CAM NC – REG (EU) No 2017/459) and rules on congestion management established through the Commission Decision of 24 August 2012 on amending Annex I to Regulation (EC) No 715/2009 (CMP GLs). The CAP KG has also been responsible for ENTSOG's activities related to implementation and operational issues raised on the Functionality Platform that are connected to CAM NC or CMP GLs.

Furthermore, the CAP KG is responsible for the monitoring of CAM NC and the CMP GLs and developing monitoring reports on the implementation and effect of the CAM NC and CMP GLs. The CAP KG also analyses and provides feedback to ACER's monitoring reports on the same topics, where necessary.

Where requested, the CAP KG provides appropriate input to the update of Common Network Operation Tools (CNOT) – comprising Business Requirements Specifications (BRS) for the CAM NC and the CMP GLs document and Message Implementation Guideline (MIG).

BALANCING

The Balancing KG (BAL KG) is responsible for ENTSOG's tasks related to balancing activities in transmission systems, with a focus on the implementation, application and functioning of the Network Code on Gas Balancing of Transmission Networks (BAL NC – REG (EU) No 312/2014). The BAL KG is responsible for providing expert knowledge and guidance to ENTSOG members and external parties on balancing-related topics. One key activity, among others, is developing the report on the implementation and the effect monitoring of BAL NC.

Where requested, the BAL KG also provides appropriate input to the update of Common Network Operation Tools (CNOT) and contributes to the development of issues solution related to BAL in the Functionality Process.

TARIFFS

The Tariff KG (TAR KG) is responsible for providing expertise, monitoring, and development of the Network Code on Harmonised Transmission Tariff Structures for Gas (TAR NC – REG (EU) No 2017/460).

More widely, the TAR KG is active to inform the MAR WG proposals on TSO tariffs and revenues, especially in the context of asset repurposing for the transition to hydrogen. As such, it keeps a close monitoring of developments on tariffs in Member States and of stakeholders' proposals on asset repurposing and revenue regulations.

ACTIVITIES

In 2022, the MAR WG and the other Working Groups contributed to develop policy options to enable the uptake of renewable and decarbonised gas markets.

The ENTSOG MAR team and ENTSOG Members were involved as experts for the online course "EU Gas Network Codes" organised by ENTSOG and the Florence School of Regulation on Market Codes: Capacity, Balancing and Tariffs NCs.

CAPACITY KERNEL GROUP

CAPACITY ALLOCATION MECHANISMS

ENTSOG prepared the annual auction calendar in 2022 for the gas year 2023/2024 with publication date of 13 January 2023.

In November 2022, ENTSOG started the data collection and the drafting of the Implementation and Effect Monitoring Reports for CAM NC and CMP GL which are expected to be published in May 2023.

ENTSOG also continued the monitoring of the 2021-2023 incremental capacity process.

In addition, the CAP KG worked on the CAM NC and CMP GL related Functionality issues published on the joint ACER/ENTSOG Functionality Platform.

BALANCING KERNEL GROUP

In 2022, the BAL KG continued supporting ENTSOG members with the implementation of the BAL NC.

Based on ENTSOG's obligation set out in Article 8(8) of the Regulation (EC) No 715/2009, to monitor the implementation and effects of the network codes and guidelines, the BAL KG started in October 2021 the data collection to produce the Implementation and Effect Monitoring Report and published it on 6 May 2022.

In addition, the BAL KG started data collection for the gas year 2021/2022 in December 2022 to support the update of ACER's gas balancing dashboard due to be published in Q1/2023.

TARIFF KERNEL GROUP

In 2022, the TAR KG continued supporting ENTSOG members with the implementation of the TAR NC.

Based on ENTSOG's obligation set out in Article 8(8) of the Regulation (EC) No 715/2009 to monitor the implementation and effects of the network codes and guidelines, the TAR KG started in October 2021 the data collection to produce the Implementation and Effect Monitoring Report and published it on 6 May 2022.

The KG provided an opinion on what should be the ambition of the TSOs and what would be feasible in regard to future regulatory decisions on the study "Future Regulatory Decisions on Natural Gas Networks"1 prepared by consultancy DNV for ACER in November 2022.

In 2022, the ENTSOG Brussels team also discussed tariff issues with stakeholders such as ACER and the FSR.

1 https://www.acer.europa.eu/events-and-engagement/news/acer-publishes-study-future-regulatory-decisions-natural-gas-networks


Picture courtesy of Enagás

JOINT NETWORK CODE FUNCTIONALITY PROCESS

The established Joint Functionality Process, co-managed by ENTSOG and ACER and supported by the EC, is aimed at reaching commonly recommended solution(s) on implementation and operational issues within the existing Network Codes and Guidelines. It provides stakeholders a possibility to raise and discuss issues as well as an opportunity to be involved in developing solutions, which aim at commonly recommended non-binding guidance.

The Gas Network Codes Functionality Platform[1] enables stakeholders to raise implementation and operation issues via the web interface and gives an overview of all reported issues and their status. Since its introduction in 2016, the perceived limited scope – only Network Code implementation, functional or operational issues could have been raised on the platform – was outlined as a potential barrier to submission of Network Code related issues. Therefore, in the summer of 2017, in conjunction with ACER, the scope of the Functionality Process was broadened so as to allow any issue related to the Network Codes to be included. In addition, the number of potential Network Codes and Guidelines was also expanded to include the Transparency Guidelines and the TAR NC.

In July 2018, the first issue solution was published on the Functionality Platform, related to Ex-post interruptible capacity discounts.

During 2022, one new issue was posted on the Functionality Platform. The table below outlines the status of all the issues which have been discussed, solved or posted on the platform during 2022.

Issue poster	Description	Status
EFET	Greater flexibility to book firm capacity at IPs	In progress
MVM CEEnergy Ltd	Modification of the ascending-clock auction algorithm	In progress

Table 6: Status of issues discussed, solved or posted on FUNC platform during 2022

MARKET ASSESSMENT

In 2022, the MAR WG continued to evaluate relevant policy and legislative initiatives in the EU gas sector and examined practical and innovative TSO actions which could facilitate the energy transition whilst maintaining security of supply and promoting competition.

The MAR WG's primary focus and workload throughout 2022 was developing positions and views in relation to anticipated legislative changes of the EU gas market, and the gas grids contribution towards decarbonising the energy sector. The MAR WG provided input to the reports on the topics of interest and responded to consultations from the EC on these topics.

MAR WG provided updates to the ENTSOG Liaison Group, worked with INT WG, Legal Advisory Group and other relevant groups, and liaised with the Gas and Hydrogen Package (GHP) TF.

1 https://www.gasncfunc.eu/gas-func/

MARKET NETWORK CODES IMPLEMENTATION AND EFFECT MONITORING

For MAR, ENTSOG is required to publish monitoring reports on implementation as well as on effects of the CAM NC, TAR NC, BAL NC and CMP GLs. The monitoring requirements differ for the different Network Codes for the frequency of the reports publications.

CMP GL IMPLEMENTATION AND EFFECT MONITORING

In October 2022, ENTSOG launched the 2022 implementation and effect monitoring data collection for the Congestion Management Procedure Guidelines.

The Implementation Monitoring report for 2022 provides the status of the implementation of the CMP GL by European TSOs as of 1 November 2022. It shows the effect of the CMP GL for the Gas Years (GY) 2020/2021 and 2021/2022. Information was collected by ENTSOG from European gas TSOs. ENTSOG aimed to produce a report which can be considered supplementary to ACER's reports. ENTSOG's focus was to identify to what extent the main objectives of the CMP GLs have been achieved.

