entsog

european network
of transmission system operators
for gas

ANNUAL REPORT

2021

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BART JAN HOEVERS
President, ENTSOG

PIOTR KUŚ
General Director, ENTSOG

PRESIDENT'S FOREWORD

The European energy landscape is ever dynamic, and never was this more evident than over the past few years. Gas TSOs have ensured business continuity throughout the COVID-19 pandemic, maintaining essential services by implementing measures to safeguard their staff, and gas infrastructure operations. Russia's hostile invasion of Ukraine in 2022 has resulted in a humanitarian crisis – ENTSOG stands in utmost solidarity with the Ukrainian people. This needless war also shines a very real spotlight on Europe's urgent need to diversify its energy supply and reduce its dependency on Russian gas.

During 2021, ENTSOG and its Members continued its support to the European Commission (EC) and the Gas Coordination Group (GCG) by providing operational and gas system relevant expertise. Support was also provided in the implementation of the Security of Supply Regulation, in the preparation and application of solidarity principles, regional emergency, and preventive action plans. Gas TSOs and ENTSOG were monitoring the situation of storage facilities, flows to Interconnection Points, and LNG terminals on a daily basis and these observations were also discussed with the EC and the GCG. Given the ever-changing geopolitical circumstances and consequential risks to gas flow and infrastructure, ENTSOG sees how critical it is to continue to apply the principles of the Regional Coordination System for Gas (ReCo). ENTSOG maintains its coordination of the ReCo teams, to minimise as far as possible any planned and unforeseen disruption.

During 2021, ENTSOG delivered on its regulatory tasks relating to infrastructure planning (developing its Ten-Year Network Development Plan (TYNDP) 2022), security of supply assessments (Summer Supply Outlook and Winter Supply Outlook reports, Security of Supply Simulation report) and checking gas market functionality (Network Codes and Guidelines monitoring). ENTSOG and its members were also making big and proactive steps to further support Europe's focus on addressing climate change and reform its energy system, in response to the Paris Agreement, EU's Green Deal and in anticipation of EC's publication of the Hydrogen and Decarbonised Gas Market Package at the end of 2021. In June, ENTSOG submitted a response to EC's stakeholder consultation on this package. ENTSOG also published its positions on a number of other topics related to legislative files from 'Fit for 55': most notably, its response to EC's Regulation on Trans-European Energy Networks revision and EC's initiative to revise the Renewable Energy Directive II.

"TO ENABLE FULLY TRANSPARENT STAKEHOLDER DISCUSSION, ENTSOG ESTABLISHED ITS ADVISORY PANEL FOR FUTURE GAS GRIDS, TO EXCHANGE IDEAS ON HOW TO BEST REPURPOSE AND RETROFIT THE GAS GRIDS BY 2050."

To enable fully transparent stakeholder discussion, ENTSOG established its Advisory Panel for Future Gas Grids, to exchange ideas on how to best repurpose and retrofit the gas grids by 2050. The panel stakeholders worked in 2021 to develop a Recommendation Report on the Repurposing Framework for gas grids. ENTSOG also facilitated the roundtable on clean hydrogen transmission and distribution, as part of EC's European Clean Hydrogen Alliance. ENTSOG addressed specific technical challenges through the Prime Movers' Group on Guarantees of Origin and Certificates and Prime Movers' Group on Gas Quality and Hydrogen Handling. ENTSOG continues to outreach to new audiences in the gas, hydrogen and electricity value chains, including industry, NGOs, Member States and institutional stakeholders.

2021 was also the year that saw a change of President and General Director, as well as ENTSOG Board Members. I wish to express my heartfelt gratitude to both Stephan Kamphues and Jan Ingwersen for their many years of dedication, enabling ENTSOG to play a pivotal role in delivering Network Codes, progress the integration of the European gas market and implement measures for security of energy supply. 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 (including hydrogen) market for many years to come.

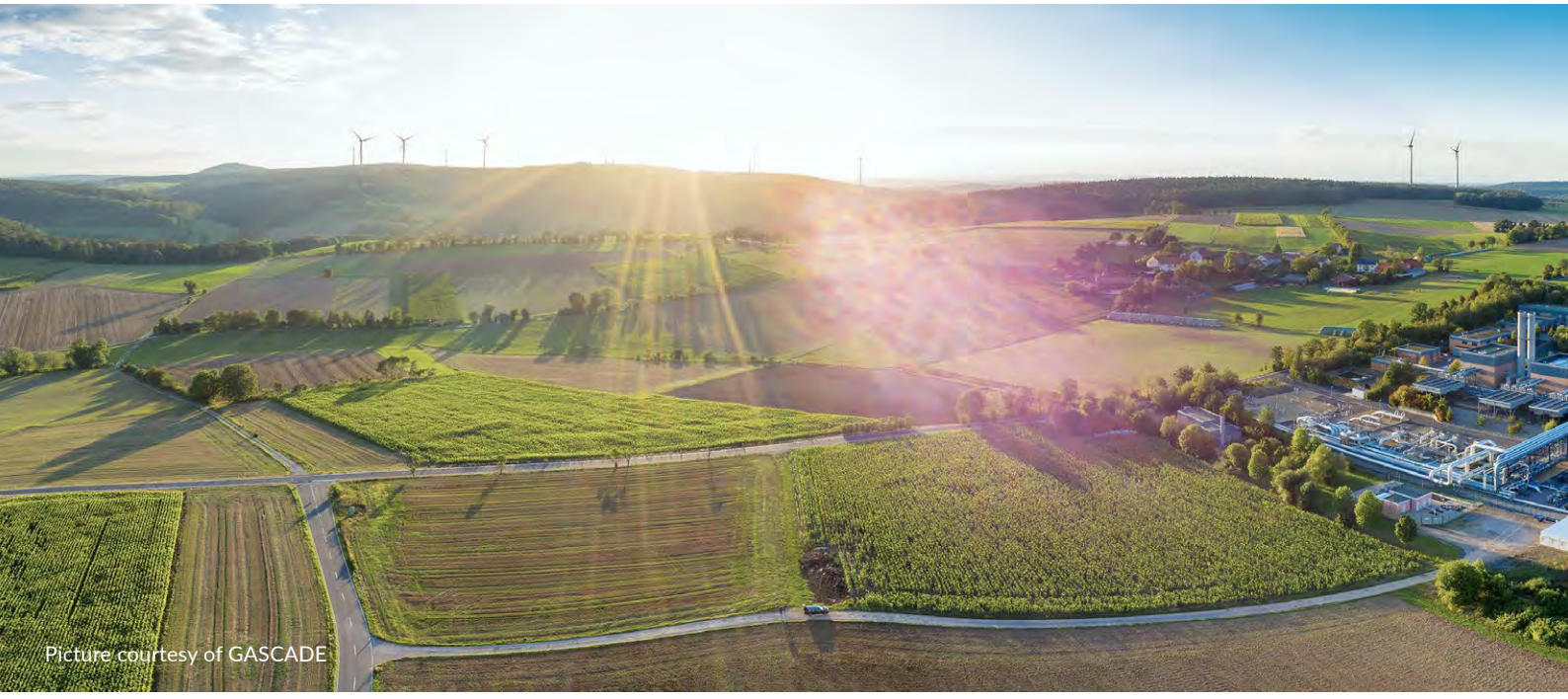
GENERAL DIRECTOR'S FOREWORD

Efforts to kick-start recovery in a post-pandemic era have been overshadowed by a senseless war, orchestrated by Russia, in Ukraine. Like other European energy market participants, it rapidly shifted the goalposts for ENTSOG, whose members had achieved a lot for European gas market competitiveness and security of supply since the association's creation in 2009. ENTSOG is now ever more committed in its alignment with European Commission's (EC) fast-tracked implementation of reliable and affordable energy for European citizens and accelerating the roll-out of renewable gases, while maintaining security of supply and stability of network operations.

2021 represented another busy year for ENTSOG. The implementation and effect monitoring reports for the Capacity Allocation Mechanism (CAM) Network Code and the Congestion Management Procedure (CMP) Guidelines were published. Work began on ENTSOG's Ten-Year Network Development Plan (TYNDP) 2022, with ENTSOG and ENTSO-E working throughout the year to jointly develop their TYNDP scenarios. ENTSO-E and ENTSOG also delivered their screening and dual assessment Progress Report, which considers the outcomes of the Interlinked Model Focus Study. TYNDP 2022 project collection commenced in October.

ENTSOG also collaborated on several other deliverables in 2021: ENTSOG, GIE and Hydrogen Europe published their joint factsheet 'How to transport and store hydrogen? Facts and figures'; ENTSOG and ACER jointly published their policy paper with recommendations on how to mitigate misconduct in EU balancing markets; and members of ENTSOG, GIE, IOGP and Concawe contributed to the Re-Stream study, which assessed the feasibility of transport of hydrogen and CO_2 in European gas and oil infrastructure.

ENTSOG also undertook short-term analysis of the preparedness of the gas infrastructure for the upcoming gas seasons, assessing if the infrastructure can store gas for the upcoming summer or if the infrastructure can enable supply and demand adequacy for the upcoming winter, given an available supply. ENTSOG observed that on 1 October 2021, EU gas storage facilities had a filling level of 75 %, the lowest value of the last ten years. These analyses and assessments continue at pace, especially critical during this time of supply uncertainty.



Picture courtesy of GASCADE

ENTSOG launched an EU-wide visualisation platform for low-carbon and renewable hydrogen projects, as well as completing the largest IT infrastructure project ever undertaken at ENTSOG, with changes to its data warehouse (PDWS) and Transparency Platform data storage. ENTSOG published its Transmission Capacity map – a resource which is often used and appreciated by energy market participants.

Participants at ENTSOG's Annual Conference in December 2021 had the opportunity to discuss the contents of EC's proposal for the Hydrogen and Decarbonised Gas Market Package, which was published during the same day of ENTSOG's conference. Energy Commissioner Kadri Simson and EC Head of Cabinets – Stefano Grassi and Diederik Samsom – expressed their views on the constructive role that gas grids could play in facilitating the transition for a hydrogen economy, in the short and longer terms. Most recently, ENTSOG notes that the measures envisaged by EC in their REPowerEU Plan are wide-ranging, ambitious and will require profound changes by EU and Member States. ENTSOG will provide the needed support here also.

In my new role as General Director, I wish to continue the committed efforts of my predecessor, Jan Ingwersen, so that ENTSOG functions as a proactive, technical expert and trusted adviser on gas transmission related topics on a European level works, as has been done over the years. I believe that molecules – not only natural gas, but also biomethane and hydrogen – can play a part in an integrated energy system, a secure and reliable energy system, and ensure an affordable energy future for European citizens. I am mindful of the challenges that lay ahead for energy markets, especially related to security of supply. ENTSOG is there to support the market participants and provide technical advice/assistance these days, and going forward.

> I BELIEVE THAT MOLECULES – NOT ONLY NATURAL GAS, BUT ALSO BIOMETHANE AND HYDROGEN – CAN PLAY A PART IN AN INTEGRATED ENERGY SYSTEM, A SECURE AND RELIABLE ENERGY SYSTEM, AND ENSURE AN AFFORDABLE ENERGY FUTURE FOR EUROPEAN CITIZENS.

Picture courtesy of Gas Connect Austria

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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 (which are supported by the management support team): Market, System Development, System Operation and Strategy, Policy and Communication. These areas manage the many activities with which ENTSOG are tasked – the development and implementation of Network Codes and guidelines and assessment of current and future gas market design (Market); activities associated with scenario building and future gas infrastructure planning (System Development); cooperation for security of supply and providing transparency, ensuring REMIT compliance and technical cooperation (System Operation and System Development); coordination of strategic topics and policy processes within ENTSOG and communication of associated ENTSOG activity outside the organisation (Strategy, Policy and Communication). The Management Support team provide legal, HR, Finance, and IT support to the ENTSOG team.

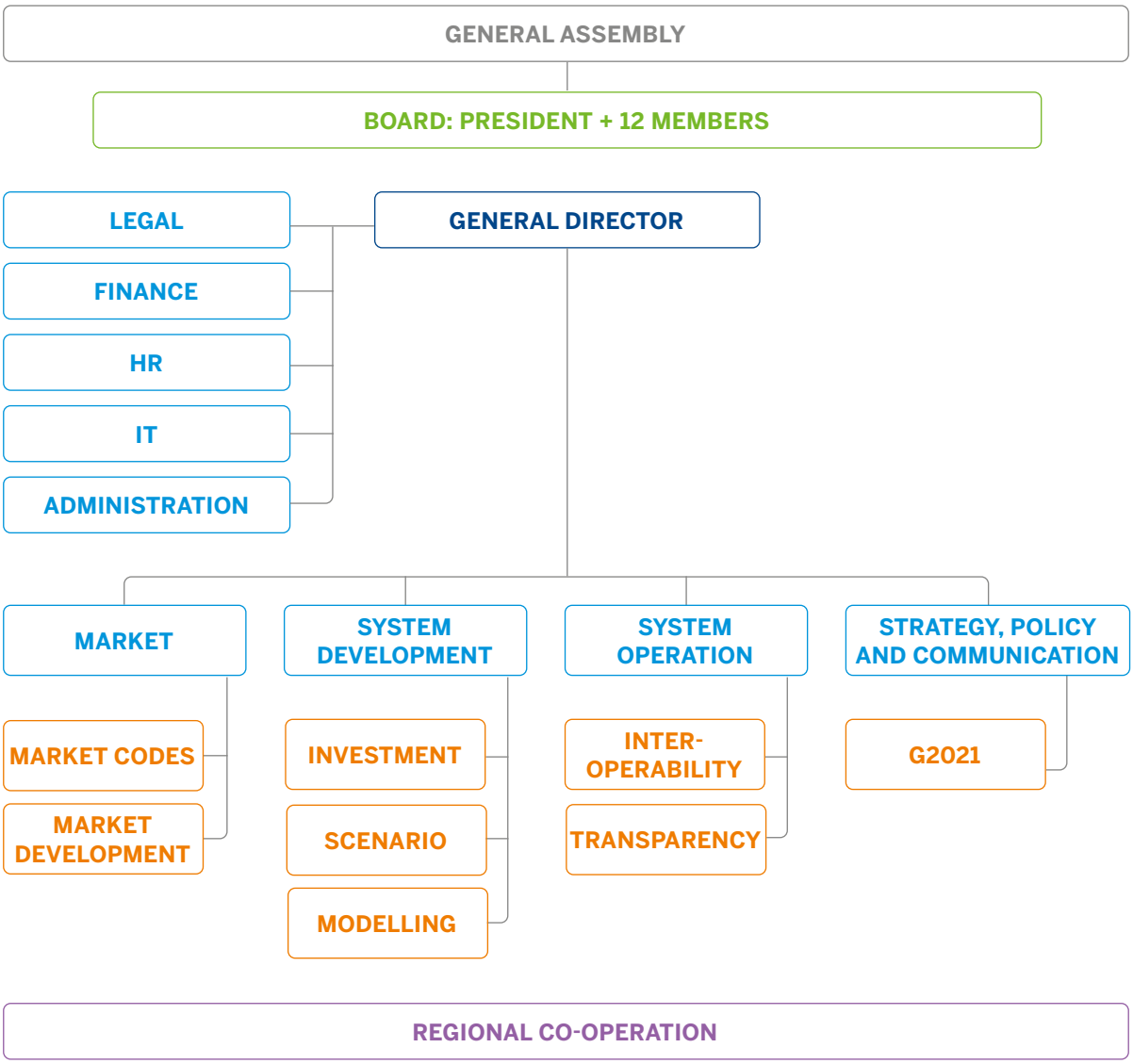

Figure 1: ENTSOG internal organisational structure (as of 31 December 2021)

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.

- A WG is the primary vehicle for the management and delivery of ENTSOG's main content outputs (e.g., TYNDP, Summer/Winter Outlooks, Network Codes, 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.

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.

The structure of ENTSOG with the embedded expertise of its members, as well as that of its Brussels office, will continue to play a pivotal role in the further development of the European gas markets.

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 end of 31 December 2021, ENTSOG's membership was comprised of:

45 TSO Members, 2 Associated Partners from EU countries, and 9 Observers from non-EU countries.

MEMBERS (45)

Austria
- Gas Connect Austria GmbH
- TAG GmbH

Belgium
- Fluxys Belgium S. A.
- Interconnector Limited

Bulgaria
- Bulgartransgaz EAD

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
United Kingdom	– GNI (UK) – Premier Transmission Limited – National Grid Gas plc

ASSOCIATED PARTNERS (2)

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

OBSERVERS (9)

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
Ukraine	– LLC Gas Transmission System Operator of Ukraine

Status as of 31 December 2021

MEMBERS MAP

STATUS: DECEMBER 2021

45 Members

2 Associated Partners

9 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 Fluxys

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SUMMARY OF ENTSOG'S **ACTIVITIES AND DELIVERABLES** IN 2021

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.

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.

ENTSOG's tasks are mainly defined in Regulation (EC) No 715/2009, which includes the development and monitoring of the implementation and effect of Network Codes for Market and System operation, developing Ten-Year Network Development Plans (TYNDPs), providing regular information on gas supply and demand for the European gas market and delivering transparency and common operational tools for network security and reliability. While its focus remains on these activities, it also now includes the assessment of the future progress of the functionality of the European gas markets and looking at 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 "Market Network Codes and Guidelines and Market Development" to "ENTSOG Management Support" below.
- The key deliverables are outlined in section "ENTSOG Deliverables".
- The status of the activities and deliverables which had been planned and included in the AWP2021 are provided in section"Work Programme status".

MARKET NETWORK CODES AND GUIDELINES AND MARKET DEVELOPMENT

MARKET NETWORK CODES AND GUIDELINES

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 Network Code development process begins when the (European Commission) EC submits a request for a Framework Guideline to the Agency for the Cooperation of Energy Regulators (ACER). Next, ENTSOG transforms the ACER Framework Guideline into a Network Code while conducting extensive public consultations.

Once approved through the European comitology procedure, a Network Code becomes legally binding for all Member States. The EC proposed not to include new items on the annual priority list for 2022 for the development of harmonised gas rules but to focus on the full and correct implementation of the existing market rules in all Member States. ENTSOG continues to monitor and analyse the implementation of the Network Codes and the EC Guidelines and their effect.

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 GLs.[1)]
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 still on going.[2)]
BAL NC – Network Code on Gas Balancing of Transmission Networks	Published 26 March 2014 as Regulation (EU) No 312/2014, implementation still ongoing.[3)]
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.
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.[4)]

During 2021, the Market Codes ENTSOG team, together with the Market Codes Working Group (MC WG), worked on the following topics to fulfil ENTSOG's monitoring obligation: publication of the Implementation and Effect monitoring reports for CAM NC and CMP GLs and development of questionnaires for the analysis and preparation of Implementation and Effect monitoring reports for BAL NC and TAR NC, with publication envisaged in the second quarter of 2022.

Additionally, the MC WG was active in the following workstreams: developing solutions to issues raised through the jointly managed ACER and ENTSOG Functionality 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 2022/23 published in January 2022; support the Interoperability WG with updates on the Business Requirement Specifications (BRS) for BAL, CAM NC and CMP GLs and support the Market Development WG and other Working Groups on developing policy solutions to enable the uptake of renewable and decarbonised gas market.

MARKET DEVELOPMENT

During 2021, the Market Development ENTSOG team and Market Development Working Group (MD WG) focused primarily on the Gas Market Decarbonisation and Hydrogen Package which will set the course for the future of the European gas infrastructure. MD WG worked on proposals for several consultations from EC, all being part of the 'Fit for 55' package. Furthermore, input was provided by ENTSOG to the EC Energy System Integration and Hydrogen Strategies.

During the year, the Market Development team in coordination with the Guarantee of Origin Kernel Group (GO KG) further actively participated in the CEN process to revise the standard on Guarantee of Origin (GO). ENTSOG, with other associations, under the banner of the GO Prime Movers' group, have made recommendations during the Madrid Forum on the 29 – 30 April on the implementation of the revised EU-ETS Monitoring and Reporting Regulation and on rules to develop an EU wide GO market for both renewable and low carbon gases.

1) See the latest findings in the CMP GL Implementation & Effect Monitoring Report 2021 in Chapter 2.

2) See the latest findings in the CAM NC Implementation & Effect Monitoring Report 2021 in Chapter 3.

3) See latest findings of the BAL NC Implementation & Effect Monitoring Report 2021 in Chapter 3.3.1

4) Out of the 50 TSOs from 28 countries (including two non-Member States) covered in ENTSOG's Tariff Monitoring report on 2021 data, 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

Picture courtesy of Net4Gas

SYSTEM DEVELOPMENT SCENARIOS AND INFRASTRUCTURE

Throughout 2021, ENTSOG continued with activities related to scenario development and TYNDP processes, assessing the infrastructure against the European energy policies and identifying infrastructure gaps and mitigation of these gaps by current and planned infrastructure projects. Work also progressed with ENTSO-E on the Interlinked Model work. In April 2021, together with ENTSO-E and following the outcome of the public consultation, ENTSOG adopted and published the final TYNDP 2022 Storyline Report. In October 2021, ENTSOG published the draft TYNDP 2022 Scenario Report for public consultation feedback and ACER's Opinion.

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.

In October 2021, ENTSOG launched the project data collection for TYNDP 2022.

In December 2021, the European Commission published its proposal for the revision of Regulation 347/2013 (TEN-E) – ENTSOG had already been proactive in its tasks throughout 2021, in anticipating the possible changes.

SECURITY OF SUPPLY AND REGIONAL COOPERATION

In 2021, in accordance with the provisions of the Regulation 2017/1938 of the European Parliament and of the Council concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010, ENTSOG provided the first full scope revision of the Union-wide simulation of gas supply and infrastructure disruptions scenarios in cooperation with the Gas Coordination Group.

ENTSOG and EU TSOs also continued to ensure security of gas supply and preparedness for possible crises or emergency situations. With respect to the Covid-19 pandemic, TSOs took relevant measures to avoid any potential negative impact on system operations and business continuity

ENTSOG also supported the EC and the Gas Coordination Group (GCG) by providing operational and gas system relevant expertise during the pandemic, as well as in the implementation of the Security of Supply Regulation, especially in the preparation and implementation of solidarity principles, regional emergency, and preventive action plans.

Since July 2021, ENTSOG was observing 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. On 1 October 2021, EU gas storage facilities had a filling level of 75 %, the lowest value of the last ten years. TSOs and ENTSOG were monitoring the situation of storage facilities, flows to Interconnection Points, and LNG terminals, on a daily basis. ENTSOG's observations were also discussed with the EC and with the GCG.

The Summer Supply Outlook 2021 and Summer 2020 Review, Winter Supply Outlook 2021 – 2022 and Winter Supply 2020 – 2021 Review reports – which give an overview of the ability of the European network, storages and potential gas supply to meet market demand – were published in 2021.


Picture courtesy of Ontras

SYSTEM OPERATION INTEROPERABILITY AND TRANSPARENCY REQUIREMENTS

The Interoperability team continued to work in 2021 on one particular issue reported on the Functionality (FUNC) Platform, relating to the potential extension of the Business Requirements Specifications (BRS) by adding information about balancing processes.

ENTSOG also continued cooperating with relevant stakeholders in the field of gas quality and hydrogen handling via a dedicated prime movers' group which was established in 2020 together with the DSO organisations Eurogas, GEODE, CEDEC, and GD4S. As part of this prime movers' group, ENTSOG facilitated the workshops of the two subgroups. Subgroup 1 was tasked with developing proposals for the normative framework needed to implement the Wobbe Index 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.[1)]

In 2021, ENTSOG produced the Annex 2 "Detailed assessment of the Interconnection Agreements' in compliance with the Network Code on Interoperability and Data Exchange Rules (INT NC) (Second list of IPs for 2020)" for the third INT NC Implementation Monitoring Report (published 2019). Following a special request from ACER, a detailed analysis of Interconnection Agreements' (IAs) current status for the second group of selected TSOs was undertaken.

ENTSOG supported activities relating to the European Commission's initiative on Methane Emissions Reduction, one of the urgent topics of the EU Green Deal agenda.

The ENTSOG Transparency Team and the Transparency Working Group undertook work in 2021 on improving 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.

1) Final report: DECARBONISING THE GAS VALUE CHAIN CHALLENGES, SOLUTIONS AND RECOMMENDATIONS

STRATEGY, POLICY AND COMMUNICATION

The G2021 Task Force, facilitated the coordination of ENTSOG's activities on the European Green Deal related to re-opening of the TEN-E Regulation, analysing the 'Fit for 55' Package focusing on relevant legislative files impacting the grid infrastructure, and coordinated the preparation for the then upcoming Hydrogen and Decarbonised Gas Market package. The Task Force (TF), in conjunction with the Market Development WG and other ENTSOG business areas, specifically worked on analysing and developing positions for the revision of the Trans-European Networks for Energy (TEN-E) Regulation, the revision of the Renewable Energy Directive (RED III) and the Implementing Act on voluntary schemes, as well as monitoring other relevant legislative files from 'Fit for 55' and the developments on Delegated Acts under the Taxonomy Regulation.

In 2021, the TF, in cooperation with relevant WGs, monitored these EU policy developments and provided regular updates to the ENTSOG Members, GA and ENTSOG Board. This work is to facilitate contributions to the then-upcoming package of Hydrogen and Decarbonised Gas markets legislation.

In 2021, the TF was involved in setting priorities for engagement with stakeholders in bilateral and multilateral fora. The TF was informed and regularly updated on ENTSOG activities in newly created 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 addition, the TF was informed on ENTSOG activities in facilitating the Roundtable on Clean Hydrogen Transmission and Distribution under the European Clean Hydrogen Alliance, which worked on providing input to two main deliverables in 2021: Project Investment pipeline and a Barriers and mitigation measures report.

ENTSOG **MANAGEMENT SUPPORT**

In 2021, ENTSOG's Management Support team continued working 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 2021, they provided IT support to ENTSOG stakeholders in the use of ENTSOG's data and systems.

ENTSOG **DELIVERABLES 2021**

JANUARY

11 // ENTSOG AND GIE – SYSTEM DEVELOPMENT MAP 2019 – 2020

12 // PROJECT-SPECIFIC CBA (PS-CBA) PACKAGE OF DOCUMENTS FOR DRAFT TYNDP 2020

21 // CAM NETWORK CODE 'CAPACITY AUCTION CALENDAR' FOR 2021/2022

MAY

04 // ANNUAL REPORT 2020

04 // TWO IMPELMENTATION MONITORING REPORTS FOR CAM NC AND CMP GLS

18 // ACER AND ENTSOG – SOLUTION TO ISSUE OF PRODOC REQUIREMENT ON GAS NETWORK CODES FUNCTIONALITY PLATFORM

FEBRUARY

10 // ACER AND ENTSOG – JOINT POLICY PAPER WITH RECOMMENDATIONS TO MITIGATE MISCONDUCT IN EU GAS BALANCING MARKETS

APRIL

13 // SUMMER SUPPLY OUTLOOK 2021 AND SUMMER SUPPLY REVIEW 2020

26 // ENTSOG AND ENTSO-E: THE FINAL TYNDP 2022 STORYLINE REPORT

MAY

25 // ENTSOG AND ENTSO-E – PROGRESS REPORT FOR THE INTERLINKED MODEL INVESTIGATION, SCREENING AND DUAL ASSESSMENT

27 // ENTSOG, GIE AND HYDROGEN EUROPE – 'HOW TO TRANSPORT AND STORE HYDROGEN? FACTS AND FIGURES'

SEPTEMBER

09 // EU-WIDE VISUALISATION PLATFORM FOR LOW-CARBON AND RENEWABLE HYDROGEN PROJECTS

17 // PRACTICAL IMPLEMENTATION DOCUMENT (PID) FOR TYNDP 2022

OCTOBER

07 // ENTSOG AND ENTSO-E – JOINT DRAFT SCENARIOS FOR TYNDP 2022 AND OPEN PUBLIC CONSULTATION

11 // PROJECT COLLECTION SUPPORTING DOCUMENTS FOR TYNDP 2022

DECEMBER

9 // SECOND INCREMENTAL CAPACITY REPORT

20 // ANNUAL WORK PROGRAMME 2022

JULY

13 // FINAL TEN-YEAR NETWORK DEVELOPMENT PLAN (TYNDP) 2020

19 // ENTSOG AND ACER – GAS NETWORK CODES FUNCTIONALITY PLATFORM: A PUBLIC CONSULTATION SUMMARY AND AN ISSUE SOLUTION

OCTOBER

12 // WINTER SUPPLY OUTLOOK 2021/22 AND WINTER SUPPLY REVIEW 2020/21

28 // ENTSOG, GIE, IOGP, CONCAWE – RE-STREAM STUDY ON TRANSPORT OF H_2 & CO_2 IN EUROPEAN GAS AND OIL INFRASTRUCTURE

NOVEMBER

05 // TRANSMISSION CAPACITY MAP 2021

30 // REVISION OF THE UNION-WIDE SIMULATION OF GAS SUPPLY AND INFRASTRUCTURE DISRUPTION SCENARIOS REPORT

WORK PROGRAMME STATUS

These tables provide an overview of the activities in ENTSOG's four main business areas – Market, System Development, System Operation and Strategy, Policy and Communication (SPC). The listed tasks originate (and are supplemented in some cases) from the Annual Work Programme 2021.

MARKET

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
MARKET NETWORKS CODES AND GUIDELINES				
Provide opinion and/or responses on issued reports, public consultations and papers.	Support members and stakeholders	Ongoing through 2021	TSOs	Ongoing
BALANCING				
Support ENTSOG members with the implementation of the BAL NC	Successful implementation of the BAL NC provisions by ENTSOG members	Ongoing throughout 2021	TSOs	Ongoing
Develop the BAL NC implementation and effect monitoring reports covering gas years 2019/2020 and 2020/2021	Monitor the implementation and effects of the BAL NC	To be published on ENTSOG website in Q2 2022.	TSOs and ACER	Ongoing
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 2021	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on balancing related issues and respond to consultations and queries from stakeholders	Develop sound 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 2021	TSOs, stakeholders, ACER	Ongoing
Participation in external events on balancing	Present ENTSOG's positions and results regarding balancing towards external stakeholders	Ongoing throughout 2021	TSOs, stakeholders, ACER	Ongoing
TARIFFS				
Support ENTSOG members with the implementation of the TAR NC	Successful implementation of the TAR NC provisions by ENTSOG members	Ongoing throughout 2021	TSOs	Ongoing
Develop the TAR NC implementation and effect monitoring report as of 1 October 2021	Monitor the implementation and effects of the TAR NC	To be published on ENTSOG website in Q2 2022.	TSOs and ACER	Ongoing
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 2021	TSOs, stakeholders	Ongoing

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
Develop ENTSOG positions on tariff related issues and respond to consultations and queries from stakeholders	Develop sound 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 2021	TSOs, stakeholders, ACER	Ongoing
Participation in external events on tariffs	Present ENTSOG's positions and results regarding tariffs towards external stakeholders	Ongoing throughout 2021	TSOs, stakeholders, ACER	Ongoing
CAPACITY				
Support ENTSOG members with the implementation of the CAM NC	Successful implementation of the CAM NC provisions by ENTSOG members	Ongoing throughout 2021	TSOs	Ongoing
Publish the CMP GL and CAM NC implementation and effect monitoring reports covering gas years 2018/2019 and 2019/2020	Monitor the implementation and effects of the CAM NC and CMP GL	Publication on ENTSOG website in May 2021.	TSOs	Completed
Development of CAM NC auction calendar 2022/2023	Publish the auction calendar for 2022/2023	Publication on 4 January 2022	TSOs	Completed
Publish the second incremental capacity process report	Monitor the incremental capacity process	Publication on ENTSOG website in December 2021	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 2021	TSOs, stakeholders	Ongoing
Develop ENTSOG positions on capacity related issues and respond to consultations and queries from stakeholders	Develop sound 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 2021	TSOs, stakeholders, ACER	Ongoing
Participation in external events on capacity	Present ENTSOG's positions and results regarding capacity towards external stakeholders	Ongoing throughout 2021	TSOs, stakeholders, ACER	Ongoing

Activity	Goal	Deliverables & Completion Date	Consultation with	Status / Comments
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 DEVELOPMENT				
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	Ongoing throughout 2021	TSOs, EC, stakeholders	Ongoing
Develop positions and recommendations that will facilitate the use of power-to-gas technologies and the use of renewable gases in transport, heating and industry	Ensure that stakeholders understand how the gas grids can contribute to decarbonisation and the energy transition in different sectors of the EU economy	Ongoing throughout 2021	TSOs, EC, stakeholders	Ongoing
Provide support to ENTSOG Members regarding the development of any new TSO products and services which can contribute towards meeting decarbonisation and EU climate neutrality targets	Develop positions on the measures that are needed at the national levels to facilitate deployment of the new 'climate oriented' TSO products and services	Ad-hoc work stream (upon requests of TSOs)	TSOs, stakeholders	Ongoing