The part on the implementation monitoring shows that only one TSO was still in the process of implementing some of the CMP measures by the end of 2022.These measures are expected to be implemented by October 2023.

The part on the effect monitoring shows that the current ways of offering additional capacity through existing CMP mechanisms allow network users to access the market in situations where IPs are contractually congested. It can be concluded that the most used measure varies between the gas years – in 2020/2021 and 2021/2022 Oversubscription and Buy-Back had the highest ratio of allocated capacity among the four CMP measures. Also, the interest in secondary capacity was low, even at the congested interconnection points.

CAM NC IMPLEMENTATION AND EFFECT MONITORING

According to Article 8(8) of the Regulation (EC) 715/2009 ("Gas Regulation"), ENTSOG shall "monitor and analyse the implementation of the network codes and the guidelines ..." Due to this obligation, ENTSOG published sixth implementation monitoring report and the fifth effect monitoring report of the CAM NC.

The implementation report covers the status of implementation at the 1 November 2022. In addition, this report especially focuses on the implementation status of provisions that were identified in the previous report as not fully implemented at the end of calendar year 2020. ENTSOG members were requested to complete a questionnaire to follow up on any changes and developments that could have taken place in their systems since the last report. For that purpose, they were asked to provide answers and updates on the implementation status of the following CAM NC articles: art 6 (joint method for capacity calculation), art 19.9 (virtual interconnection points), art 32 (interruptible capacity). TSOs were also asked to specify which type of interruptible capacity products were offered, if any. Since the implementation of the CAM NC had been completed by the majority of TSOs in the previous reports, the monitoring this time focused on collection of updates related to the CAM NC Articles that might have been subject to change. 14 TSOs were asked to answer the individual questionnaires to clarify any possible inconsistencies or issues in the CAM NC implementation flagged in the previous report.

The report shows that CAM NC has been almost fully implemented with only few shortages – art 19.1 and art 21.3. Regarding art 19.1, the shortages are rather of a technical nature, As reported by the TSO not implementing art 21.3, the lack of its implementation has not been raised as an issue by the market.

In conclusion, the Implementation Monitoring Report shows that progress has been made towards the full implementation of CAM NC provisions in comparison to the previous monitoring report, implying that TSOs are progressing. It has been observed that almost all the TSOs have fully implemented all the Articles of the CAM NC.

The effect monitoring report focused on evaluating whether the main aims of the CAM NC have been achieved. The periods covered were the gas years (GY) 2020/2021 and 2021/2022 and only IPs which were CAM-relevant on both sides of an IP have been considered.

A total of 37 TSOs participated in the monitoring exercise. 7 TSOs were excluded from the analysis since they had either been granted derogation under Art. 39 of the Gas Directive, used the implicit allocation method, had no interconnection points or the interconnection point was not CAM-relevant on both sides of the point or has come into operation after the time scope covered by the report.

Based on the results obtained for the different indicators used in the report, the conclusions were:

- Bookings for most of the standardised bundled firm capacity products for the GY 2020/2021 and GY 2021/2022, related to bookings for unbundled firm capacity, were higher than for the previous years, which could be mainly explained by the expiration of unbundled contracts and partly by change in the gas flows caused by the energy crisis and war in Ukraine that started in February 2022. However, the full impact of the above mentioned will be visible in the results of next CAM NC effect monitoring report.
- The overall quantity of bundled firm capacity allocated through auctions has increased in the last two GYs compared to the GY 2019/2020. The share of bundled capacity reallocated by secondary market trades has reached a level of around half of the total amount of firm capacity traded on the secondary market. However, the bundled firm capacity allocated using the secondary market is marginal compared to the capacity allocated through auctions.

INCREMENTAL CAPACITY PROCESS

The incremental capacity process has been introduced by the EC Regulation (EU) 2017/459 as a streamlined and harmonised Union-wide process to react to possible market-based capacity requests for an increase in technical capacity or creation of new capacity. The requested incremental capacity is offered based on a market demand. Technical capacity is increased at an existing IP or through establishing a new IP or creating a physical reverse flow capacity at an IP, which has not been offered before and only if there are binding market commitments and are subject to the positive outcome of an economic test.

The aim of setting rules for incremental capacity is to identify the need for new/incremental capacity and to allocate both existing and incremental capacity in an integrated way.

The process lasts two years and is divided in two phases: a non-binding phase in which the demand for incremental capacity is assessed, and a binding phase where network users provide binding commitments for incremental capacity.

The non-binding phase starts after the annual yearly auction, at least in each odd-numbered year, with the assessment of demand indications for incremental capacity. The network users provide TSOs with their non-binding capacity demand. No later than eight weeks after the start of the annual yearly auction, TSOs shall produce market demand assessment reports (DARs) which shall be published within 16 weeks after the start of the annual yearly auction. The DARs should consider, among other things, whether the TYNDP identifies a physical capacity gap whereby a specific region is undersupplied in a reasonable peak scenario and where offering incremental capacity at the interconnection point in question could close the gap. The DARs should also consider if a national network development plan identifies a concrete and sustained physical transport requirement. If the DAR identifies demand for incremental capacity that cannot be satisfied by existing available capacity, the concerned TSOs will follow the incremental capacity process further. If no demand has been identified, the process stops here.

In the next phase, the design phase, TSOs conduct technical studies for incremental capacity projects and coordinated offer levels based on technical feasibility and the DARs. A public consultation on the key parts of the draft project proposal is conducted and stakeholders have an opportunity to provide feedback on the TSOs' proposals. A key milestone after the design phase and public consultation is to submit a comprehensive incremental capacity project proposal to the relevant National Regulatory Authorities (NRAs). The NRAs will then have six months to issue coordinated decisions on the project proposal.

After the NRAs' decisions, the binding allocation phase will start and binding commitments for incremental capacity from network users will be collected during the annual yearly auction. As a default, auctions are used. However, an alternative capacity allocation mechanism can be employed, subject to NRA's approval.

After receiving binding commitments for the incremental capacity offered in the annual yearly auction, the economic viability of the incremental capacity project will be assessed through the economic test. If the outcome of the economic test is positive on both sides of an interconnection point for at least one offer level that includes incremental capacity, an incremental capacity project will be initiated.

INCREMENTAL CAPACITY PROCESS INITIATED IN 2021

After the start of the annual yearly capacity auctions in July 2021, a new cycle of the incremental capacity process was initiated, the third in a row. The figure below illustrates the timeline for the process.

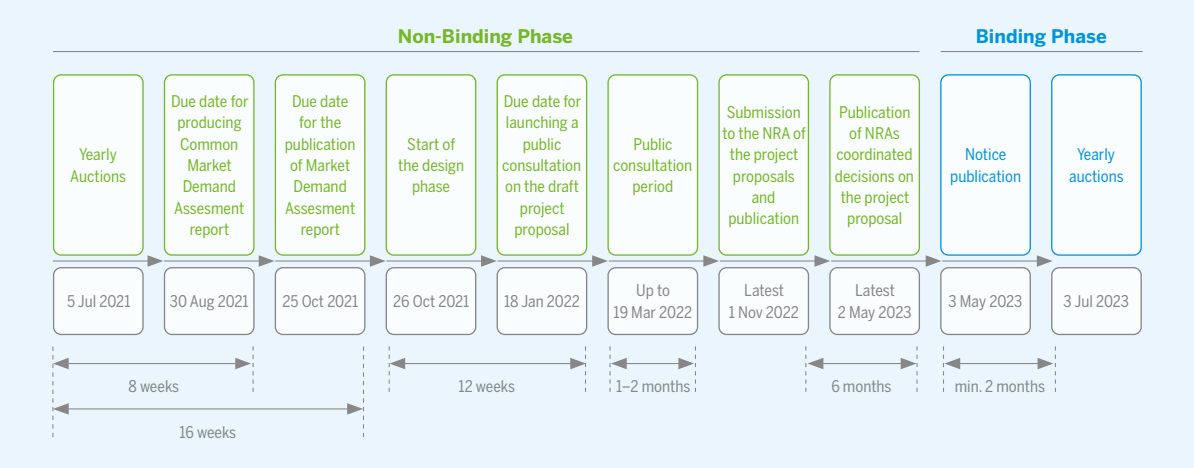

Figure 10: Timeline for the incremental capacity process initiated in 2021

The start of the design phase, due to received market interest, has been triggered at six borders which are shown in the table below.

Entry-Exit Border	Gas flow direction covered by Demand Indications
BELUX-DE	Entry DE
CZ-PL*	Exit PL / Entry CZ
GR – ICGB (GR)	Exit GR / Entry ICGB(GR)
GR – TAP – IT	Exit GR / Entry TAP
PL-UA	Exit PL / Entry UA
UA-RO	Entry UA / Exit RO Entry / Exit Tekove / Medieşu Aurit

* Incremental project Polish-Czech Interconnection DAR 2021 has not been submitted due to its initiation after the completion of the TYNDP 2022 projects data collection first phase. During the second extraordinary phase of projects data collection the PL-CZ incremental project was not submitted due to not finished discussion related to its final parameters.

Table 7: Design phase triggered at six borders

Picture courtesy of Teréga

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STRATEGY, POLICY AND COMMUNICATION

With publication of the REPowerEU Communication and Action Plan in 2022, several new actions and targets were introduced to rapidly reduce dependence on Russian fossil fuels and speed up the green transition. Measures proposed focused on energy savings, diversification of energy supplies, and accelerated roll-out of renewables, including hydrogen and biomethane. The major task of the Strategy, Policy and Communication (SPC) business area was to facilitate stakeholder dialogue and value chain cooperation, particularly on the proposed REPowerEU actions, monitor EC's "Fit for 55" package development, and provide strategic direction on key topics under the Hydrogen and Decarbonised Gas markets Package.

The SPC business area addressed:

- the identification of strategic aspects,
- policy monitoring,
- communication service.

The SPC business area supported managerial activities by provision of information sharing of resources, networks and relevant knowledge to organise internal ENTSOG strategic debate. SPC oversaw promotion of ENTSOG activities to its members and the external environment, by involving relevant stakeholders, by contributing to consultations, participating in conferences and fora as discussion partner or speaker, but also by maintaining a close dialogue with media representatives.

ENTSOG SPC developed and managed relevant partnerships with research centres, for example: Florence School of Regulation, Copenhagen School of Energy Infrastructure and think tanks. SPC also cooperated with DSOs to ensure TSO-DSO exchange of information.

Furthermore, SPC engaged in dialogue with the hydrogen project promoters and stakeholders under Clean Hydrogen Transmission and Distribution Roundtable under Clean Hydrogen Alliance; creating the joint Hydrogen Infrastructure Map with other partner associations and managing the ENTSOG Hydrogen Project Visualisation Platform. To promote Energy System Integration, SPC coordinated with a wide range of stakeholders, including ENTSO-E and Hydrogen Europe to promote the integration of all energy carriers. The business area monitored numerous EC studies, consultations and stakeholder workstreams including dialogue ahead of Madrid, Florence and Copenhagen Fora. The area coordinated all the external communications of ENTSOG, including management and preparation for public appearances related to the future of the European infrastructure.

In the extraordinary circumstances of Russian invasion of Ukraine, the importance of external communication activities increased significantly. The Communication Manager addressed approximately double the number of external queries, including those relating to the security of gas supply situation, and regarding gas prices increases and rerouting of the gas flows.

Queries were addressed using with the best available data, e. g., from Transparency Platform and with support from the ENTSOG technical teams. The SPC Team assisted the business areas in the external communication of publications, including the Yearly Outlook, the Seasonal Supply Outlook Data Dashboard and the Gas Flows and Storage Data Dashboard. This was possible through an immense coordination effort within Brussels Team and across ENTSOG membership (with daily calls under the ReCo team for Gas and weekly email updates to the Members on the status of security of supply topics). This approach ensured the timely and relevant information exchange delivered to the stakeholders in a user-friendly format. Interaction with registered social media observers increased substantially.

ENTSOG hosted and co-hosted in a number of events: including its Annual Conference in December, GRIDTech, EU Sustainable Energy Week and contributed to many of the EC hosted events, e. g., PCI Energy Days, Madrid and Copenhagen Forum.

SPC also coordinated the ENTSOG Annual Report and the ENTSOG Annual Work Programme, with input from the ENTSOG business areas.

WORK STRUCTURE

The ENTSOG GHP Task Force (previously G2021 TF) was responsible for coordinating ENTSOG's activities related to work on the parts of the European Green Deal – legislative actions, policy communications, action plans announced by the EC or other, as requested by the ENTSOG Board.

Figure 11: GHP Task Force with Strategy, Policy and Communication area

The TF was established to be active at least to the end of the work on the Green Deal regulatory and legal developments.

The TF met on a monthly basis, with an option for ad-hoc meetings, if required. The TF was managed by the ENTSOG SPC, with close cooperation of other ENTSOG business areas. Some ad-hoc activities were addressed to the GHP Task Force, as determined by the Board and/or GA.

ACTIVITIES

The GHP Task Force was responsible for coordinating ENTSOG's activities related to work on the parts of the European Green Deal which will be relevant for and impacting the gas infrastructure. In 2022, the Task Force coordinated these activities in close cooperation with the relevant ENTSOG Working Groups, the ENTSOG business areas and based on the strategic guidance from ENTSOG's Board.

In 2022, the TF was responsible for providing EU policy proposals and updates on the preparations for the European Green Deal developments – specifically on RED III Regulation and the Hydrogen and Decarbonised Gas Market package. The TF informed ENTSOG members on all the relevant EC studies, forming the background to any associated impact assessments and changes in the priorities post publication of the REPowerEU Communication.

In order to understand the impact of the goals announced by the EC (of replacing deliveries of gas from Russia by 2027 with new types of gases: 35 bcm of biomethane and 10 mt of EU-made and 10 mt of imported hydrogen) ENTSOG conducted the analytical work and communicated with project promotors via ENTSOG's own Future of Gas Grids Panel, as well as withing Commission-led Investors Dialogue and Clean Hydrogen Alliance. Together with co-chairs of Transmission and Distribution Round Table within Clean Hydrogen Alliance, ENTSOG started the work on the "Learnbook on the European Hydrogen Corridors 2023".

The TF provided updates about the positions of important stakeholders, including electricity, gas and hydrogen value chain representatives.

The TF also monitored the changing political environment ahead of Madrid, Florence and Copenhagen Fora. The TF provided regular updates to the ENTSOG GA, ENTSOG Board and cooperated with other relevant WGs, specifically MAR WG.

In addition, the TF monitored the evolving narratives of electricity, hydrogen, industry stakeholders and NGOs on the future energy system, including the voice of particular EU Member States and scenarios/technology/innovation experts.