SYSTEM DEVELOPMENT

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
TYNDP 2020	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.	Publication of project-specific CBA (PS-CBA) package of documents for draft TYNDP 2020 and 5th PCI selection process (completed) Public consultation (completed) Formal submission for the opinion of ACER (completed) Final TYNDP publication taking into account stakeholders and ACER feedback (completed)	Stakeholders, ACER Public consultation	Completed
TYNDP 2022	Inclusion of expected new TEN-E provision in TYNDP Practical Implementation Document for project collection. 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.	TYNDP 2022 Practical Implementation Document (completed). TYNDP 2022 project collection (completed)	EC and ACER consulted on TYNDP 2022 Practical Implementation Document. 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 process ongoing.
Support to Regional Groups	Provide technical expertise during the 5th PCI selection process.	Contribution to the EC/ACER/ ENTSOs Cooperation Platform for the 5th PCI selection process (completed) Prepare Project Fiches for the 5th PCI selection process (completed)	EC ACER TSOs	Support to 5th PCI selection process, started in November 2020. Project-Specific results and related project fiches were published in January 2021.
ENTSO-E/ ENTSOG consistent and Interlinked Model	ENTSOG and ENTSO-E to implement a project screening methodology, taking into account the outcomes of the Artelys Focus Study as well as to develop a dual assessment methodology (ongoing)	Testing of screening methodology and dual assessment (completed) Publication of a Progress Report (completed)	Prime Movers. EC ACER TSOs Copenhagen Infrastructure Forum Madrid gas Forum	A Progress Report was published in May 2021. Application of the findings of the Progress Report to subsequent TYNDPs is 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 to be published in Spring 2022
Union-wide simulation of supply and infrastructure disruption scenarios	Regulation 2017/1936 provides that every four years, ENTSOG carries out a Union wide simulation of supply and infrastructure disruption scenarios, which represents a Union wide risk assessment, whose results should be taken into account by competent authorities for the update of their risk assessments, preventive action plans and emergency plans.	Defining the scenarios in consultation with the Gas Coordination Group; (completed) Collecting the necessary data from the competent authorities; (completed) Performing the risk assessment, editing the report gathering the results and submitting this report to the relevant parties. (completed) The SoS simulation report will be publication in after approval by the Gas Coordination Group. (completed)	Gas Coordination Group	Completed
Summer Outlook 2021	Provide view on injection period ahead	Publication	TSOs ACER	Completed
Summer Review 2020	Analyse previous summer	Publication	TSOs	Completed
Winter Outlook 2021/22	Provide view on supply-and-demand balance for winter ahead	Publication	TSOs ACER	Completed
Winter Review 2020/21	Analyse previous winter	Publication	TSOs	Completed
System Development Map (periodical)	Provide project map and graphic representation of supply-and-demand for past year	Publication	TSOs	Approved in December 2021 and published in January 2022

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 94 %. The German Market merger has been a large project in 2021.
Continuous platform improvements	Ensure user friendliness and usability of the published data	In 2021, development work focused on IIP registration and moving to the cloud.	Gas TSOs and TP Users	Ongoing
Facilitate required data collection processes	Ensure timely and effective data deliveries	The data needed for ACER's monitoring obligations was delivered on 12 February 2021.	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 2021, including significant discussions on data reported via REMIT Table 4 by the TSOs and Booking Platforms. The updated ACER requirements for REMIT implementation have been considered and implemented, if relevant.
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 since 2020. Phase two testing has occurred in 2021 and is still ongoing.
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	Ongoing.
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	Ongoing

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
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,	Ongoing. In 2021, significant attention has been placed on market mergers,
Stakeholder satisfaction survey on the TP	Ensure a transparent and user-friendly channel for providing feedback on using the TP	In 2021, only 2 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 600 questions from TP users were handled by ENTSOG and TSO staff in 2021.
Public workshop on Transparency	Ensure transparent dialog with stakeholders	No workshop was held in 2021.	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 2021, TSOs engaged in many dialogues on the methodology for correct reporting of REMIT Table 4 data.
INTEROPERABILITY AND DATA EXCHANGE				
Follow up on INT NC Implementation Monitoring	Monitor the implementation and functioning of the INT NC	An Annex 2 for the 3rd Implementation Monitoring Report with a detailed analysis of IAs' compliance with the INT NC for a selected group of TSOs Published in the second half of 2021	TSOs, ACER	Next full Implementation Monitoring Report is planned for 2022
Continue discussion on gas quality and H2 handling	Develop understanding of how H2 might be introduced in the gas grids	Ongoing	TSOs involvement	Set out ENTSOG's current understanding of the opportunities and challenges on increased penetration of hydrogen in 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 discussion on gas quality with industry associations	Cooperate with gas sector regarding gas quality standard and regulation	Ongoing	Stakeholders from the whole gas value chain participate in the process	Marcogaz, EASEE-gas and other industry associations in this field.

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
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	Ongoing	Stakeholders from the whole gas value chain participate in the process	Eventually reach a consensus on the main principles for handling gas quality and hydrogen Joint initiative facilitated by ENTSOG with DSO associations CEDEC, Eurogas, GEODE, and GD4S
Public workshop of prime movers' group on GQ&H2 handling	Make available the findings of the prime movers' groups work to the public	Finished	All public could participate	Once per year
Facilitating WI framework discussion	Reliable WI framework is a must for the proper implementation of the CEN SFGas GQS proposal in the CEN gas quality standard EN 16726	Finished	Stakeholders from the whole gas value chain participate in the process	ENTSOG was facilitating the discussion and development of recommendations to facilitate the setting of basic rules and procedures needed for the implementation of the CEN WI exit classification system proposal from CEN SFGas GQS TF1/CAG proposal on Wobbe index
Smart Grid solution & digitalisation for Gas Quality and H2 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 data exchange	Manage and review CNOTs	Update the CDES table with new recommended data exchange solutions for various information flows	ACER, TSOs, SSOs, Market Area Managers, Capacity Booking Platform Operators, and network users	ACER and ENTSOG have published the solution for the reported FUNC issue on this topic and provided an amendment of the Common Data Exchange Solution Table as part of the CNOTs considering the input provided by the market participants via a public consultation
CNOT update: CAM/CMP BRS update	Update the BRS CAM CMP to reflect edig@s® changes	Add additional parameters to indicate the changes coming from the new edig@s® version	ACER, TSOs, SSOs, Market Area Managers	CAM/CMP BRS updated and on ENTSOG CNOTs webpage for public consultation

Activity	Goal	Deliverables & Completion Date	Consultation with	Status/ Comments
CNOT update: Nominations& Matching BRS update	Update the BRS for Nominations & Matching to reflect edig@s® changes	Add additional parameters to indicate the changes coming from the new edig@s® version	ACER, TSOs, SSOs, Market Area Managers	Nominations & Matching BRS updated and on ENTSOG CNOTs webpage for public consultation
Follow up on data exchange	Organise Data Exchange and cyber security workshop	Data Exchange workshop 17 November 2021	ACER, GIE, EASEE-gas	A combined Data exchange and cyber security workshop was held in November 2021 in collaboration with ENTSOG, EASEE-gas and GIE
Follow up of EASEE-gas developments	Collaborate on CNOT issues and advise on data exchange	Participate and contribute to the MWDWG & TSWG. Review the current situation and review areas of closer collaboration	EASEE-gas 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
Continuation of the dialogue with stakeholder on European and national level on security algorithms for AS4	Establish a common definition of secure definition security algorithms for AS4	Milestone 1. Crypto study is delayed until Q1 2022	BSI, BDEW, EASEE-gas, CEF	Three further meetings were held in the first half of 2021 to discuss this matter. More progress needed.
Review Data exchange readiness for new gases	Initiate a dialogue with relevant stakeholders	ENTSOG (ITC KG) has started work drafting an analysis on the suitability of current CNOTs and edig@s® solutions in the context of new gases and will assess if they are fit for purpose.	EASEE-gas, MWDWG (edig@s®), TSWG, GIE	A draft analysis template has been created and preliminary input received from stakeholders. Work will continue in 2022
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 the possible amendment of EIC functions & definitions
Cooperation with GIE and Marcogaz on methane emissions reduction strategy	Dissemination of information on the progress of the EC's methane emissions reduction strategy	Ongoing	GIE, Marcogaz, GERG	Ongoing
Cooperation with CAMEO project and with the German Aerospace Center on requirements for methane emissions monitoring and measurement	Knowledge sharing	Organisation of joined webinars, follow up of project developments, expert support, and discussion of requirements for monitoring and measuring of methane emissions	CAMEO, German Aerospace Centre, GIE, Marcogaz, GERG	Ongoing

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
	Analyse and develop positions on revision of TEN-E Regulation	Q1–Q4	TSOs	Completed
	Analyse and develop positions on revision of Renewable Energy Directive and Implementing Act on voluntary schemes	Q1–Q4	TSOs	Ongoing
	Analyse and develop positions on the then-upcoming 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 2021	TSOs	Ongoing
	Map the priorities of the European Commission and European Parliament	Ongoing throughout 2021	Ongoing throughout 2021	Ongoing throughout 2021
External Engagement	Engage in the European Clean Hydrogen Alliance's Roundtable on Clean Hydrogen Transmission & Distribution	Q1-Q4 2021	TSOs	Established and ongoing
	Engage in the Advisory Panel for Future Gas Grids	Q1-Q4	TSOs	Established and ongoing
Communication proposals	Provide recommendations on ENTSOG's priorities in dialogue with the European Commission, Parliament and ACER.	Ongoing throughout 2021	TSOs	Ongoing
	Propose external and internal communication.	Ongoing throughout 2021	TSOs	Ongoing
	Engage in dialogue with industry, gas and other key EU stakeholders.	Ongoing throughout 2021	TSOs	Ongoing
Information sharing	Provide information material to TSOs in their discussions on gas regulatory framework held at national level.	Throughout the whole 2021	TSOs	Ongoing
	Report to Members on all ENTSOG bilateral, multilateral and public engagement	Throughout the whole 2021	TSOs	Ongoing

Picture courtesy of Gasum

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MARKET NETWORK CODES AND GUIDELINES AND MARKET DEVELOPMENT

ENTSOG's Market Team is responsible for providing expertise, monitoring and development of the market-related Network Codes that promote the internal European gas market. The Market Area has also been involved 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 also 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.

The Market team also 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 2021 was undertaken to envision what innovative TSOs solutions 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.

WORK STRUCTURE

The work within the Market Area is organised into two main areas – the Market Codes Working Group (MC WG) and the Market Development Working Group (MD WG).

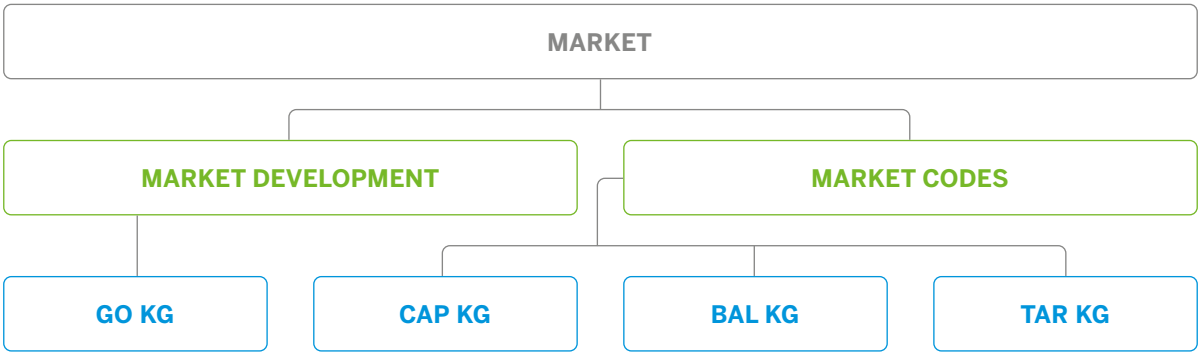


Figure 2: Market Code and Market Development Working Group and associated KGs

MARKET CODES

The MC 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 with these areas.

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

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

The work areas addressed in the 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


Picture courtesy of Gasgrid

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 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).

In 2021, the TAR KG was convened several times, in particular to start preparations for the 3rd TAR NC Implementation and Effect monitoring report, whose publication is scheduled for the second quarter of 2022.

MARKET DEVELOPMENT

The MD WG is responsible for developing ENTSOG's proposals for the future gas market design (including hydrogen), so that these proposals can be fed into work undertaken by the EC and used to discuss future developments with stakeholders. Going forward, the MD WG will also contribute with inputs and proposals to the gas-related topics of the new regulatory packages, developed to achieve the ECs Green Deal's objectives.

The GO Kernel Group deals most specifically with Guarantees of Origin and works with other associations within a so-called "Prime Movers" Group.

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

ACTIVITIES

MARKET CODES

In 2021, the MC WG in collaboration with the MD WG and the other Working Groups contributed to develop policy options to enable the uptake of renewable and decarbonised gas markets.

The MC Brussels team was 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 2021 for the gas year 2022/2023 with publication date in January 2022.

In November 2020, ENTSOG started the data collection and the drafting of the Implementation and Effect Monitoring Reports for CAM NC and CMP GL which were published in May 2021.

ENTSOG also continued the monitoring of the 2019 – 2021 incremental capacity process and published the second incremental capacity process report in December 2021.

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 2021 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 to be published in Q2 2022.

In addition, the BAL KG, in cooperation with the INT WG and related TFs, was involved in developing solution on one Functionality issue published on the joint ENTSOG/ACER Functionality Platform related to the implementation of the BAL NC.

TARIFF KERNEL GROUP

In 2021, 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 to be published in Q2 2022.

The TAR KG had been involved in the drafting of ENTSOG's response to ACER's Public Consultation on multipliers in late 2020. This consultation was about the option for ACER to recommend a reduction of the cap of day-ahead and within-day multipliers from 3.0 to 1.5 by April 2021, as set out in the TAR NC. ENTSOG's response advocated not to reduce that cap. In 2021, following this consultation, ACER declared that NRAs 'should substantiate their decisions regarding daily and within-day multipliers that lie above the upper threshold of Article 13 (1) (b) of the NC TAR.'[1)] The Agency decided not to recommend a reduction of these multipliers.

In 2021, the TAR Brussels team also discussed tariff issues with stakeholders such as ACER and the Florence School of Regulation (FSR).

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.

1) ACER 2021, Recommendation No 01/2021

Picture courtesy of REN

Issue poster	Description	Status
Equinor ASA	BRS for balancing	In progress
EFET	Greater flexibility to book firm capacity at IPs	In progress
EASEE-gas	Dutch TSO requirement of message PRODOC is unnecessary and contrary to BAL NC	Closed
Energy Community Secretariat	Amending the EU legislation	Closed

The Gas Network Codes Functionality Platform (**www.gasncfunc.eu**) 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 2021, one new issue was posted on the Functionality Platform and two issues were closed. The table below outlines the status of all the issues which have been discussed, solved or posted on the platform during 2021.

MARKET DEVELOPMENT

In 2021, the MD WG continued to evaluate relevant policy and legislative initiatives in the EU gas sector and examined innovative TSO solutions which could facilitate the energy transition whilst maintaining security of supply and promoting competition.

The MD WG's primary focus and workload throughout 2021 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 MD WG provided input to the ITRE reports on Energy System Integration and on Hydrogen strategies, participated in the Pentalateral Energy Forum (10 March), in a workshop from DG ENER and Trinomics on the Gas Market Decarbonisation and Hydrogen Package (18 May) and responded to consultations (March and June) from the Commission on this topic. Furthermore, MD WG responded to consultations from the Commission such as the ones related to the Gas Market Decarbonisation and Hydrogen package, and the revisions of the Energy Efficiency Directive (EED), the EU-Emission Allowance Trading System Directive (EU-ETS) and the Renewable Energy Directive (RED II).

Regarding the climate value, the Guarantees of Origin (GO) Prime Movers group made recommendations during the Madrid Forum on the 29 – 30 April on the implementation of the revised EU-ETS Monitoring and Reporting Regulation and on rules to develop an EU wide GO market for both renewable and low carbon gases. The Market Development team also participated in a workshop from DG ENER on RED II (22 March). During the year, the Market Development team in coordination with the GO KG further engaged in the CEN process to revise the standard on GO.

MD WG provided updates to the Liaison Group, worked with MC WG, INT WG, LAG and other relevant groups and liaised with the G2021 TF.

MARKET NETWORK CODES IMPLEMENTATION AND EFFECT MONITORING

For the Market Area, 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 when it comes to how often the reports have to be published and when. In 2021, ENTSOG produced the BAL NC and TAR NC monitoring reports as specifically required by the Network Code text. Additionally, When the latest CAM NC implementation monitoring report was published, the incremental capacity process for the period 2019 – 2021 was still ongoing. The implementation of the provisions on Chapter V of the CAM NC has therefore been assessed at a later stage and the results of the incremental capacity process were published in a separate report later in 2021. Further details are provided below.

BAL NC IMPLEMENTATION MONITORING

In October 2021, ENTSOG launched the 2021 implementation monitoring data collection in and started drafting the firth BAL NC implementation monitoring report, with publication in Q2 2022.

The report reflects the status of the BAL NC implementation on 1 October 2021 and covers the most recent updates implemented during Gas Years 2019/20 and 2020/21. The report evaluates the BAL NC implementation status in 29 balancing zones in 27 countries[1] (AT, BE, BG, CZ, DE, DK, EE, ES, FI, FR, GR, HU, HR, IE, IT, LU[2], LT, LV, NL, PL, PT, SE, SI, SK, RO, UK-GB and UK-NI[3]). Cyprus does not have TSOs, therefore it was not contacted to take part in this monitoring report. Malta still holds a derogation according to Article 49 (6) of the Gas Directive 73/2009 and the future network of the prospective TSO Interconnect Malta is not yet commissioned. It is therefore not included in this report.