THE KEY ACTIVITIES OF THE GHP TASK FORCE FOR 2022 ARE LISTED BELOW:

1. STRATEGY PROPOSALS:

- Identified strategic focus areas for ENTSOG for the Hydrogen and Decarbonised Gas Markets on recast Gas Regulation and Gas Directive. Security of Supply Regulation recast, Solidarity Regulation, Price Cap Regulation

2. POLICY UPDATES:

- Monitored key energy & climate policy/regulatory developments put forward by EU institutions – revision of the Renewable Energy Directive, and the Hydrogen and Decarbonised Gas Market package, REPowerEU Communication
- Monitored and engaged where relevant to EU analytical works (EC studies and stakeholder engagement processes). Initiation of the work to develop the ECH_2A Learnbook on European Hydrogen Supply Corridors.

3. EXTERNAL ENGAGEMENT

- Engagement in the European Commission's Clean Hydrogen Alliance's Roundtable on Clean Hydrogen Transmission and Distribution.
- Engagement in ENTSOG's Advisory Panel for Future Gas Grids.
- Coordination with TSO/DSOs/LSOs and SSOs on the Hydrogen Infrastructure map.

4. COMMUNICATION PROPOSALS:

- Provided recommendations on ENTSOG's priorities in dialogue with the European Commission, Parliament, and ACER.
- External and internal communication in response to stakeholder interest and queries.
- Engaged in dialogue with industry, gas and other key EU stakeholders.

5. INFORMATION SHARING:

- Provided information material for TSOs in their discussions on gas regulatory framework held at national level.
- Reported to Members on all ENTSOG bilateral, multilateral and public engagement.


Picture courtesy of GRTgaz

Picture courtesy of Teréga

7

ENTSOG
MANAGEMENT SUPPORT

The management team has five support groups which provide compliance, financial and other services across the association. These are Legal, Financial, HR, IT and Administration.

ACTIVITIES

In 2022, the Management Support Team continued to provide support to the Business Areas and management in Brussels, and work with ENTSOG members. Support is through the Legal, HR, Finance, and IT functions to ensure there is a robust platform for the activities and deliverables of ENTSOG's Business Areas. They are also responsible for organisation of the meetings of the GA and the Board, as well as those for the Liaison Group, the Legal Advisory Group, and the Financial Committee.

LEGAL

The Legal Team, either internally or together with the Legal Advisory Group (LAG), which meets on a monthly basis, contributes to the work and deliverables of all the Business areas. This includes the interpretation of Network Codes and other legal texts applicable to ENTSOG and the TSOs as well as the support to the other Business areas for addressing Network Codes Functionality Platform issues. Other work undertaken development of regulatory input for the upcoming gas legislative package.

In 2022, the Legal & Corporate Team facilitated the secretariat of the EU-UK Gas TSOs TF, created in 2021, in accordance with Working Arrangements Agreement approved by the decision making bodies of ENTSOG and of the UK TSOs to comply with the "Brexit" Trade and cooperation agreement concluded by and between the EU and the UK. This TF ensures a permanent dialogue between the UK TSOs and ENTSOG.

In 2022, the Legal & Corporate Team with the other areas organised the two additional meetings of the External Contact Platform (ECP) in June and December. The ECP was created by ENTSOG and the Energy Community Secretariat to strengthen the cooperation between ENTSOG and other non-EU gas transmission gas companies. The scope focuses on coordination and technical cooperation between ENTSOG and other non-EU gas transmission system operators, as framed by Regulation 715/2009. The Legal & Corporate Team also assisted the General Director in some bilateral contact with other non-EU delegations.

Finally, the Legal Team also ensured the internal day to day way of working of ENTSOG by contributing to the organisation of the GA and Board meetings and assisting the HR, administration and communication services as well as the management.

HR AND FINANCE

ENTSOG Human Resources continued with a well-prepared recruitment process, so that the relevant resources and competences were in place to perform the requested activities. ENTSOG has a strong focus on the resource allocation as well as the relevant handover processes to ensure the performance of the organization vis-à-vis the required deliverables. With regards to financial reporting, ENTSOG created and implemented clear and efficient accounting procedures and controls in 2022. ENTSOG's Financial Statement for 2022 is included in this report, the approval of which is supervised by an internal Financial Committee.

IT

The list of the main IT projects for 2022 include the following:

- Data warehouse (PDWS) and TP Migration to the cloud (Microsoft Azure) – development started in 2020, was finished in Q4 2021 and delivered in Jan 2022.
- Consolidation and fine tuning of the Azure cloud infrastructure used by the various projects at ENTSOG.
- TP Upgrade to newer version of technologies: the database behind the TP was upgraded to the latest version.
- Developing Geographical Information Systems (GIS) software for the System Development projects (built on ESRI ArcGIS).
- Developing the H_2 map using QGIS
- PDWS (data warehouse) and TP Performance enhancements.
- Developing the Projects Data Collection Portal for TYNDP and PCI.
- Developing ReCo, the new/updated collaboration tool for emergency situations.
- On-going development of the PLEXOS simulation tool for System Development team.
- SharePoint improvements to the collaboration platform with the Members.
- Improvements to office IT software and hardware.

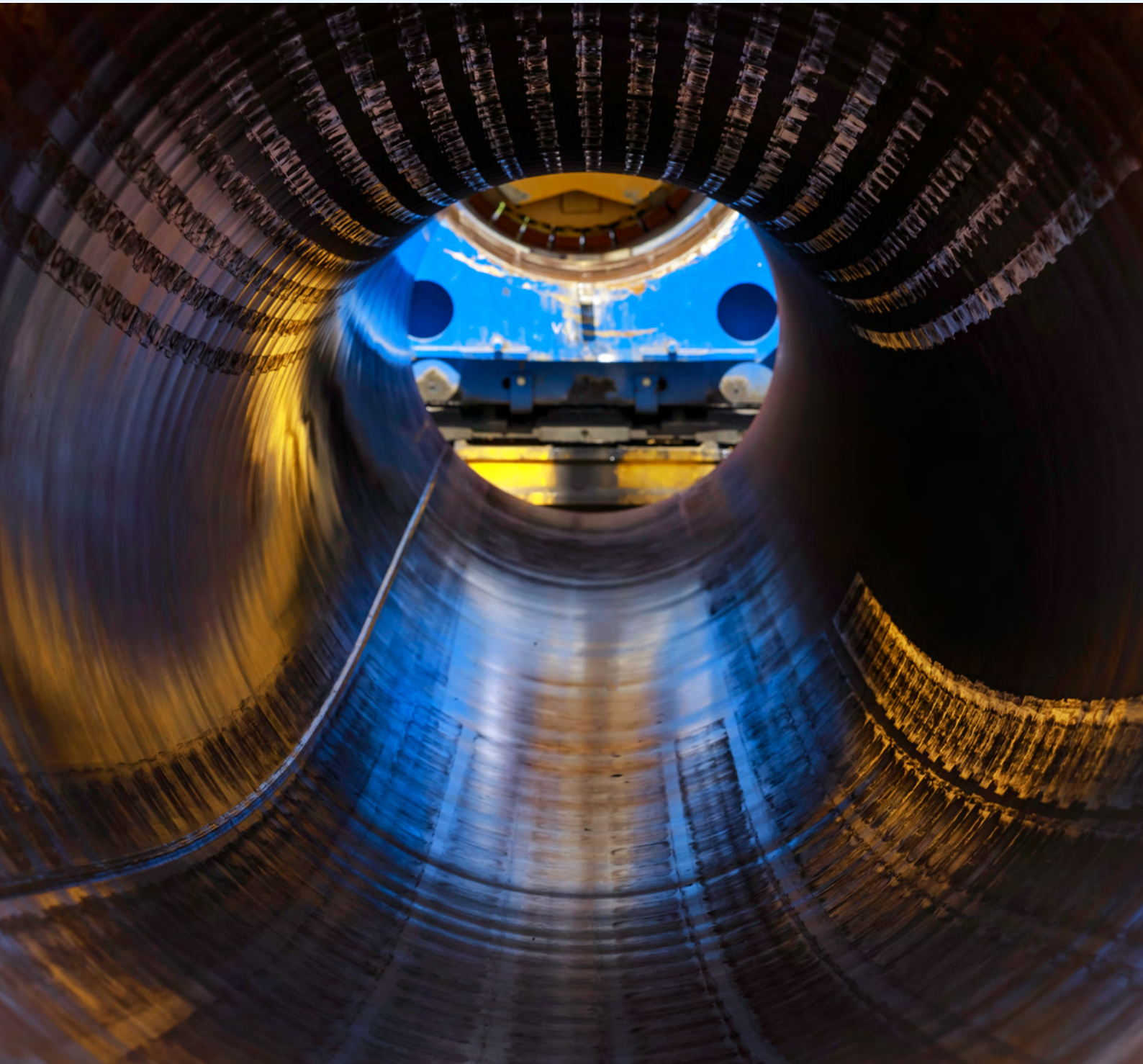
In addition, ENTSOG is moving their reporting capabilities to the Microsoft platform called Power BI. In 2020, some internal reports were migrated – this was continued in 2022 with more reports.

Beside the above listed projects, the IT team also have worked on recurrent projects in 2021 – the TYNDP 2022, Project Submission Portal, Capacity Transmission Map, and Summer/Winter Outlook/Review data collections.

Picture courtesy of GASCADE

8

RESEARCH AND DEVELOPMENT AT ENTSOG



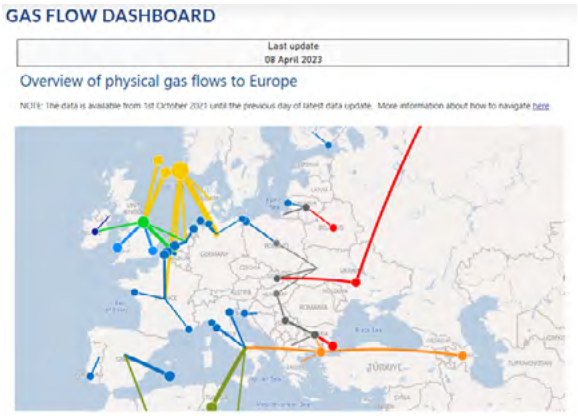
Each year, ENTSOG aims to improve and progress its way of working, by assessing its tools, methodologies, and approaches, some of which are summarised in Sections below.

In 2022 and beyond, ENTSOG works closely with its Members to develop innovative products and services to facilitate the future role of gas in the overall European energy mix and to meet energy and climate targets. There will be challenges such as maintaining resilient and diverse security of supply, dealing with fluctuating gas quality, growing renewable, low-carbon and decarbonised gases content, framing the proper conditions for connecting low carbon, decarbonised and renewable gas production, planning for hydrogen and biomethane being used in gas grids or designing new data flows between TSOs and DSOs. Nevertheless, gas systems offer long-distance transportation, long-term energy storage, decarbonisation potential and short-term demand management support tools.

Innovative work continued in 2022 by ENTSOG and its Members, to ensure readiness and facilitate those developments going forward.

JOINT HYDROGEN INFRASTRUCTURE MAP

The REPowerEU Plan introduced actions to rapidly reduce dependence on Russian fossil fuels and speed up the green transition. In December 2022, ENTSOG together with GIE, CEDEC, Eurogas, GEODE, GD4S and in cooperation with European Hydrogen Backbone Initiative launched a joint Hydrogen Infrastructure Map . The map showcases hydrogen infrastructure projects and was prepared based on the mandate received at 36th European Gas Regulatory Forum. This bottom-up process gathered all relevant hydrogen infrastructure projects with the aim to present the data in an interactive, user-friendly and publicly accessible map that can be used by stakeholders and policy makers. The map includes hydrogen transmission, distribution, terminals, storage, production and demand projects. The map will be updated on a quarterly basis. **Link to the map:**



DEVELOPMENT OF REGIONAL COORDINATION SYSTEM FOR GAS (RECO) 2.0 PLATFORM

ENTSOG started to work on a web platform providing visualisation of a relevant range of operational data on an EU level to monitor the security of gas supply. The development of this Regional Coordination System for Gas (ReCo) 2.0 platform can support the TSOs' dispatching centres and ReCo teams during emergency situations. As a first step, a visualisation of daily physical flows was completed in 2022. ReCo 2.0 will visualise both hourly and daily operational information (e. g., flows, capacities, balance, etc.) – the current ReCo platform reports only daily physical flows. Other improvements proposed are the inclusion of alarms to identify risk areas, tools for analytics and availability of historical data. Information on cross border maintenance will also be included. Work on the developments of the ReCo 2.0 platform will continue in 2023.

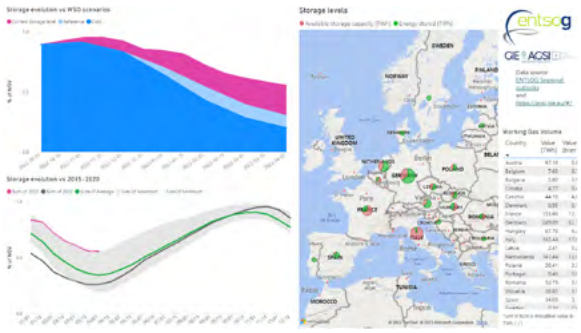
GAS FLOW AND STORAGE DASHBOARD

In order to have a more detailed overview of the gas market situation, ENTSOG developed data dashboards to assess the European gas market behaviour and gas flow patterns, which were published on ENTSOG's website for stakeholders' use. The information presented in the dashboard is sourced from ENTSOG's Transparency Platform and GIE's AGSI Transparency Platform. Data are presented in an aggregated form based on the gas supply corridors and risk groups as defined in the Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010 to ensure coherence with the terminology most often used by participants of the European gas sector.

Link to the dashboard:

SEASONAL SUPPLY OUTLOOK DASHBOARD

For the better overview of the results of the ENTSOG seasonal outlooks, by presenting gas storage stock levels when compared to the simulations undertaken by ENTSOG for its Seasonal Supply Outlook reports, this outlook data dashboard was developed in early 2022. This shows how the simulations produced in the system assessment are in the context of the storage injection and withdrawal patterns for European average and country stock level. Data used include historical trends, allowing for more in-depth analysis. ENTSOG's Seasonal Supply outlook monitoring dashboard data aims to be updated on a biweekly or monthly basis, as far as possible. **Link to the dashboard:**



ENTSO-E/ENTSOG CONSISTENT AND INTERLINKED MODEL DEVELOPMENT

The Interlinked Model aims at ensuring that interaction of gas and electricity sectors is considered when assessing the value of infrastructure projects. Based on the investigations carried out in the period 2019-2020 and the recently adopted European Regulations, ENTSO-E and ENTSOG in 2021 and in 2022 have worked on the development of a consistent process for the inclusion of an "infrastructure dual assessment" in TYNDPs as well as of a methodology for its application. The aim of this exercise is to already implement the main identified improvements to TYNDP 2022 and to make these available for the 6th Project of Common Interest selection process. This will be done without impacting the timeline of ongoing single-sector TYNDPs. The Interlinked Model has progressed into an integrated PLEXOS model consisting of electricity and hydrogen infrastructure, on which CBA analysis on projects submitted to ENTSOG and ENTSO-E can be performed.