MAIN FINDINGS OF THE BAL NC IMPLEMENTATION MONITORING REPORT 2021

The Implementation Monitoring Report shows that progress has been made towards the full implementation of BAL NC provisions in comparison to the previous monitoring report.

Compared to the previous Implementation Monitoring Report 2019, Bulgaria terminated the use of interim measures, while interim measures are still in place in Ireland, Greece, Slovakia and UK-Northern Ireland. The main reason indicated by these countries to implement interim measures is because of the absence of sufficient liquidity of the short-term wholesale gas market. In Ireland existing tolerances are needed to support the development of renewable gas injection. The interim measures that remain in place in Greece, Slovakia and UK-Northern Ireland are planned to be removed as soon as well functioning Trading Platforms are established and market liquidity is developed.

New balancing zone mergers have been accomplished throughout years 2020 and 2021 and future balancing zone mergers are under consideration. Finland, Estonia and Latvia created a single-entry tariffs system, with an Estonian-Latvian joint balancing zone as of 1 January 2020. In Finland, discussion is ongoing on establishing a common balancing zone with Baltic States (Estonia, Latvia and Lithuania). A decision on this regard has not yet been made and currently the TSOs in Finnish-Baltic region are looking for a solution for 4-country common tariff zone (currently Finland, Estonia and Latvia form a 3-country common tariff zone) which would allow to eliminate transmission cost between Lithuania, Latvia, Estonia and Finland.

In Bulgaria, the National and Transit balancing zones became effective as of 1 October 2021, while two German gas market hubs Gaspool (GPL) and Net Connect Germany (NCG) have been merged as of 1 October 2021 in the Trading Hub Europe (THE) joint market area.

On 1 October 2021, trading platforms have been established in almost all balancing zones, with exception of Greece, Slovakia and UK-Northern Ireland. In Portugal, the trading platform was established in March 2021, but the new rules enabling the TSO to perform balancing actions using STSPs entered into force as of 1 October. In Greece a trading platform will be estab-

1) The term "country" refers to member countries of the EU and UK.

2) Data for Luxembourg have been incorporated in the questionnaire submitted by the Belgian TSO (Fluxys) as Belgium and Luxembourg have the same balancing regime and belong to the same balancing zone.

3) UK-GB and UK-NI are counted separately as different TSOs operate in the two different balancing zones and the two areas are regulated by different NRAs. Whilst UK is no longer part of EU as of 1 January 2021, data available for UK-GB and UK-NI until 1 October 2021 have been considered in this report for completeness.

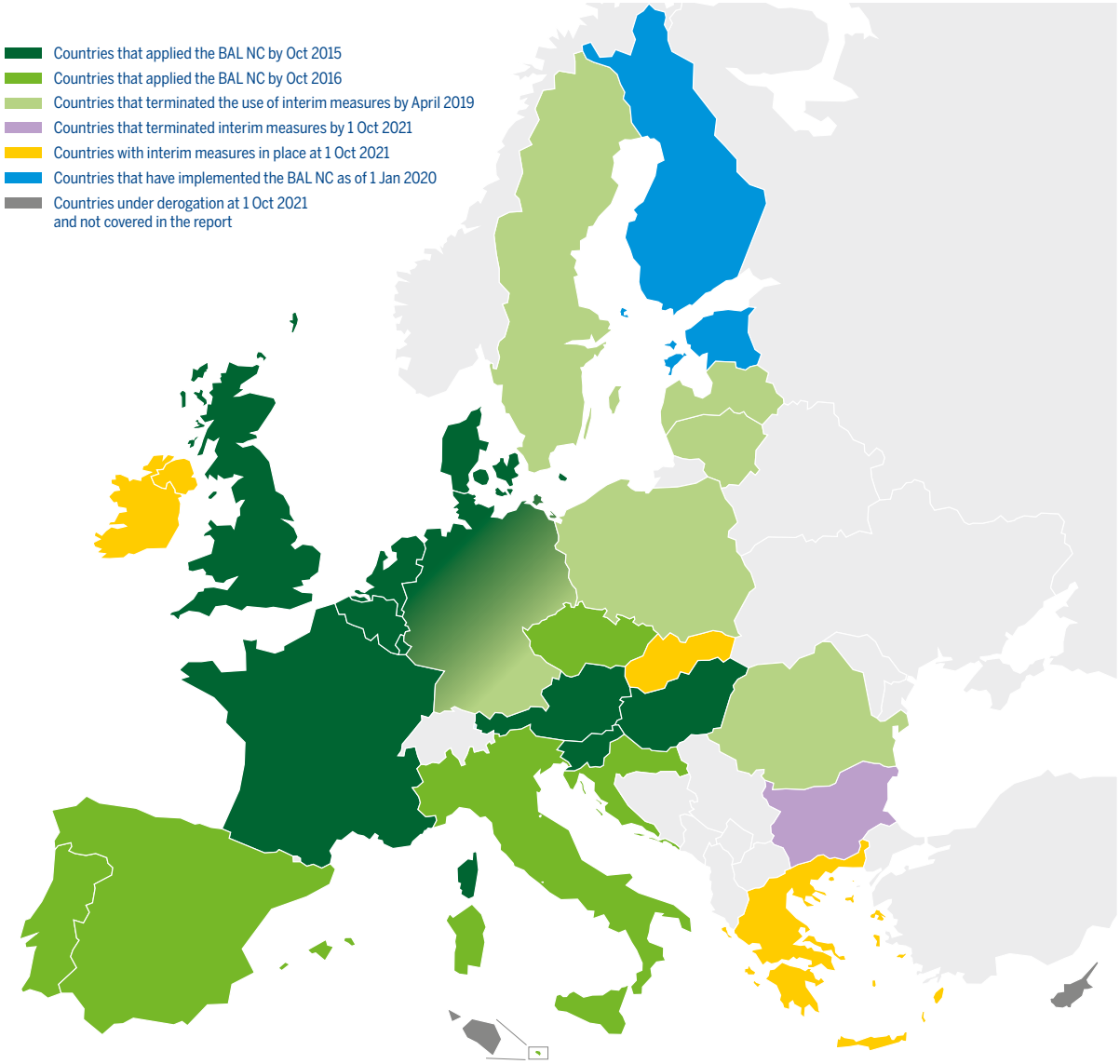


Figure 3: Implementation status of the BAL NC in EU Member States on 1 October 2021

lished during 2022. A balancing platform is in place in Greece and Slovakia, while in UK-Northern Ireland the TSOs rely solely on balancing services to undertake balancing actions. Balancing services are still procured in 9 countries (Germany, in both NCG and GP balancing zones, Greece, Lithuania, in Poland, in the H-gas balancing zone, Portugal, Slovenia[1)], Slovakia, UK-Great Britain and UN-Northern Ireland) when Short Term Standardised Products (STSPs) are not providing the necessary response to keep transmission network within its operational limits, in absence of a liquid trading platform or to respond to specific system needs.

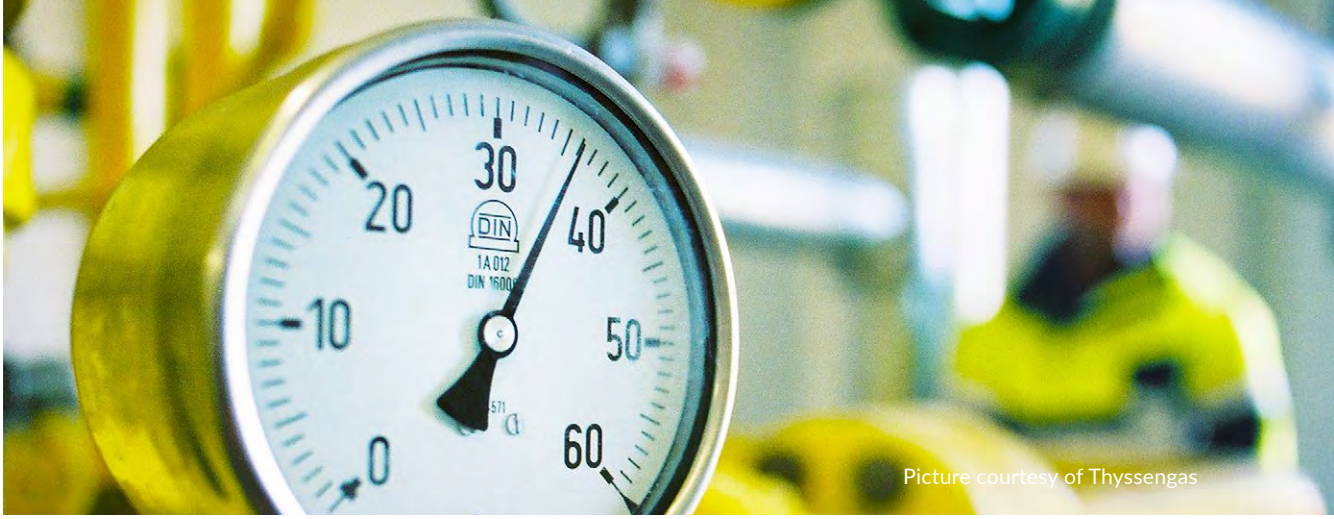
TSOs operating in 3 balancing zones (Finnish, Latvian-Estonian and Slovenian balancing zones) have reported some updates in relation to the application of nomination and renomination rules at points other than IPs.

Daily imbalance charges have been implemented by TSOs in all countries except Greece, Slovakia and UK-Northern Ireland, where interim imbalance charges apply. Bulgaria terminated the use of interim imbalance charges in January 2020, following the establishment of the trading platform.

Within Day Obligations (WDOs) are in place in Austria, Belgium (in both BeLux-H and BeLux-L balancing zones), Germany and the Netherlands. In Denmark and Sweden (Joint balancing zone) and Hungary, WDOs will be introduced as of 1 October 2022.

In almost all countries neutrality provisions have been implemented as per BAL NC, except for Austria, Greece and Lithuania, where neutrality charges are still under implementation, and in Denmark (applying to the overall Joint Balancing Zone DK/SE), where there is no separate balancing neutrality charge. TSOs

1) No balancing action was undertaken via balancing services in SI and UK-GB in GY 2020/21 based on the EM analysis.



Picture courtesy of Thyssengas

from 8 countries (France, Hungary, Italy, Netherlands, Poland, Romania, Spain, UK-Great Britain) have reported that cases of default payment by network users occurred within GY 2019/20 – 2020/21. In all cases, the credit risk measures implemented have been activated. However, for some TSOs the episode resulted in non-recoverable losses.

On 1 October 2021, almost all the countries had implemented the information provisions of BAL NC, with the exception of Greece and Romania, where implementation of non-daily metered provisions is still ongoing.

Compared to the previous Implementation Monitoring Report, Czech Republic, France, Netherlands and Portugal remained the only countries where a Linepack Flexibility Service (LFS) was offered on 1 October 2021. In Portugal, new rules for the offer of a LFS entered into force as of 1 October 2021.

Further changes in the national balancing rules have been reported as under implementation in 9 countries (Austria, Denmark and Sweden (Joint balancing zone), Greece, Hungary, Lithuania, Portugal, Slovakia, UK-Great Britain and UK-Northern Ireland).

In conclusion, the BAL NC Implementation Monitoring Report shows an advanced stage of implementation of harmonised balancing rules among EU balancing zones. However, further improvement is still needed to overcome the market illiquidity in certain gas hubs and to remove the interim measures in place.

Moreover, it is expected that further assessment of the existing balancing rules will be needed in order to enable market integration of low carbon and renewable gases.

BAL NC EFFECT MONITORING

The Effect Monitoring Report focusses on the effects of the BAL NC on EU balancing zones at the end of GY 2020/21 (until the reference date of 1 October 2021).

The data collected by means of a questionnaire have been analysed using five indicators to assess the effects of the BAL NC implementation across EU balancing zones:

- **Indicator BAL.1:** TSO balancing via Short Term Standardised Products (STSPs) vs. total TSO balancing actions
- **Indicator BAL.2.1:** TSO balancing volume as % of Market Volume
- **Indicator BAL.2.2:** TSO balancing volume as % of Domestic Volume
- **Indicator BAL.3 (previously named BAL.4):** Net NUs imbalances as % of Market Volume
- **Indicator BAL.4 (previously named BAL.5):** Average network users' cost of being balanced by the TSO

RESULTS OF THE EFFECT MONITORING INDICATORS

Indicator BAL.1 aims at assessing the extent to which TSO balancing actions are undertaken following the "merit order" (Art. 9 of BAL NC) and the **progressive use of short-term standardised products over other balancing tools**.

Based on the results of indicator BAL.1, in GY 2020/21 it is observed that during the past gas year most TSOs relied on Title products when undertaking balancing actions in their respective balancing zones, and an increased use of STSPs as tool for TSOs to undertake balancing actions, and a progressive reduction of balancing services particularly in balancing zones that terminated the use of interim measures since the last monitoring report.

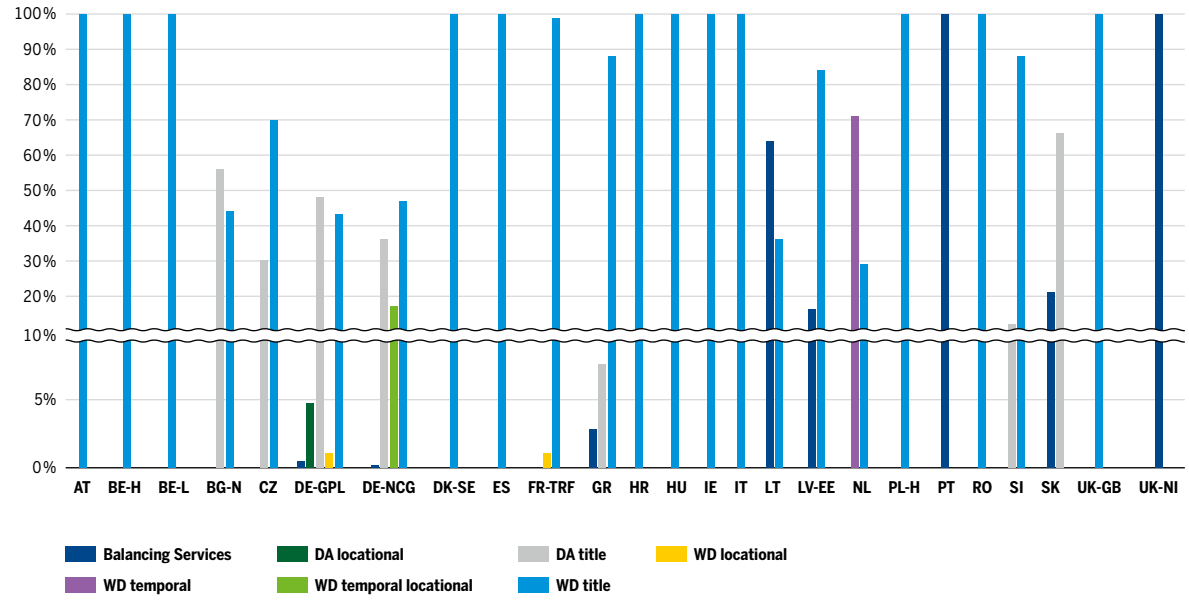


Figure 4: Indicator BAL.1 (%) for GY 2020/21

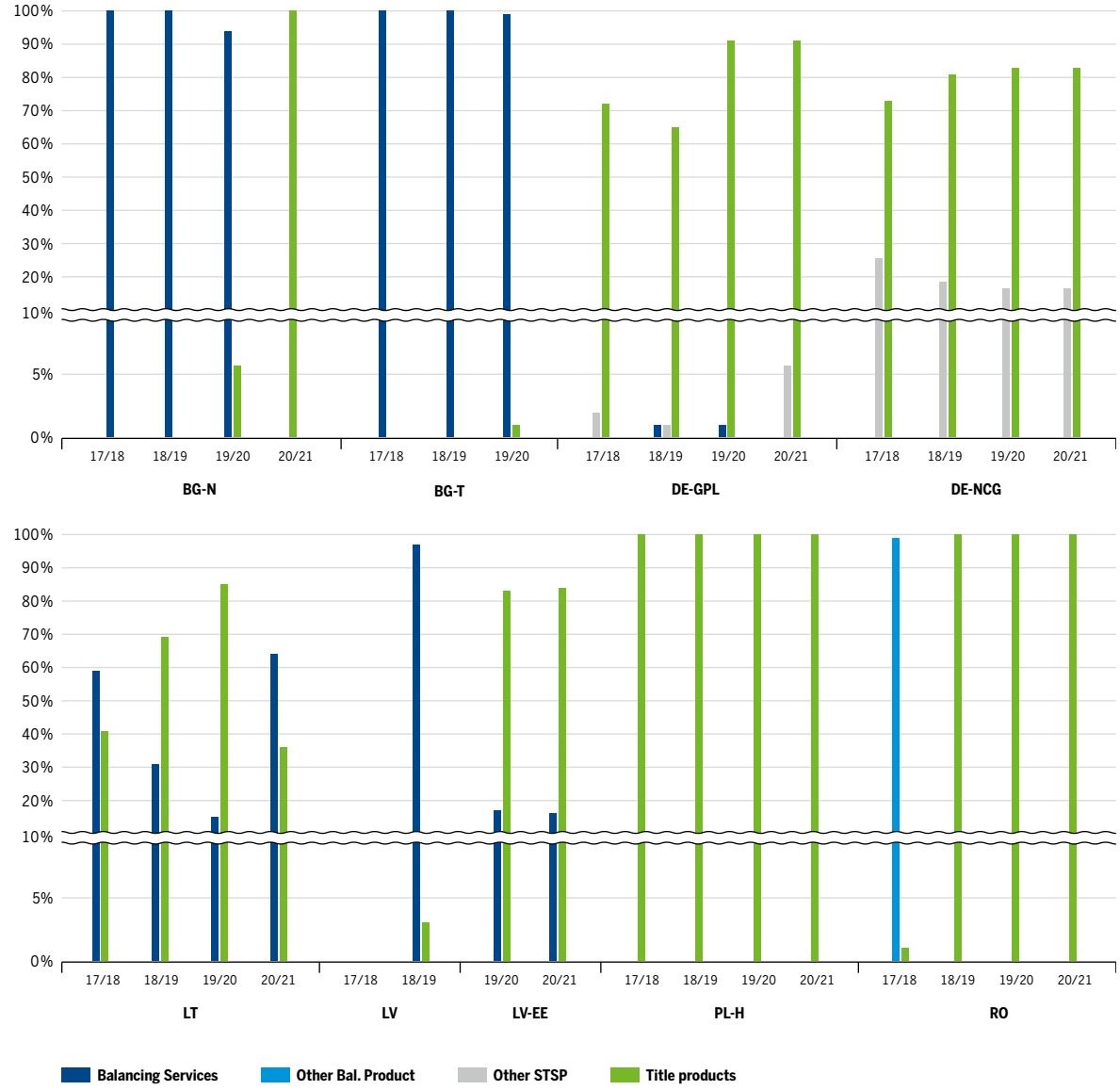


Figure 5: Countries that terminated the use of interim measures on 1 October 2021

Picture courtesy of Gas Connect Austria

Establishing a residual balancing role for the TSO while leaving the primary balancing responsibility to the network users is one of the key principles of the BAL NC. Therefore, **indicator BAL.2.1 assesses how much gas is traded by the TSO for balancing purposes compared to the Market volume**. The Market volume considers the quantity allocated at all entry points into a balancing zone (e.g., virtual IPs, LNG, production and storages) but excluding VTP trades.