Picture courtesy of GAZ-SYSTEM

9

ENTSOG BOARD AND TEAMS

ENTSOG **BOARD**

During 2022, the ENTSOG General Assembly approved the following changes within ENTSOG's Board:

- Replacement of GAZ-SYSTEM representative Tomasz Stępień, with **Artur Zawartko**.
- Replacement of Transgaz representative Irina Dragoman, with **Cristina Iancu**.

Listed below are ENTSOG Board members, as of 31 December 2022.

Bart Jan Hoevers, President
(Gasunie Transport Services B.V.)

Artur Zawartko
(Gaz-System S.A.)

Pascal De Buck
(Fluxys Belgium S.A.)

Francisco de la Flor Garcia
(Enagás S.A)

Torben Brabo
(Energinet)

Gaetano Mazzitelli
(Snam Rete Gas S.p.A.)

Con O Donnell
(Gas Networks Ireland)

Szabolcs I. Ferencz
(FGSZ Ltd)

Vladimir Malinov
(Bulgartransgaz)

Matjaž Sušnik
Plinovodi

Cristina Iancu
Transgaz S.A.

Thierry Trouvé
(GRTgaz)

Christoph von dem Bussche
(GASCADE Gastransport GmbH)

ENTSOG **TEAMS**

MARKET TEAM

From left to right: Claude Mangin, Laurent Percebois, Alexandra Kiss. Peter Hlusek, Manfred Cadez;
above: Karolina Golonka

SYSTEM DEVELOPMENT TEAM

From left to right: Arturo de Onis Romero-Requejo, Maria Castro, Mareike Dollinger, Kacper Zeromski, Dante Powell,
Thilo von der Grün, Mads Boesen, Hubert Bolesta, Alexandra Kiss; above: Diana Fathelbajanova, Joan Frezouls, Alexander Kättlitz

MANAGEMENT

From left to right: Bart Jan Hoevers (President)
Piotr Kuś (General Director)

SYSTEM OPERATION TEAM

From left to right: Kathrine Stannov, Hendrik Pollex, Lilia Jakobsson, David Gil, Alexandra Kiss, Lorella Palluotto;
above: Douglas Hill, Anton Kolisnyk, Viktoria Medvedeva-Tšernobrivaja

STRATEGY, POLICY & COMMUNICATION TEAM

From left to right: Gideon Saunders, Carmel Carey, George Wüstner, Sara Piskor, Patricia Orglerova, Mauro Barbosa

MANAGEMENT SUPPORT TEAM

From left to right: Hubertine Soares, Agata Musial, Maria Dhenin, Piotr Kuś, Elisa Asensio, Nicolas Van der Maren, Mauro Barbosa, Sahar Aitlhou, Bogdan Gugescu

ENTSOG **FINANCIAL STATEMENT 2022**

The Financial Statement 2022 was approved by the ENTSOG General Assembly on 26 April 2023.

Values EUR	Code	2022 01.01.–31.12.2022	2021 01.01.–31.12.2021
ASSETS			
FORMATION EXPENSES	20		
FIXED ASSETS	21/28	**96,268.76**	**142,051.27**
211000 – Concessions, patents, licenses, know-how (D)			**16,873.00**
211009 – Concessions, patents, licenses, – Depr. (D)			**–16,873.00**
Tangible fixed assets (explanation 6.1.2)	22/27	**95,768.76**	**141,551.27**
Furniture and vehicles	24	**76,055.99**	**106,147.68**
240000 – Furniture – acquisitions (D)		**345,901.07**	**345,901.07**
240009 – Furniture – depreciations (D)		**–305,297.62**	**–283,556.84**
241000 – Office equipment – acquisitions (D)		**173,048.96**	**297,556.55**
1241009 – Office equipment – depreciations (D)		**–137,596.42**	**–253,753.10**
Other tangible fixed assets	26	**19,712.77**	**35,403.59**
260009 – Property kept as immovable property rese (D)		**–744,361.80**	**–728,670.98**
264000 – Expenses from fitting-out rented propert (D)		**764,074.57**	**764,074.57**
Financial fixed assets (explanation 6.1.3)	28	**500.00**	**500.00**
288000 – Cash guarantees (D)		**500.00**	**500.00**
CURRENT ASSETS	29/58	**2,644,411.31**	**3,320,422.13**
Amounts receivable within one year	40/41	**76,012.57**	
Trade debtors	40	**76,012.57**	
400000 – Customers (D)		**76,012.57**	
Cash at bank and in hand	54/58	**2,506.194.28**	**3,210.422.13**
550000 – Bank account (D)		**1,510.163.42**	**2,210.071.40**
550053 – ING CHF account (D)			**1,131.92**
550100 – ING Bonus account (D)		**994,972.61**	**998,162.99**
570000 – Cash in hand (D)		**355.43**	**353.00**
571000 – Cash in device (D)		**702.82**	**702.82**
Deferred charges and accrued income	490/1	**62,204.46**	**110,000.00**
491000 – Accrued income (D)		**62,204.46**	**110,000.00**
GL accounts not in the standard Belgian schema	AXX		
TOTAL ASSETS	20/58	**2,740,680.07**	**3,462,473.40**

Values EUR	Code	2022 01.01.–31.12.2022	2021 01.01.–31.12.2021

EQUITY AND LIABILITIES

CAPITAL AND RESERVES	10/15	**2,173,747.27**	**2,173,747.27**
Funds of the association or foundation (explanation 6.2)	10	**619,892.00**	**619,892.00**
100000 – Issued Capital (C)		**619,892.00**	**619,892.00**
Allocated funds and other reserves (explanation 6.2)	13	**300,000.00**	**300,000.00**
133000 – Reserves available for distribution (C)		**300,000.00**	**300,000.00**
Accumulated profits (losses)	(+)/(–) 14	**1,253,855.27**	**1,253,855.27**
140000 – Accumulated profits (C)		**1,253,855.27**	**1,253,855.27**
PROVISION AND DEFERRED TAXES (explanation 6.2)	16		
AMOUNTS PAYABLE	17/49	**1,053,491.19**	**1,288,726.13**
Amounts payable within one year (explanation 6.3)	42/48	**710,991.94**	**1,018,726.13**
Trade debts	44	**626,039.91**	**949,542.18**
Suppliers	440/4	**626,039.91**	**949,542.18**
440000 – Suppliers (C)		**626,039.91**	**875,518.05**
444000 – Invoice to be received (C)			**74,024.13**
Taxes, remuneration and social security	45	**84,952.03**	**69,183.95**
Taxes	450/3	**–57,275.00**	**–58,635.28**
451700 – VAT corrections (C)		**570.24**	
451900 – Current VAT account (C)		**–57,845.24**	**–58,635.28**
Remuneration and social security	454/9	**142,227.03**	**127,819.23**
454000 – Social Security payable – expired (C)		**–5,682.99**	**–76,249.02**
455000 – Net salaries and wages payable – expired (C)		**3,782.00**	
456000 – Provision for holiday pay – employees (C)		**144,128.02**	**204,068.25**
Accruals and deferred income	492/3	**342,499.25**	**270,000.00**
492000 – Accrued charges (C)		**342,499.25**	**270,000.00**
GL accounts not in the standard Belgian schema	BXX		
TOTAL LIABILITIES	10/49	**3,227,238.46**	**3,462,473.40**

INCOME STATEMENT

Values EUR		Code	2022 01.01.–31.12.2022	2021 01.01.–31.12.2021
Operating income and charges				
Gross operating margin	(+)/(–)	9900	1,626,533.49	2,335,285.66
Turnover		70	8,738,738.01	9,232,797.73
700000 – Sales & Provided services (C)			8,587,646.69	8,991,001.95
740900 – Withholding tax not to pay (C)			21,015.40	91,226.64
741000 – Gains realization tangible assets (C)			148.63	
741001 – Gain on disposal of other tangible fixed (C)				4.00
745200 – Meal-checks (employees intervention) (C)			3,538.14	3,208.96
745900 – Sundry recovered costs (C)			123,383.15	144,386.18
749100 – Benefit in kind (C)			3,006.00	2,970.00
Raw materials, consumables, services and other goods		60/61	7,112,204.52	6,897,512.07
610000 – Rent land and buildings (D)			591,478.46	631,887.14
610100 – Rent plant, fittings and fixtures (D)			723.57	733.29
610200 – Rent machinery and equipment (D)			15,873.81	14,013.36
610300 – Maintenance informatica (D)				1,431.00
611000 – Maintenance land and buildings (D)			43,969.22	22,413.59
611300 – Maintenance office fittings and equipmen (D)			150.00	
612400 – Prints and office supplies (D)			52,425.54	22,756.41
612410 – Documentation (D)			42,864.82	25,930.37
613100 – Fees and service benefits (D)			2,628,264.18	2,579,410.79
613102 – Fees				261,153.00
613103 – Fees				76,666.67
613105 – Fees			164,000.00	138,000.33
613107 – Fee			714,666.67	604,333.33
613108 – Fees			1,043,999.33	623,000.00
613109 – Fees				40,000.00
613111 – Fees			140,000.00	100,000.00
613113 – Fees			176,000.00	375,000.00
613114 – Fees			273,944.45	295,000.00
613118 – Fees			140,000.00	134,630.13
613119 – Fees			488,000.00	284,333.34
613123 – Fees			35,000.00	
613126 – Fees				233,419.27
613127 – Fees			134,166.66	132,083.33
613128 – Fees			70,000.00	
613140 – General insurance (D)				147.82
613150 – External training charges (D)			79,144.86	120,006.47
613160 – Meetings organised by Entsog (D)			82,630.96	69,508.36
613170 – Conference fees (attendence) (D)			19,900.00	9,555.00
613200 – Subscriptions to professional organizati (D)			17,500.00	2,000.00

Values EUR	Code	2022 01.01.–31.12.2022	2021 01.01.–31.12.2021
613500 – Legal publications (D)		192.79	2,272.55
613700 – Telephone (D)		2,531.91	7,110.90
613710 – Cell phone (D)		26,194.33	25,088.62
613730 – Postal charges (D)		8,076.33	4,895.21
613801 – Catalogues, printed matter and document (D)		802.50	632.50
613803 – Annual fairs and expositions (D)			13,742.10
613810 – Charges of visits and receptions – local (D)			557.56
614000 – Insurance fire, CR, theft, electronic (D)		3,329.47	3,396.34
614600 – Civil responsibility insurance (D)		1,066.96	
615100 – Travel/moving costs (local) (D)		4,769.18	341.92
615101 – Travel/moving costs (abroad) (D)		108,845.34	26,170.35
617000 – Temporary staff – workers (D)			4,500.00
617010 – Temporary staff – employees (D)		1,693.18	11,391.02
Remuneration, social security costs and pensions	(+)/(–) 62	2,026,664.77	1,799,243.95
620200 – Salaries		1,318,676.31	1,121,254.14
620201 – Salaries			2,363.90
620210 – Salaries		63,099.31	80,790.28
620220 – Salaries		50,330.43	
620250 – Salaries		97,108.13	77,718.47
621000 – social secur		–26,825.71	
621100 – social secur		6,938.60	
621200 – social secur		405,989.98	325,448.72
621201 – Social security costs			5,418.16
621900 – Cot. ONSS empl			3,971.55
622200 – Group insurance employees and executives		91,181.98	90,781.34
623000 – Insurances – Personnel		8,557.18	7,374.99
623100 – Misc. fringe benefits		17,909.96	15,996.00
623130 – Frais de déplacement empl		4,451.10	2,198.44
623210 – Costs employees		29,874.00	24,864.51
623280 – Increase in provision for holiday pay em		144,128.02	204,068.25
623290 – Utilization provision for holiday pay em		–204,068.25	–171,900.42
623410 – Medical service and pharmaceutical produ		1,350.44	1,107.48
623447 – Food and beverages		17,963.29	7,788.14
Depreciation of and other amounts written off formation expenses, intangible and tangible fixed assets	630	70,341.46	73,128.31
630200 – Depreciation of tangible fixed assets (D)		70,341.46	73,128.31
Other operating charges	640/8		3,340.39
640800 – Various taxes (D)			840.39
642000 – Losses realization trade debtors (D)			2,500.00

Values EUR	Code	2022 01.01.–31.12.2022	2021 01.01.–31.12.2021
Operating profit (loss)	(+)/(–) 9901	**–470,472.74**	**459,573.01**
Financial income (explanation 6.4)	75/76B	**230.28**	
Recurring financial income	75	**230.28**	
751011 – Interests on Bonus account ING (C)		**228.17**	
754000 – Realised exchange gains (C)		**0.17**	
757000 – Received discounts from supplier (C)		**0.01**	
757010 – Payment differences on purchase (C)		**1.93**	
Financial charges (explanation 6.4)	65/66B	**16,315.93**	**20,932.76**
Recurring financial costs	65	**16,315.93**	**20,932.76**
650080 – Interests current account payable within (D)		**6,922.32**	**4,767.54**
654000 – Realised exchange losses (D)		**3,569.14**	**6,011.50**
657000 – Other financial charges (D)		**79.14**	**28.75**
657010 – Payment differences on sales (D)		**0.15**	**7.97**
658100 – Bank charges (D)		**5,745.18**	**10,108.35**
658400 – Payment differences (D)			**8.65**
Profit (Loss) of the financial year before taxes	(+)/(–) 9903	**–486,558.39**	**438,640.25**
Gain (loss) of the period	(+)/(–) 9904	**–486,558.39**	**438,640.25**
Profit (loss) of the financial year available to be appropriated	(+)/(–) 9905	**–486,558.39**	**438,640.25**

Values EUR	Code	2022 01.01.–31.12.2022	2021 01.01.–31.12.2021

PROCESS PROFIT / LOSS

Profit (loss) to be appropriated	(+)/(–) 9906	**–486,558.39**	**438,640.25**
Profit (loss) of the financial year available to be appropriated	(+)/(–) (9905)	**–486,558.39**	**438,640.25**
Withdrawal from equity: funds, allocated funds and other reserves	791		
Addition to allocated funds and other reserves	691		
Profit (loss) to be carried forward	(+)/(–) (14)	**–486,558.39**	**438,640.25**
693000 – Profit to be carried forward (D)			**438,640.25**