In order to better compare the balancing zones by removing the effect of the cross-border flows and exits towards storage facilities, the **indicator BAL.2.2 is calculated by replacing the total entry volume with the domestic end-users consumption volume**. The domestic consumption considers the quantity of gas allocated at all exit points to final customers connected at the transmission network and exits towards DSO networks/city gate, therefore excludes exits to storage and cross-border exits. The domestic volume is considered representative of the actual demand for end-users trading gas within each balancing zone, therefore is deemed to give a more precise assessment of the more or less marginal role of the TSOs undertaking balancing actions within its respective balancing zone.

Indicators BAL.2.1 and BAL.2.2 show that the level of TSO/MAM's balancing action volume remains below 1 % for most balancing zones, signalling that that the percentage of TSOs/MAM's balancing action is overall relatively small compared to the total gas volume entering each balancing zone (BAL.2.1).

In some balancing zones cross-border flows have an impact on the overall gas quantities entering the market, which is more evident when comparing the TSO/MAM balancing action volume with the domestic end-users consumption (BAL.2.2).

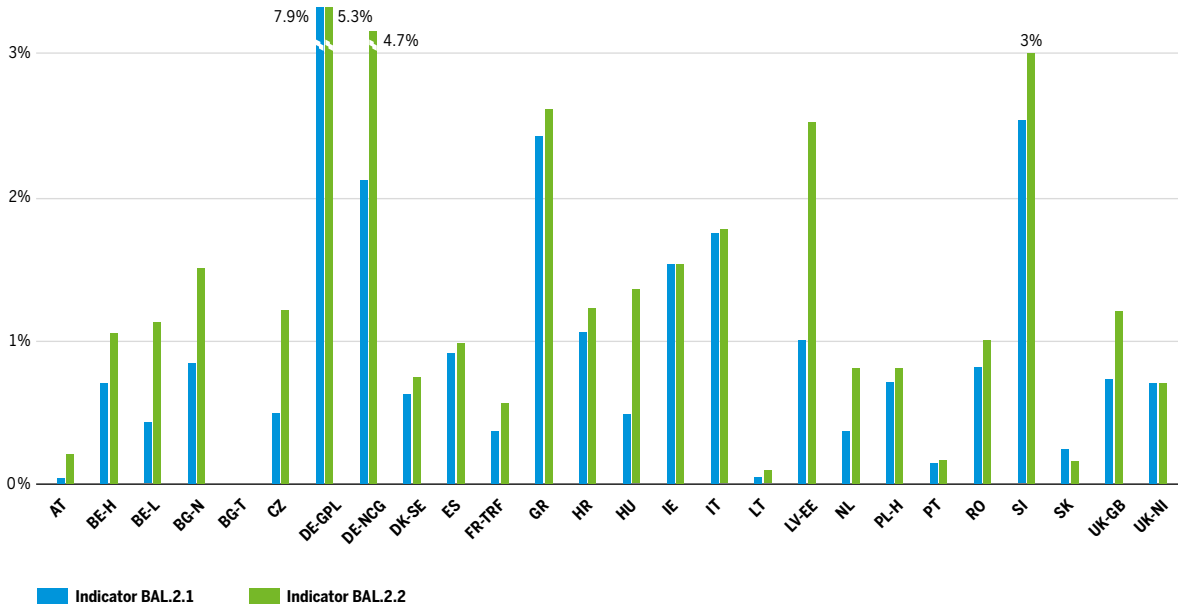


Figure 6: Indicator BAL.2.1 versus BAL.2.2 for GY 2020/21


Picture courtesy of Amber Grid

The **indicator BAL.3 assesses whether on average during the year network users contribute sufficiently to keeping the system in balance**. This is done by calculating the weighted average daily net imbalance volume over the daily market volume (as defined in indicator BAL.2.1). Contrarily to the past report, the Market Volume is used instead of the Domestic end-users consumption to allow a more precise normalisation of the network users' imbalances volume.[1)] Moreover, the methodology to calculate the indicator has been revisited compared to the previous Effect Monitoring Report. Instead of using the sum of daily net network users' imbalances, the weighted daily net network users' imbalances have been calculated, to better reflect the actual volume of gas entering the system on a daily basis. In the cases when tolerances and Linepack Flexibility Service are applied, the net network users' imbalances also consider the tolerated imbalance volume and the imbalances covered by the LFS (both Short and Long).

The analysis of the level of network users' imbalances over the total market volume via indicator BAL.3 shows that in most balancing zones the network users' imbalance level imbalance level was equal or less than 2 % of the total market volume.

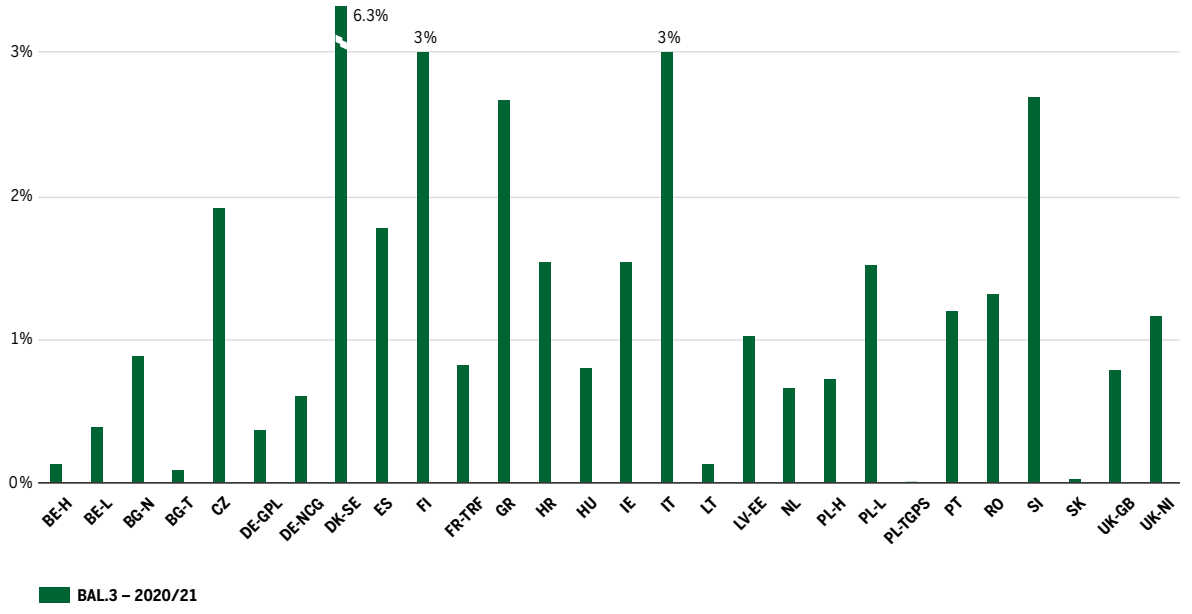


Figure 7: Indicator BAL.3 for GY 2020/21

1) Network user's imbalance quantity is calculated based on all quantities attributed as an input or an off-take from the overall system. Considering the domestic end-users consumption volumes limits the calculation to only quantities allocated at exit points towards consumers directly connected to the transmission grid, city gates or distribution systems, based on the definition of domestic end-users consumption.

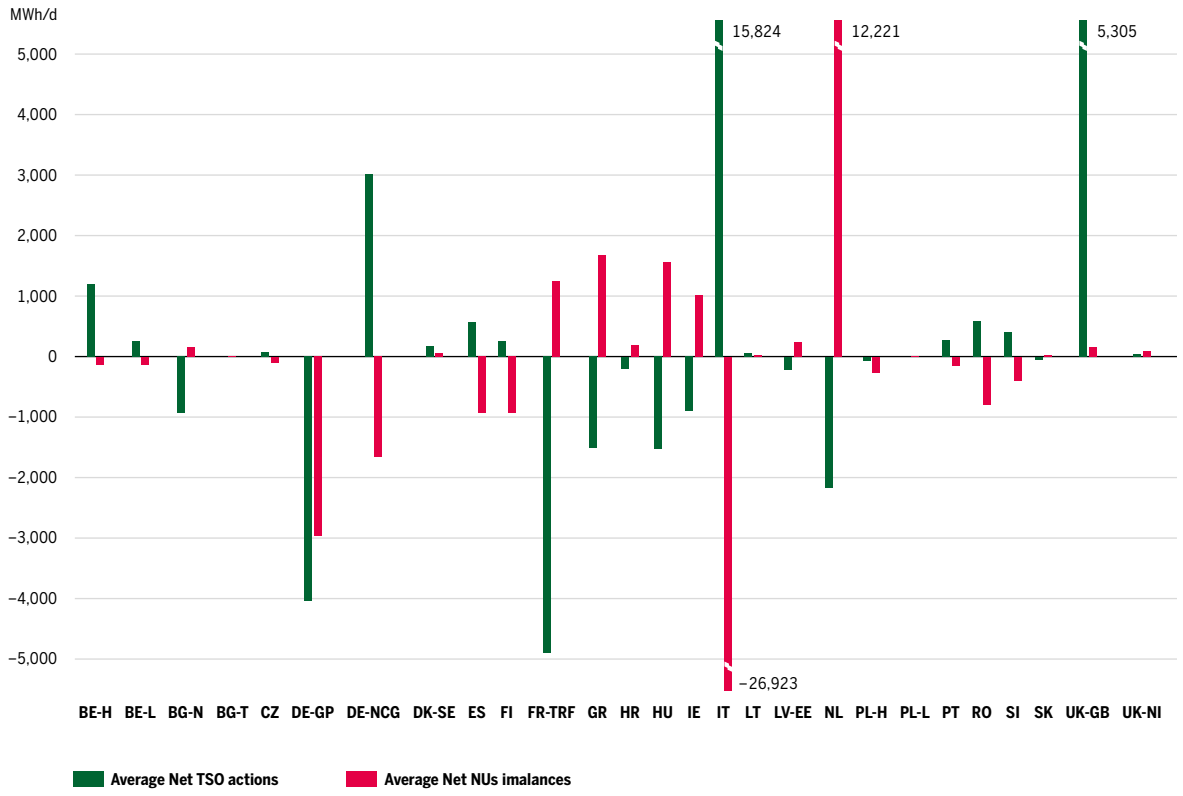


Figure 8: Average daily net TSO/MAM balancing action (MWh/d) versus average daily net network users' imbalances (MWh/d) – GY 2020/21

In the past indicator BAL.3 was used in combination with another indicator (previously named BAL.3 – "Net TSO Balancing Volume as % of Domestic Consumption") to compare the normalised net imbalance volume of network users and the counteracting net balancing volume of the TSO. In this edition of the Effect Monitoring report, this evaluation has been made by comparing the average yearly net TSO actions volume expressed in MWh/d vs. the average net NUs' imbalance quantity (as defined in current indicator BAL.3), expressed in MWh/d. This is to provide an observation of whether TSO's balancing action is (on an average) aligned with system imbalance direction (TSO BUYs when system is SHORT (i.e., the network user's off-takes for that gas day exceed its inputs for that gas day), TSO SELLs when system is LONG (i.e., the network user's inputs for that gas day exceed its off-takes for that gas day).

The net TSO/MAM action is calculated on a daily basis by subtracting the gas volume purchased by the TSO/MAM minus the gas volume sold. Positive value means that more gas has been bought than sold. The net network users' imbalance is obtained by subtracting the daily positive imbalance quantities (excess gas) minus the daily negative imbalance quantities (deficit gas). It should be noted that while the average net network user's imbalances is based on end-of-day balancing data, the net TSO actions volume is based on aggregated within-day values, therefore this comparison does not consider within-day settlement.

When comparing the level of net network users' residual imbalance volume with the net TSO/MAM balancing actions volume, a correlation between net Ns imbalances and counteractive TSO/MAM net action can be noted for most balancing zones.

Exceptions have been assessed in a focused Annex of the Effect Monitoring Report, providing explanations for such results.

Picture courtesy of Gaz-System

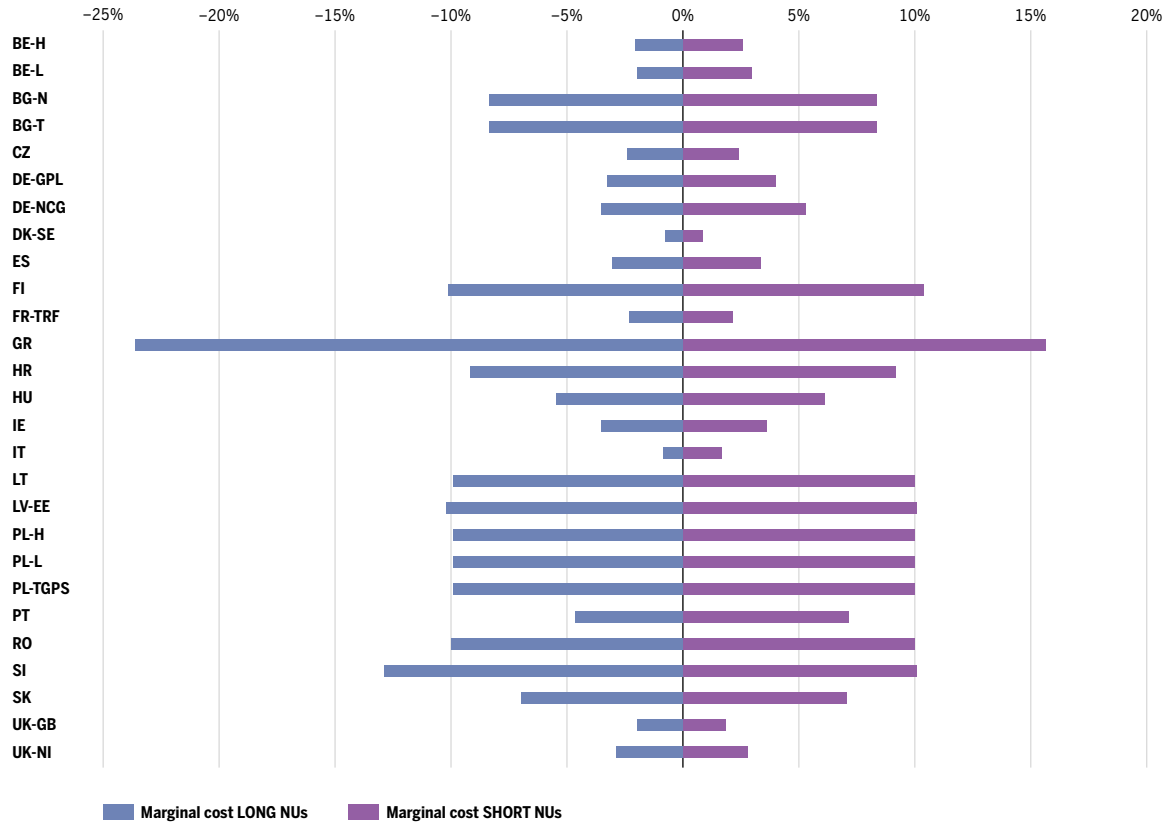


Figure 9: Indicator BAL.4 for GY 2020/21

Finally, **indicator BAL.4 is used to analyse the average marginal cost borne by the network users for being imbalanced**. Considering the specificities of each balancing regime and the different underlying determination of the imbalance charges in each balancing zone, the analysis of indicator BAL.5 is not intended to provide a price comparison between balancing zones, but to give a general overview of the ratio between Average Daily Buy/Sell Price and average daily Weighted Average Price (WAP) in each balancing zone.