Picture courtesy of TAP

PRESS RELEASES AND STAKEHOLDER WORKSHOPS/EVENTS

PRESS RELEASES 2022

04 Jan	ENTSOG publishes the CAM Network Code "Capacity Auction Calendar" for 2022/2023
12 Jan	System Development Map 2020/2021 published by ENTSOG and GIE
24 Feb	ENTSOG publishes its high-level position paper on EC's Hydrogen and Decarbonised Gas Market Package
17 Mar	ENTSOG publishes its interactive Seasonal Supply Outlook monitoring dashboard on its website
05 Apr	ENTSOG publishes its interactive European gas flow data dashboard on a dedicated website
11 Apr	ENTSO-E and ENTSOG publish their Joint Scenarios for TYNDP 2022
28 Apr	ENTSOG publishes its Summer Supply Outlook 2022 and Summer Supply Review 2021
06 May	ENTSOG publishes Annual Report 2021 and two Monitoring Reports
24 May	ENTSOG reopens project collection for its Ten-Year Network Development Plan 2022
30 Jun	GRIDTech 2022 Conference participants discuss the immediate, short, and long-term priorities for Europe's gas infrastructure
01 Jul	ACER and ENTSOG consult on the FUNC issue: how to ensure greater flexibility to book firm capacity at interconnection points
20 Jul	ENTSOG opens stakeholder consultation on its Annual Work Programme (AWP) 2023
27 Jul	ENTSOG publishes its Yearly Supply Outlook 2022/2023 in response to disruption of Russian gas supply
21 Oct	ENTSOG publishes an updated list of projects to be included in its Ten-Year Network Development Plan 2022
24 Oct	ENTSOG publishes its Winter Supply Outlook 2022/23 and Winter Supply Review 2021/22
12 Dec	Gas TSOs of the North-West Region publish the 5th edition of their Gas Regional Investment Plan
13 Dec	New Hydrogen Infrastructure Map shows how infrastructure can enable the upscaling of hydrogen economy
16 Dec	Security of supply and the gas grids' readiness for hydrogen discussed at ENTSOG's Annual Conference 2022
20 Dec	ENTSOG publishes its Annual Work Programme 2023

ENTSOG STAKEHOLDER CONSULTATIONS, EVENTS AND WORKSHOPS 2022

Jan – Mar	FSR/ENTSOG online Gas Network Codes course
20 Jan	5th Advisory Panel for Future Gas Grids
30 Mar	6th Advisory Panel for Future Gas Grids
23 Jun	7th Advisory Panel for Future Gas Grids
27 Jun	Joint ACER and ENTSOG Workshop on EFET'S FUNC issue "GREATER FLEXIBILITY TO BOOK FIRM CAPACITY AT IPS"
28 Jun	GRIDTech2022 – A secure, affordable and sustainable energy system with gas infrastructure by Eurogas and GIE, with the technical partnership of ENTSOG
20 Jul	ENTSO-E & ENTSOG Workshop on TYNDP Scenarios: Kicking-Off 2024 Cycle Webinar
29 Jul	ENTSOG public stakeholder consultation on Annual Work Programme (AWP) 2022
19 Sep	ENTSOG information stand at EC PCI Energy Days
20 Sep	EU Sustainable Energy Week – Extended Programme – Joint policy session 'Can the RePowerEU Plan be achieved? What place for electrons and molecules?'
06 Oct	8th Advisory Panel for Future Gas Grids
03 Nov	2nd Joint workshop on data exchange and cyber security in the gas sector
07 Nov	ENTSOG Gas Quality & Hydrogen Workshop
14 Dec	ENTSOG Annual Conference 2022: In The Pipeline – Secure Winter, Sustainable Future

LIST OF **ABBREVIATIONS**

ACER	Agency for the Cooperation of Energy Regulators
AEMP	Associations of energy market participants
AR	Annual Report
API	Application Programming Interface
ARIS	ACER's REMIT Information System
AS4	Applicability Statement 4
AWP	Annual Work Programme
BAL KG	Balancing Kernel Group
BAL NC	Balancing Network Code
BRS	Business Requirement Specifications
CAM NC	Capacity Allocation Mechanism Network Code
CAP KG	Capacity Kernel Group
CBA	Cost-Benefit Analysis
CEDEC	European Federation of Local and Regional Energy Companies
CEN	European Committee for Standardisation
CDEST	Common Data Exchange Solution Table
CIO	Central Issuing Office
CMP GL	Congestion Management Procedures Guidelines
CNOT	Common Network Operational Tool
COP 21	The 2015 United Nations Climate Change Conference held in Paris
DAR	Demand Assessment Reports
DSO	Distribution System Operator
EASEE-gas	European Association for the Streamlining of Energy Exchange – gas
EC	European Commission
ECH$_2$A	Learnbook on European Hydrogen Supply Corridors
ECP	External Contact Platform
EEA	European Economic Area
EFTA	European Free Trade Association
EIC	Energy Identification Code
EnC	Energy Community
ENCS	European Network for Cyber Security
ENISA	European Union Agency for Cybersecurity
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSOG	European Network of Transmission System Operators for Gas
ETR	Energy Transition
EU	European Union
Fit for 55	Set of proposals to revise and update EU legislation
FSR	Florence School of Regulation
FUNC	Gas Network Codes Functionality Platform
GA	General Assembly
GY	Gas Years
GCG	Gas Coordination Group
GD4S	Gas Distributors for Sustainability
Geode	Association of European independent distribution companies of gas and electricity
GIE	Gas Infrastructure Europe
GHG	Greenhouse Gases
GHP	Gas and Hydrogen Package
GIS	Geographical Information System
GO	Guarantee of Origin
GO KG	Guarantee of Origin Kernel Group
GQ & H$_2$	Gas Quality and Hydrogen
GUI	Graphical User Interface
IAs	Interconnection Agreements
IMR	Monitoring Report
INT WG	Interoperability Working Group
INV WG	Investment Working Group
IP	Interconnection Point
IIP	Innovative Projects Platform
JRC	Join Research Centre
KG	Kernel Group

LAG	Legal Advisory Group
LIO	Local Issuing Office
LNG	Liquefied Natural Gas
MAR WG	Market Working Group
MIG	Message Implementation Guideline
MS	Member State
NC	Network Code
NeMo KG	Network Model Kernel Group
NRA	National Regulatory Authority
OMP	Organised Market Places
PCI	Project of Common Interest
PLEXOS	Energy Analytics and Decision Platform
ReCo	Regional Coordination System for Gas
RED III	Revision of recast Renewable Energy Directive
REMIT	Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency
REPowerEU	A plan of EC for saving energy, producing clean energy and diversifying our energy supplies
RFNBOs	Renewable Fuels of Non-Biological Origin
RRM	Registered Reporting Mechanism
SCN WG	Scenario Working Group
SoS	Security of Supply
SSO	Summer Supply Outlook
SPC	Strategy, Policy and Communication
TAR	Tariff
TAR KG	Tariff Kernel Group
TAR NC	Tariff Network Code
TEN-E	Trans-European Networks for Energy
TF ILM	Task force Interlinked Model
TP	Transparency Platform
TRA WG	Transparency Working Group
TSO	Transmission System Operator
TYNDP	Ten-Year Network Development Plan
UMM	Urgent Market Message
VIP	Virtual Interconnection Point
WG	Working Group
WI	Wobbe Index

COUNTRY CODES (ISO)

AL	Albania
AT	Austria
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BE	Belgium
BG	Bulgaria
BY	Belarus
CH	Switzerland
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
DZ	Algeria
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
LY	Libya
MA	Morocco
ME	Montenegro
MK	North Macedonia
MT	Malta
NL	Netherlands, the
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
RS	Serbia
RU	Russia
SE	Sweden
SI	Slovenia
SK	Slovakia
TM	Turkmenistan
TN	Tunisia
TR	Turkey
UA	Ukraine
UK	United Kingdom

ADDITIONAL **NOTE**

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