It is noted that in certain balancing zones the average marginal cost for network users to be imbalanced corresponds to the level of the small adjustment which is applied to determine the daily imbalance charges.[1)] For others, the deviation of the average buy and sell prices from the daily market price varies between 1 % and 16 % and −1 % and −24 % for buy and sell prices respectively.

1) This case applies to Bulgaria, Finland, Lithuania, Poland, Romania and Spain.

TAR NC IMPLEMENTATION MONITORING

In October 2021, ENTSOG launched the 2021 implementation and effect monitoring data collection and started drafting the third TAR NC Implementation and Effect Monitoring report, with publication in Q2 2022.

The Implementation Monitoring report 2021 provides the status of the implementation of the TAR NC by European TSOs and its effect on the European gas market, as of 1 October 2021.

By analysing the responses TSOs provided to the IM questionnaire, we can conclude that, out of 50 TSOs participating in the report, **as of 1 October 2021, 45 European TSOs applied the 'new Reference Price Methodology (RPM)', i.e. based on rules in line with the TAR NC**. Only two TSOs, the Slovak and Bulgarian TSOs, still applied the prevailing RPM which was in use on 31 May 2019. The remaining three TSOs from three countries in the report (including two MSs) have clarified they had a derogation.

The Slovak and Bulgarian TSOs with the 'prevailing' RPM rules have reported **a high level of early compliance for most TAR NC provisions** that are only applicable for the new RPM; these TSOs are also compliant with the 'prevailing' rules applicable before the shift to 'new' RPM rules. ENTSOG considers this a positive aspect that also facilitates a smooth transition from the prevailing RPM to the new one.

It should be noted that an estimated 36 TSOs from 18 MSs had adopted the 'new' RPM as of 1 January 2020 already.

It is interesting to highlight a few significant trends and to mark **key differences between the present Implementation Monitoring report and the previous Implementation Monitoring report published in 2020**.

- **Fewer Member States are now concerned by derogations:** since 1 January 2020, Finland and Estonia no longer hold general derogations to the 2009 Directive. Therefore, Gasgrid Finland and Elering sent data for the current report.
- **The shift to TAR NC-based rules is now almost finalised in all MSs:** duly following TAR NC rules, Slovakia was still applying the rules prevailing at the entry into force of the TAR NC in 2019. This is because of the multi-year tariff period which applies in this MS. Moreover, the Bulgarian TSO, Bulgartransgaz, still uses the same RPM since 2017, because the Bulgarian NRA hasn't made its motivated decision about the 'new RPM' yet.
- **How the main results evolved between reports depends on specific TAR NC chapters developed in this IM report[1]:**
  - **Chapter I (General Provisions):** the trends observed in 2022 are similar to those noted in 2020. Limited scope rules are still applied by a minority of European TSOs. Non-Transmission Services are proposed by most TSOs. Most TSOs still don't apply flow-based charges. There is still good compliance with TAR NC rules on Cost Allocation Assessments (CAAs) to keep in check cross-subsidies.

1) Chapter VII of the TAR NC was not under the focus of the IM questionnaire, to align the approach followed for the previous Monitoring report, and considering that ACER already performed such monitoring of consultations in 2019. In addition, Chapter IX of the TAR NC was not covered either by the IM questionnaire for the present report, since the Demand Assessment Reports for the Incremental capacity process 2021 were already dealing with this activity. Comparison between the present and previous reports is therefore not relevant on these chapters.

- **Chapter II (Reference Price Methodologies):** wider application of the RPM rules can be observed compared to 2020, mainly owing to a change in tariff periods requiring the shift to new rules to be effective. The same RPM is generally used at all network points, except if specific derogations apply to a TSO or if the shift to new rules is not yet done in a MS. In one-MS multi-TSO systems, change can be observed in the generalised use of RPMs jointly, while in 2020 there were still many cases of separate use. However, some existing trends are just still prevailing, for example the widespread use of discounts at most storage points, and less frequently at LNG points. Among tariff adjustments, benchmarking is still less used than rescaling or equalisation by European TSOs.
- **Chapter III (Reserve Prices):** consistently with the previous report, the level of multipliers for each product duration and in combination with seasonal factors is still compliant with TAR NC rules for most TSOs, except those with a derogation or which have not yet changed tariff periods. Few TSOs also use the flexibility given for daily and within-day multipliers to be outside the default range, as allowed by the TAR NC.
- **Chapter IV (Reconciliation of revenue):** the picture is quite comparable to observations made in 2020. Price cap regimes are still applied by few TSOs. A separate regulatory account is often used to reconcile Non-Transmission Services, rather than the same regulatory account both for Non-Transmission Services and other services.
- **Chapter V (Pricing of bundled capacity and capacity at VIPs):** one trend observed in 2020 is confirmed in 2022; for the distribution of the auction premium, a clear majority of TSOs apply the default rule as per the TAR NC (equal splitting among TSOs). However, it is remarkable that, while in 2020 the TSOs with VIPs often used the weighted average tariff of individual IPs, in 2022 the opposite is true: most TSOs with VIPs use the tariff directly derived for the VIP through their RPM.
- **Chapter VI (Clearing price and payable price):** this report simply confirms that most European TSOs apply floating payable price instead of fixed payable price.
- **Chapter VIII (Publication requirements):** results are again consistent between the report published in 2020 and this one. Publication prior to the tariff period, as per Article 30 of the TAR NC, is mostly performed by TSOs rather than NRAs.
- **Chapter X (Existing contracts):** while a few TSOs pointed out in 2020 that contracts signed before the entry into force of the TAR NC would be affected by its implementation, in 2022 a clearer picture is visible on this topic. The impact of the TAR NC on existing contracts is somewhat limited, with just three TSOs highlighting this effect.

Picture courtesy of Fluxys

TAR NC EFFECT MONITORING

The EM part of the TAR Monitoring report analyses the effect of the TAR NC on the European gas market, taking account of the different application dates of the TAR NC. The effect of the TAR NC across the market has been studied by means of five indicators (the same indicators were used in the previous edition of the report, with at times limited changes, though):

- **TAR.1** 'ratio of under-/over-recoveries to allowed/target revenues'
- **TAR.2** 'changes in capacity-based tariffs'
- **TAR.3** 'seasonal factors for IPs'
- **TAR.4** 'publication of information in English'
- **TAR.5** 'multipliers for products with quarterly, monthly, daily and within-day durations'.

The information collected from the TSOs provided a useful insight of how the TAR NC impacts the market, and **it does not show a very different picture compared to the 2019 report**.

- The average European TSO gets an **under-/over-recovery comprised in a range from –1.3 % to +4.0 %** compared to its allowed/target revenue over 2013 – 20, although some TSOs have annual under-/over-recoveries significantly higher/lower than these values.
- **The median and average TSOs display some stability also in tariffs**, with an evolution which is close to inflation levels; however, this fact hides that, especially in 2019 and 2020, **the tariff evolutions among European TSOs increasingly diverged**. Over the whole 2013 – 20 period, several TSOs had significant tariff reductions, while a few others saw their tariffs at least double. Market mergers explained a good part of this divergence, with some TSOs sharply increasing tariffs to be aligned with other TSOs in the system, in accordance with TAR NC rules. Therefore, **the tariff average in line with inflation can be misleading regarding individual cases**.
- **Seasonal factors are used by only eleven TSOs** and follow rules from the TAR NC.
- Regarding publication of tariff information in English, when it was TSOs' responsibility to publish such information, it **was published in English in all cases, except for one TSO regarding the tariff period** (in this case, English translation was only partly available).
- In terms of multipliers, **all TSOs were compliant** with the ranges of multipliers defined in the TAR NC, **except one TSO regarding quarterly, monthly, and daily products, and except two TSOs regarding within-day multipliers**. However, for daily and within-day products, ranges for multipliers may not be followed in case other values are duly justified by the NRA.

This EM report is an updated picture of the situation of TSOs. It includes data from years prior to the first application date (1 April 2017) and data from years after that date, with **1 October 2021** set as the reference for data collection. Also considering data from the two previous reports (in 2017 and 2019), it looks like **the influence of the TAR NC implementation on the evolution of some indicators is not yet perceptible**.

CAM NETWORK CODE IMPLEMENTATION MONITORING – CHAPTER V ON THE INCREMENTAL CAPACITY

When the latest CAM NC implementation monitoring report was published, the incremental capacity process for the period 2019 – 2021 was still ongoing. The implementation of the provisions on Chapter V of the CAM NC has therefore been assessed at a later stage and the results of the incremental capacity process were published in a separate report later in 2021.

The aim of the report was to assess the market demand for additional or new capacity and provide an overview of the results of the second incremental capacity process, which was initiated in July 2019. In order to perform this analysis, data provided by 38 out of 45 ENTSOG members, 2 Associ¬ated Partners, and 3 Non-ENTSOG Member TSOs was used. The information received was used to analyse the different steps of the incremental process and whether any incremental capacity projects will be invested in following the 2019–2021 incremental cycle. The report also included a comparison of the results of the first incremental cycle (2017–2019) with the results of the second incremental cycle (2019–2021).

The first step of the incremental capacity process is the demand assessment phase and publication of Demand Assessment Reports (DARs) which are performed at least in each odd-numbered year, and which allow TSOs to determine whether it is necessary to initiate an incremental capacity project or not. 42 TSOs have performed demand assessments at 37 entry-exit borders and published the corresponding DARs for 46 potential incremental capacity projects.

Following the publication of DARs, the TSOs which identified a demand for incremental capacity entered into the design phase. Technical studies were performed by 24 TSOs for a total of 16 projects and 19 TSOs conducted joint public consultations for 12 project proposals. According to Art. 28(1) of the CAM NC, after the consultation, and once the design phase has been finalised, the involved TSOs shall publish and submit their incremental capacity project proposals to the corresponding NRAs in order to receive coordinated approvals. Project proposals for 12 incremental capacity projects were submitted to the relevant NRAs and published, 2 TSOs did not proceed further with the incremental capacity process for one project after the joint consultation of their draft project proposal and 3 TSOs were delayed and were still in the process of submitting 3 project proposals to the relevant NRAs.

As specified in Art. 29 of the CAM NC, incremental capacity shall be offered together with the respective available capacity by the involved TSOs in the annual yearly capacity auction as standard bundled products. 2 TSOs offered incremental capacity already during the annual yearly auction 2020, while 14 TSOs offered incremental capacity in the annual yearly auction 2021. Incremental capacity was offered for 15 years per offer level for 9 incremental capacity projects. In addition, an alternative allocation mechanism was approved by the concerned NRAs for one incremental capacity project. However, none of the TSOs received binding commitments from network users. Consequently, none of the TSOs carried out a single economic test and thus no TSOs have reported a positive outcome of the economic test.

When assessing the results of the two incremental cycles, 2017–2019 and 2019–2021, it becomes evident that there is a substantial amount of non-binding demand for incremental capacity, which has even increased between the two cycles. It should however be acknowledged that this demand is not EU wide, discrepancies between countries can be observed, and some TSOs have not received any demand for incremental capacity, neither in the first cycle or in the second one. However, the expressed demand never translated into binding commitments for incremental capacity in any of the two cycles.

ENTSOG believes that there are multiple reasons why two consecutive incremental cycles resulted in no successful allocation of incremental capacity. However, regardless of the reasons behind, the lack of binding commitments is concerning for the involved TSOs due to the considerable efforts caused by the multistage process and the related costs for the approval of project proposals by the NRAs. ENTSOG therefore included in the report some suggestions for improvements to the process, both within the current legislative framework and by revising the legislative framework.

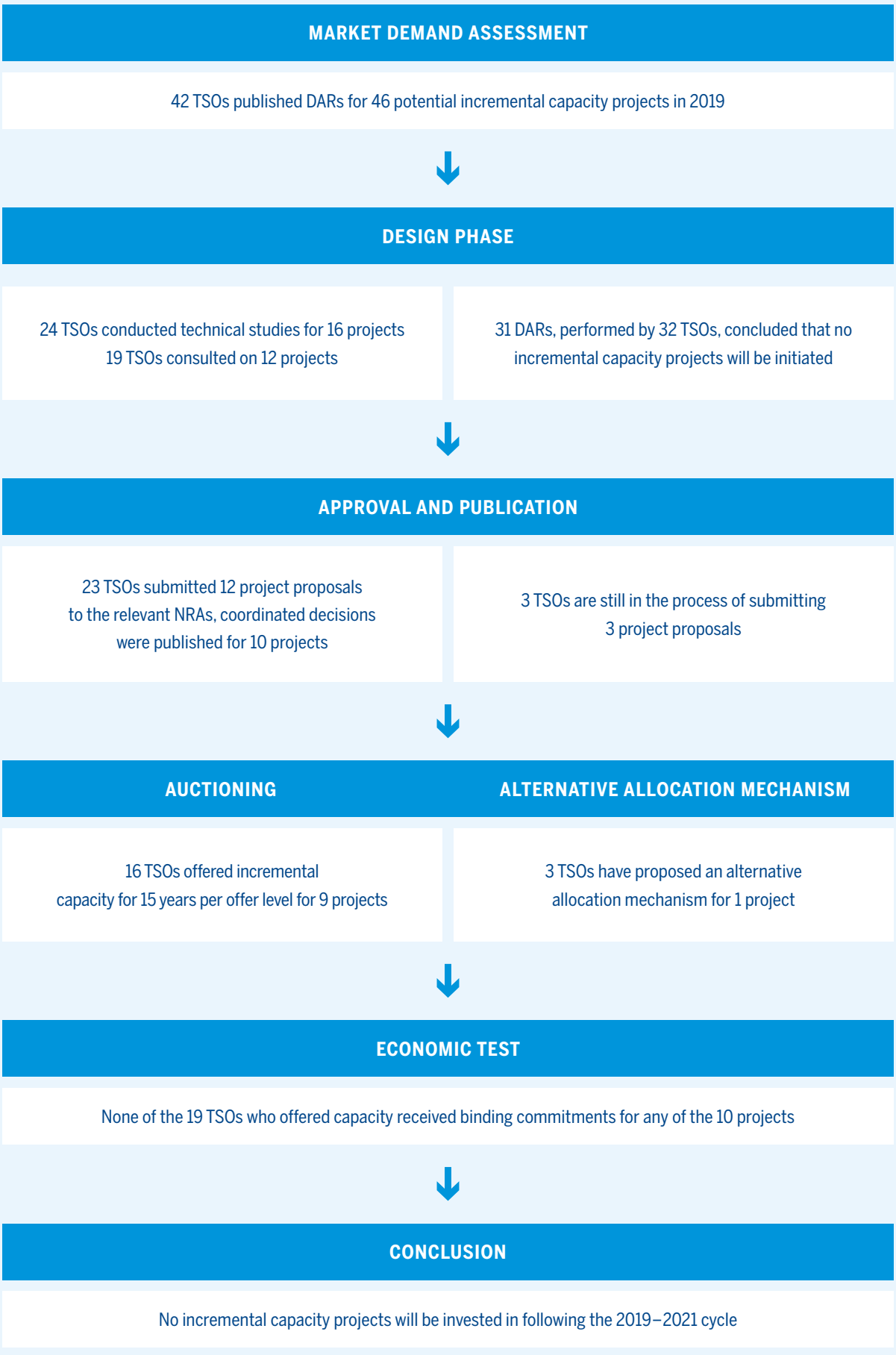


Figure 10: Summary of the different steps of the incremental capacity process

Picture courtesy of Gasum

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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 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 the European Energy Policy to achieve the European energy and climate targets and commitments of the Paris Agreement and the EU Green Deal.

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).

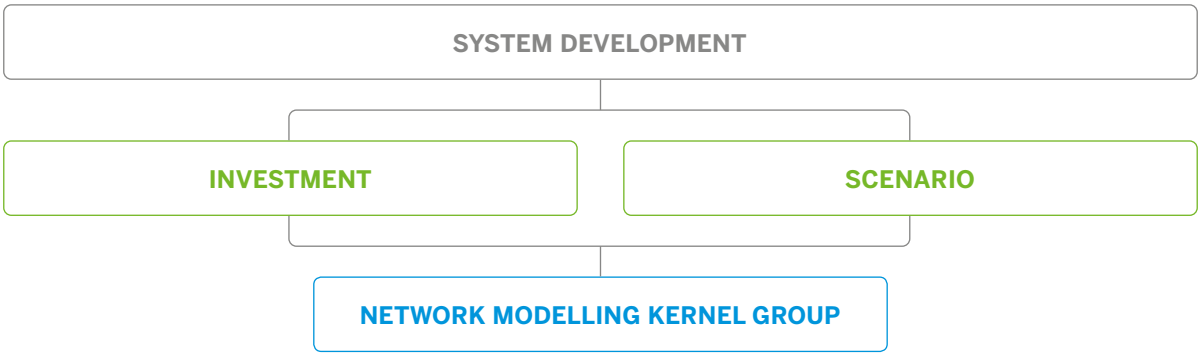


Figure 11: Investment and Scenarios Working Groups and associated KG

As shown in Figure 11 above, the Working Groups (WGs) are supported in their mission 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: 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: Winter and Summer reviews, the Transmission Capacity Map and the System Development Map developed in collaboration with Gas Infrastructure Europe (GIE).

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.

Picture courtesy of Elering

ACTIVITIES

INVESTMENT AND SCENARIOS

PROJECT COLLECTION FOR TYNDP 2022

ENTSOG undertook the TYNDP 2022 project data collection from October 2021 to December 2021.

In December 2021, the European Commission published its proposal for the revision of Regulation 347/2013 which identified which projects categories needs to be included in ENTSOG TYNDP in order to be eligible for the Project of Common Interest Selection process.

Following the proposal of the European Commission, in 2021 ENTSOG reviewed the TYNDP Practical Implementation Document which defined administrative and technical criteria for the inclusion of projects in TYNDP as well as the project categories, now also including a dedicated categories for hydrogen projects as well as biomethane projects and other projects connected to decarbonisation.

To support Europe's climate and energy ambitions, ENTSOG had already collected and assessed projects contributing to the decarbonisation of the gas system in TYNDP 2020.

UNION-WIDE SIMULATION OF SUPPLY AND INFRASTRUCTURE DISRUPTION SCENARIOS

Regulation 2017/1938 of the European Parliament and of the Council concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010 ("the Regulation") entered into force on 1 November 2017. It assigns to ENTSOG the task to carry out, every 4 years, a Union-wide simulation of gas supply and infrastructure disruptions scenarios in cooperation with the Gas Coordination Group (GCG). In accordance with the provisions of the Regulation, this publication was the first full scope revision of the above-mentioned Union wide simulation.

The revision of the methodology with the GCG, led to the introduction of the new 'timestamp approach'. It allows reflection of the configuration of the emergency gas corridors at the time of application of the next national plans (by including the projects that are expected to be commissioned before the year 2023). Consequently, the composition of the risk groups, as defined in Annex I of the Regulation (EC) 2017/1938, has been updated.

The assessment confirms that the European gas infrastructure provides sufficient flexibility for the EU Member States to efficiently apply their cooperation

mechanisms and ensure security of gas supply during extreme climatic conditions and individual supply route disruption scenarios. Even if the infrastructure allows for an efficient European gas market, an unexpected combination of extreme climatic conditions and supply route disruption may nevertheless result in local constraints and market limitations exposing some Member States to demand curtailment. Nevertheless, in some scenarios, infrastructure limitations and import limitations can prevent the Member States from fully efficient cooperation.

Gas storages and LNG terminals are essential to ensure seasonal and short-term flexibility. The evolution of the storage levels results from market decisions and can significantly influence the withdrawal capacities and therefore the short-term flexibility gas storages can provide: a too low storage level at the end of the winter can increase the risk of exposure to demand curtailment in some countries and for some scenarios.

The Security of Supply simulation results should be interpreted as an assessment of the ability of the gas infrastructure to allow for an efficient cooperation of the EU Member States to cope with an unusual cold winter season under different scenarios. The EU-wide simulation is not a forecast of the expected gas supply situation.

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 correspondent Review reports.

Summer Supply Outlook reports focuses 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.

The Summer Supply Outlook 2021 report identified the European Gas network as sufficiently robust to enable enough stock level in preparation for the winter and flexibility for the supply strategy of the network users.

Winter Supply Outlook reports explores 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 2021 analysis indicate that the European gas system offers enough flexibility across the winter season in Europe, even in the case of high demand during an extremely cold winter. One of the report's key findings is that shippers could ensure flexibility by further injecting into storages to support an adequate storage level as of October of each year. Nevertheless, on 1 October 2021, the EU storage level (75 %) was one of the lowest in any ENTSOG Winter Supply Outlook assessment due to high use of the storages during previous winter season and low injection during Summer (while observing unusual high gas prices).

It is important to emphasise that an early and significant withdrawal from storages can result in low storage levels at the end of the Winter season. This will always have a negative impact on the flexibility of the gas system – and can increase the exposure to demand curtailment in the later part of the Winter season.

ENTSOG Winter Supply Outlook is an assessment of the readiness the gas infrastructure to manage the upcoming winter season under different scenarios, but the assessment is not a forecast of the expected gas supply situation. The actual utilisation of the gas infrastructure, including the development of the gas storage levels, is determined by the decisions of the market participants.

ENTSOG and ENTSO-E cooperated on their Winter Outlook reports, which allowed 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.

SYSTEM DEVELOPMENT MAP 2020/2021

The INV WG and the NeMo KG were involved in the work to publish the System Development Map 2020/2021.

ENTSOG publishes the System Development Map (in collaboration with GIE) on an annual basis, which focuses on supply and demand trends. The 2020/21 edition was finalised in December 2021 and published in January 2022.

Picture courtesy of GASCADE

ENTSO-E/ENTSOG CONSISTENT AND INTERLINKED MODEL

In line with Regulation (EU) 347/2013, the ENTSOs submitted the draft version of their consistent and interlinked electricity and gas network and market model (the Interlinked Model) to the Commission and ACER on 21 December 2016, and ACER issued its Opinion on 20 March 2017.

Starting with TYNDP 2018, the ENTSOs have implemented the joint scenario building process, which covers the most substantial part of the draft Interlinked Model and will continue to do so in the subsequent TYNDP editions.

In 2020, ENTSO-E and ENTSOG have started jointly working to develop and implement a project screening methodology, considering the outcomes of the Focus Study as well as to develop and test a dual assessment methodology for electricity, gas and hybrid projects for its application as a pilot project on the basis of TYNDP 2020. The outcome of this investigation (available here) was published in the form of a Progress Report in May 2021 which serves as basis for its application in the following TYNDP editions.

SUPPORT TO REGIONAL GROUPS FOR THE 5th PCI SELECTION PROCESS

ENTSOG has provided support to the 5th PCI selection process by closely cooperating with the European Commission in configuring and offering its technical platform – the ENTSOG Project Portal – to perform the call for PCI projects.

Additionally, upon formal invitation by the European Commission, and under the mandate of project promoters, ENTSOG managed and delivered the Project Fiches to PCI candidate projects' promoters.

Project Fiches includes project data and project-specific cost-benefit analysis (PS-CBAs) of PCI candidates, the results of which were published in January 2021. ENTSOG also provided technical support to all promoters in the submission of their projects to the European Commission and the Regional Groups.

SUPPORT TO GAS COORDINATION GROUP

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 Gas Coordination Group (GCG) is to exchange information and best practices, and to facilitate Security of Supply (SoS) standards and to support supply-and-demand balance, especially in case of critical situations. Members include the European Commission, representatives of EU Member States, ENTSOG, and other international organisations as well as the industry.

In 2021, ENTSOG was fully committed to work on the first full scope revision of the Union-wide simulation of gas supply and infrastructure disruption scenarios (SoS simulation report) published in October 2017. ENTSOG was involved mainly in defining the scenarios in consultation with the GCG, data collection, risk assessment, editing the report gathering the results and submitting this report to the relevant parties. All those activities were done in close cooperation with the GCG.

Section "Security of Supply" of this report also refers to cooperation with the GCG on the security of supply topic.

ENTSO-E/ENTSOG JOINT TYNDP SCENARIO REPORT

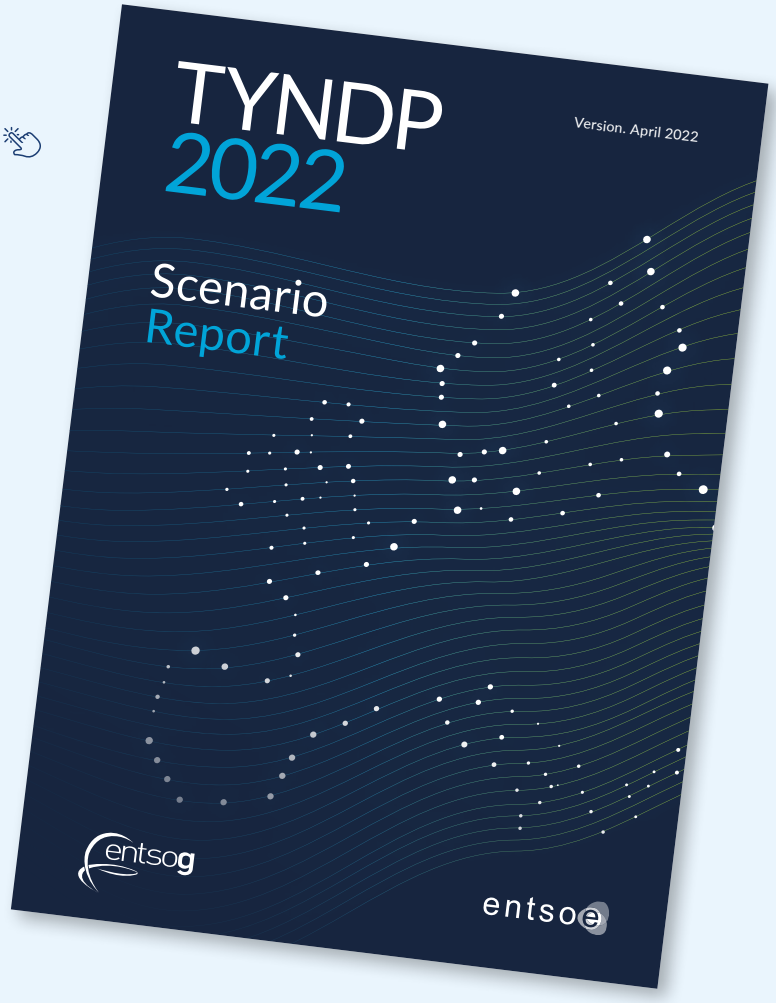
Since development of the TYNDP 2018, and to deliver the consistent and Interlinked Model, ENTSOG and ENTSO-E have joined their scenario building workstreams, building on their combined expertise and modelling capabilities as well as on the input received from dozens of stakeholders from the industry, 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 draft TYNDP 2022 Scenario Report in October 2021, followed by public consultation from 7 October to 17 November 2021, which included a public Stakeholder Workshop on 20 October. The ENTSOs updated their scenarios, considering the consultation feedback. The final TYNDP 2022 Scenario Report will be published in Spring 2022.

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

2022.entsos-tyndp-scenarios.eu



Picture courtesy of Ontras

5

SYSTEM OPERATION:

SECURITY OF SUPPLY, REMIT, TRANSPARENCY AND INTEROPERABILITY

The primary work of the System Operations 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 maintenance and continuous development of ENTSOG's Transparency Platform (TP), including activities referring to REMIT. In 2021, System Operations comprises two main working groups: Interoperability (INT WG) and Transparency (TRA WG).

WORK STRUCTURE

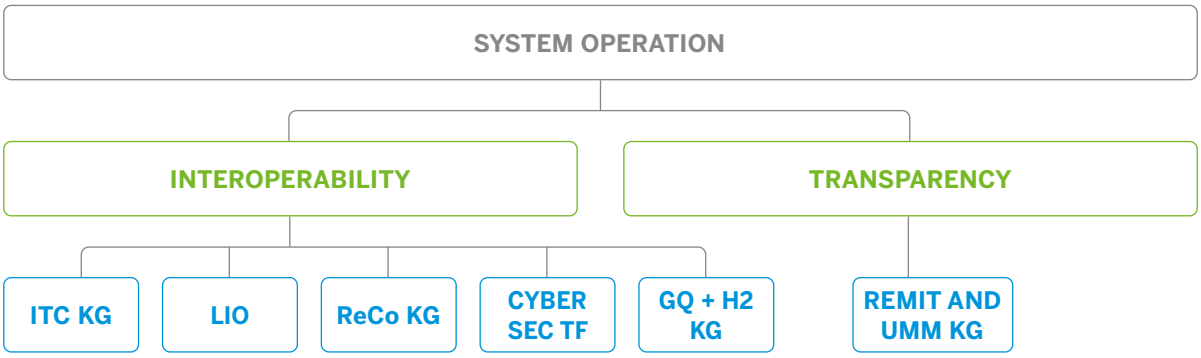


Figure 12: Interoperability and Transparency Working Group and associated KGs

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.

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 Operations area:

- The Regional Coordination System for Gas KG (ReCo KG) includes the three ReCo Teams: North-West, East and South and focuses on operational cooperation for security of 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 NC, including Business Requirement Specifications (BRS), Implementation Guidelines, and communication profiles. Furthermore, the ITC KG is working in collaboration with other European organisations (e.g., CEF/DEP, GIE, EASEE-gas-MWDWG, TSWG), on new developments and specifically with the EC CEF eDelivery program in delivering 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.

Picture courtesy of Enagas

- The Cyber security Task Force is jointly managed by GIE and ENTSOG. This group is reviewing how to best secure the gas industry from potential attacks by reviewing topics such as: Active input for NIS 2.0, 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&H2 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. Furthermore, it coordinates the cooperation with CEN, Marcogaz, EASEE-gas, and GIE. It also prepares the TYNDP Gas Quality Outlook reports. In addition, the ENTSOG team and members contribute with inputs and expertise to the prime movers' group in gas quality and hydrogen (GQ & H_2) handling, as well as the development of recommendations to facilitate the setting of 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).
- ENTSOG and European EIC Local Issuing Offices from the gas sector established on a voluntary basis a dedicated expert group to exchange experiences in managing energy identification codes (EIC) and to coordinate communication with the Central Issuing Office managed by ENTSO-E. The LIOs provide suggestions for amending some EIC functions and definitions for discussions of ENTSO-E's Gas Role Models/Harmonised Electricity Market Role Model harmonisation group. Further activities are envisaged for 2022.

These groups meet on a monthly basis (and adhoc, as required) and comprise participants representing Member TSOs across Europe.

ACTIVITIES

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, Associated Partners and Observers to fulfil their data publication obligations[1]. ENTSOG received strong support from many stakeholders with regards to TP functionality and the information provided therein.

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

RELEASED FUNCTIONALITIES AND IMPROVEMENTS

Improvements during 2021 included:

- Preparation for archiving data and creating an FAQ for user questions.
- Updated schema for Unavailabilities of gas facilities (UMM)
- Improved logic for querying CMP Capacity Made Available

Updated UMM section and RSS

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

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 2020, ENTSOG Transparency Planform successfully completed the 1st 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 600 questions were answered in 2021.

During 12 – 14 January 2021, a major incident occurred in the systems supporting the Transparency Platform. An unprecedented high amount of API calls (used for querying data to databases) caused the platform to crash, and only by placing stricter restrictions on the users and by blocking several larger users, could access to the Platform be restored. It took several days to process the backlog of data so that all users could use the API calls again without crashing the platform. Since the event, ENTSOG has been placing more restrictions on the usage of API calls to protect the multiuser environment of the Platform.

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.

Besides TSO publications, ENTSOG is also supplying the European Commission and ACER with customised reports for specific tasks. In 2021, this entailed extensive work on reports to ACER in relation to their monitoring obligations for application of CMP measures, i.e., the Congestion Report, and the Market Monitoring Report.

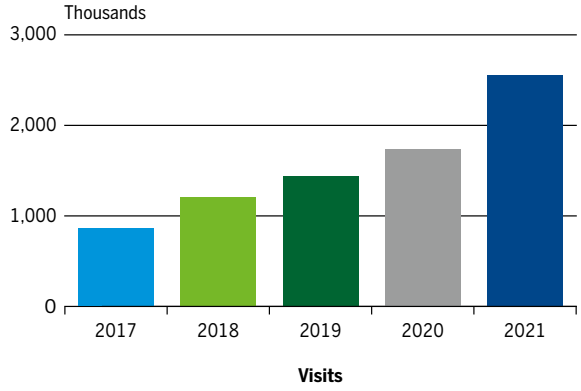
1) see Chapter 3, Annex I, Regulation (EU) No 715/2009. Additional obligations for transparency publications are laid out in the Tariff, Capacity Allocation Management, and Interoperability Network Codes

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

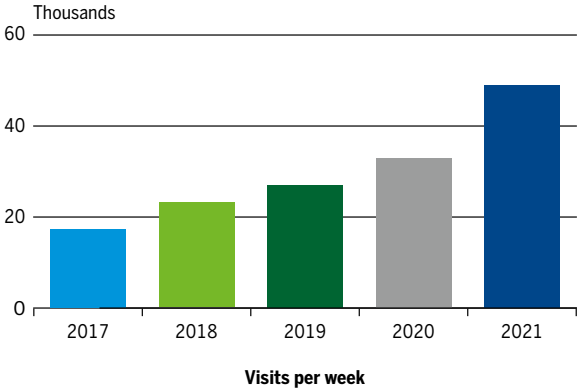
TP USAGE STATISTICS

Usage statistics for calendar year 2021 are included below:

The number of visits has increased to a total of 2,555,085 in 2021 and to 49,136 for the average amount of visits per week. The highest number of visits was reached on 1 October 2021 with 9131 unique visits.

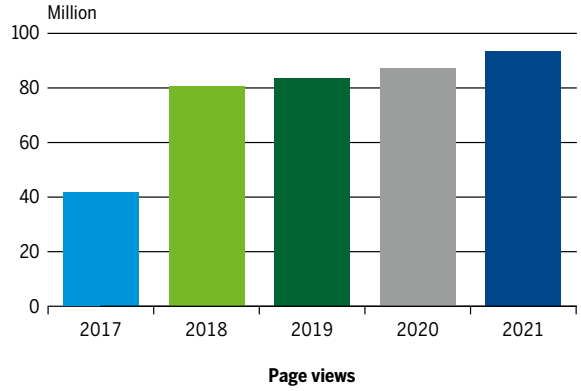


Visits

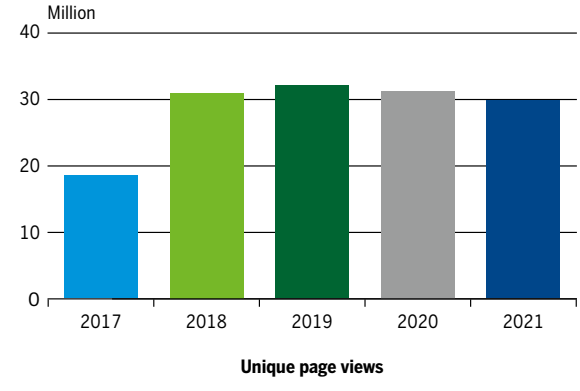


Visits per week

Compared to 2020, the number of page views has seen a slight increase to a total of 93,404,886 in 2021, but a small decrease to 29,886,389 for the total number of unique page views in 2021. It should be noted that API calls for fetching data from the TP are also counted as page views.

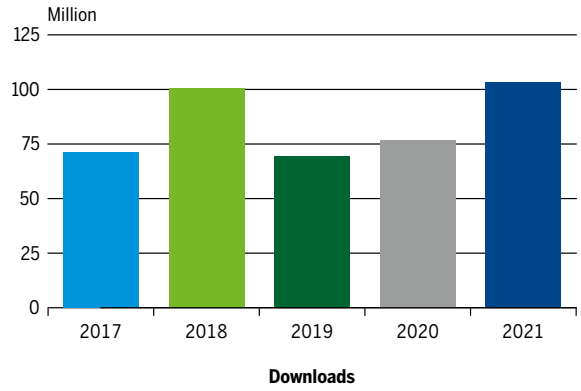


Page views

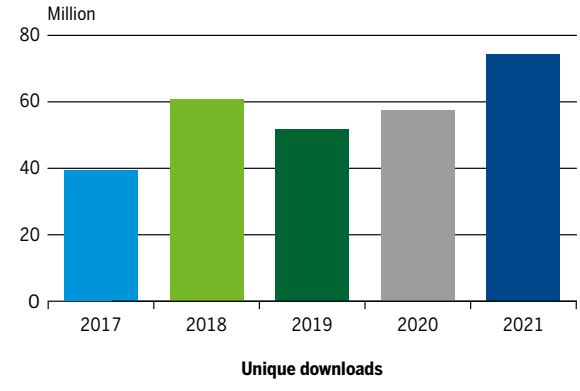


Unique page views

The number of downloads has increased compared to 2020, to a total of 103,488,347 in 2021 and an increase to 74,182,068 for the total number of unique downloads in 2021.



Downloads



Unique downloads

In 2021, users of TP were retrieving data from the TP through GUI-based as well as dedicated API calls. Keeping a stable user environment is important when managing the API calls and in addition to the incident described earlier, several users have been reduced in their API calls during the year to fulfil this goal.

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.

Commission Implementing Regulation (EU) No 1348/2014 stipulates the information that shall 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 facilities.[1)]

The ENTSOG reporting system was developed according to the provisions of Commission 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 Transparency Platform, to ACER's REMIT Information System (ARIS).

As to 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 Transparency Platform. 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


Picture courtesy of Reganosa

TSOs' IMPLEMENTATION OF REMIT REPORTING

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

- Transaction data: natural gas transportation contracts within the Union 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 2021, 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 Working Group on Resolution of EICs not Present in CEREMP
- ACER Public consultations on the revised guidance documents on transaction reporting and REMIT Table 1 schema changes.

SECURITY OF SUPPLY

SECURITY OF SUPPLY (SoS) 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, 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 European Union'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.

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 European Commission, and the Member States.

The Regional Coordination System for Gas has been functioning and progressing since 2014 with more and more TSOs coming on board. In 2021, all 45 ENTSOG members, 2 Associated Partners, and 4 TSOs from non-EU countries (51 in total) are participating in at least one of the three ReCo Teams (East, North-West, South). ENTSOG and the TSOs also agreed to establish the new ReCo Team South-East for the Caspian corridor. The Team will be completed in 2022.

Since March 2020, the COVID-19 pandemic had a significant impact on the normal way of working for most EU TSOs and especially on people involved in daily system operations. Therefore, ENTSOG and EU TSOs were systematically assessing the situation and risks related to the pandemic, such as the impact on system operations, work of dispatching teams and security of gas supply.

All EU TSOs established measures to ensure business continuity and operation twenty-four hours a day, seven days a week (24/7). Examples of such measures include redundant dispatching centres, specific shift organisation including the possibility to activate maintenance 24/7 in case of need, and strict instructions for dispatching and office crews. TSOs' main preventive measures were documented to be used by TSOs to minimise COVID-19 risk of spread and its impact on business continuity. As a result of TSOs measures, well preparedness, and procedures, TSOs ensured reliable, safe, and secure gas supply to their customers. Preventive action documentation was provided and discussed with the members of the GCG.

During the second half of 2021, gas TSOs made observations of possible impact on security of supply. Relatively high gas prices (starting from August 2021) in the EU, gas market behaviour, and low injection into the gas storage facilities drove the gas storage facilities filling level to the lowest of the last ten years. The long-term operational agreement for the Magreb Europe Gas Pipeline (MEG), a pipeline connecting Algeria, Morocco, and Spain, expired on 31 October 2021 and since then Spain had not been importing gas from Algeria via Morocco. A similar situation was observed regarding the Yamal pipeline. Its long-term contract expired on 30 September 2021. However, the gas flows were not completely stopped, and shippers were using the pipeline up to 45 % of its firm capacity. The situation with commissioning of the Nord Stream 2 pipeline was uncertain.

ENTSOG and TSOs considering potential impact on security of gas supply, took relevant measures and were closely monitoring the situation on a daily basis, in particular by monitoring gas flows and their fluctuation to Europe (including non-EU countries), gas prices, gas flows from storage facilities and gas storage filling levels. ENTSOG developed an internal data platform, charts, and maps for observation of the situation in the EU. In addition, TSOs on their monthly calls discussed the gas flows patterns, usage of pipeline capacities, gas storage filling levels, usage of LNG terminals, gas market behaviour and possible impact on security of supply. On a weekly basis, ENTSOG communicated their observations to the EC and ACER.

Following the ReCo System for Gas, on 2 November 2021, the ReCo Team East had a joint call, which followed the incident of a pipeline rupture on the gas pipeline system in Bulgaria on 1 November. The incident had an impact on the gas flow regimes in the Balkan countries. However, this did not cause serious security of supply issues, gas transmission systems were balanced, and the gas flows were restored on 3 November. Considering that the incident might have had an impact on Serbia, ENTSOG also coordinated and exchanged information with the Energy Community Secretariat.

In line with the procedures, the ReCo Teams North-West and South successfully carried out unannounced communication exercises.

ENTSOG and TSOs continued their work on the development of an operational gas flow data platform to support TSOs in normal and emergency conditions, and in particular, for the exchange of data on the European level. The development will continue in 2022.

Section "Support to Gas Coordination Group" of this report also refers to coordination with GCG on the security of supply topic.

Support to the EC in terms of SoS

The ENTSOG team continued cooperating closely with the EC and participated in the scheduled GCG meetings in 2021.

These focused on providing operational and system-development expertise during the second half of the year considering high gas prices, low storage filing level, fluctuations of the gas flows and usage of TSOs capacities by market players. On weekly basis, ENTSOG communicated their observations to the EC and ACER. In addition, the GCG was informed about ENTSOG's activities, the monitoring exercises as well as about possible actions which might be taken by TSOs in case of crisis events.

Also, ENTSOG communicated the TSOs' measures to prevent any negative impact of the pandemic on business continuity (in particular work of dispatching centres) and organisational procedures.

Recommendations relating to technical cooperation with 3rd 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 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 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 weekly and monthly calls with EU TSOs to monitor the situation and relevant risks related to the COVID-19 pandemic, exchange of knowledge and measures to prevent negative impact of the pandemic and ensuring business continuity.

ENTSOG and Energy Community Secretariat agreed that in cases of a crisis event parties will exchange relevant information and support coordination between EU and non-EU TSOs.

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

INTEROPERABILITY AND DATA EXCHANGE

INTEROPERABILITY AND DATA EXCHANGE NETWORK CODE

Pursuant to Article 8 (8) of Regulation (EC) No 715/2009 and to Article 25 of the INT NC, ENTSOG is tasked to monitor and analyse the INT NC's implementation and to report its findings to ACER.

Following ENTSOG's Annual Work Programme 2020, ENTSOG undertook a second detailed assessment of the INT NC's requirements' implementation in Interconnection Agreements (IA) by the TSOs. The second list of 10 Interconnection Points had been selected by ACER and agreed with ENTSOG. The next complete Implementation Monitoring Report for all IPs will be produced in 2022 for the 2021 assessment according to the biennial reporting requirements. TSOs provided ENTSOG with an updated set of information on their IPs and their IAs' compliance with the INT NC, which has allowed ENTSOG to fulfil its monitoring and reporting obligations. The detailed evidence is summarised in Annex 2 to the Implementation Monitoring Report 2019.

ENTSOG's analysis of the TSOs' replies, and the IAs' review indicate that, during the last three years (after the second IMR in 2017), TSOs continue to work on improving IAs and documenting their mutual consensus on the main terms and conditions envisaged in the INT NC. With only few 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 acknowledging their overall satisfaction with the results of the work executed by ENTSOG and the TSOs.

The results of this monitoring are provided in section "Interoperability & Data Exchange Network Code Implementation and Effect Monitoring ".

UPDATES OF CNOTs

In 2021, ENTSOG continued to improve the common network operation tools (CNOTs), with special attention to the AS4 communication profile.

- The ENTSOG AS4 usage profile update: The EC eDelivery CEF programme indicated their intention to update their AS4 communication protocol (on which the ENTSOG profile is based) to improve 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 5 to 10 years. The AS4 usage profile provides not only interoperability guidance for the required AS4 functionality (i.e., whose 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 eDelivery.

Status of project end of 2021: The CEF project was delayed in 2021 in the consultation and feedback phase due to issues with defining a common position on a joint profile definition. Three meetings were held in the first half of 2021 to discuss this matter.

- ENTSOG worked on two CNOT documents in 2021: BRS for CAM and CMP and BRS NOM for nomination and matching procedures, adding additional parameters to indicate the changes coming from the new Edig@s version 6. The amended version of both documents is planned to be published in the first quarter of 2022 once public consultation has ended and any received comments have been evaluated.
- In 2021 the structure and content were set by the ITC KG for a new deliverable to review the suitability of the upcoming release edig@s(R) 6.1 messages and the ENTSOG AS4 profile in the context of new gases, primarily hydrogen.


Picture courtesy of SNAM

FOLLOW-UP OF EASEE-GAS DEVELOPMENTS

ENTSOG cooperates closely with EASEE-gas in the field of data exchange as an observer in the relevant groups – the Message Workflow and Design Working Group and the Technology Standards Working Group, which continued in 2021.

On the basis of the collaborative work undertaken in 2021 and as described in the previous section, ENTSOG, EASEE-gas and GIE organised another joint workshop on data exchange and cyber security in 2021.

FUNCTIONALITY ISSUES RELATING TO DATA EXCHANGE

ENTSOG is working on the solution for FUNC issue 'BRS for Balancing' which is connected to the data exchange part of the INT NC and BAL NC.

The issue was posted on the FUNC Platform already in February 2019 and requested an extension of the existing BRS for Nominations and Matching to cover more balancing processes that require data exchange between network users and TSOs, and possibly working towards further harmonisation of current formats and communication solutions implemented amongst EU TSOs.

OPERATION OF THE LOCAL ISSUING OFFICE (LIO)

Energy Identification Codes (EIC), standardised and maintained by ENTSO-E, provide a unique identification of the market participants and other entities active within the Internal European Energy Market. They are widely used in the Electronic Document Interchange and to identify parties and objects for REMIT. ENTSOG operates a Local Issuing Office (LIO) and now manages more than 1250 EIC codes for market participants across Europe. In 2021, ENTSOG continued cooperating with ENTSO-E via the joint Central Issuing Office (CIO)/LIO meetings and contributed to upgrading the EIC Reference Manual, harmonisation of EIC functions' definitions, and addressing existing issues.

ENTSOG and LIOs from the gas sector established, on a voluntary basis, a dedicated expert group to exchange experiences in managing EICs and to communicate to the CIO, which is managed by ENTSO-E. The LIOs provide suggestions for amending some EIC functions for discussions of ENTSO-E's Gas Role Models/Harmonised Electricity Market Role Model harmonisation group.

ANNUAL WORKSHOP ON DATA EXCHANGE AND CYBER SECURITY

ENTSOG organised an online Annual Workshop on 17 November 2021. It was the 4th joint workshop with EASEE-gas and included GIE in joint collaboration. It covered data exchange and cyber security topics. The workshop presenters consisted of multiple experts from ACER, ENTSOG, 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(R). In the cyber security segment, they addressed regulatory, technical, and legal dimensions in the energy sector. Additionally, ACER presented its view on the potential of developing Network Codes for the gas sector, building on the "Framework Guideline on sector-specific rules for cyber security aspects of cross-border electricity flows".

The main topics, i.e., AS4 as protocol and edig@s(R) as a format, are part of the document-based data exchange solution. The workshop included three sessions on the following topics:

- Data exchange segment of the workshop consisted of:
  - ENTSOG: ENTSOG's vision and developments
  - GIE: Challenges harmonising exchange protocols
  - EASEE-gas: Technology Standards Working Group
  - Gasunie: Update on EASEE-connect
  - GRT: BeeCube, the B2B platform for AS4 exchange
  - Equinor: Practical use of the edig@s(R) format
  - VNG: System operations with edig@s(R)
- The cyber security segment of the workshop consisted of:
  - ENTSOG: Setting the scene: The Colonial pipeline attack
  - ACER: A potential Gas and Hydrogen Cyber security NC
  - Snam: Three real cases of cyber incidents in Snam
  - Lawyer and CS expert: A review of the NIS 1.0 and NIS 2.0 Directive
  - Snam: Future cyber security and challenges in the gas sector

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

The workshop included an interactive part where the workshop participants were asked for their opinion on the topics that had been presented. The workshop was attended by over 100 participants from over 26 countries – the highest number in this workshop series since its launch and demonstrates the importance of this forum for the data exchange and cyber security related topics for the European gas market.

GAS QUALITY AND HYDROGEN

COOPERATION WITH CEN AND MARCOGAZ AND EASEE-GAS

During 2021, 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 CEN Sector Forum Gas – Gas Quality Study WG, ENTSOG contributed to the proposal of a Wobbe Index (WI) entry range recommendation a requirement for a classification system at exit points. At the beginning of 2021, as requested by stakeholders, a subgroup was formed within the prime movers' group on gas quality and hydrogen handling[1)] in order to develop the proposals for the normative framework needed to implement the Wobbe Index classification system at exit points. The work was facilitated by ENTSOG and led to a stakeholder report which was sent to the European Commission as input for the gas decarbonisation package.[2)]

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 and participated in the development of a Common Business Practice for Hydrogen Quality Specification.[3)]

1) https://entsog.eu/prime-movers-group-gas-quality-and-hydrogen-handling

2) Report not publicly available

3) https://easee-gas.eu/download_file/DownloadFile/36/cbp-2022-001-01-hydrogen-quality-specification

HYDROGEN IN THE TRANSMISSION SYSTEM

In 2021, ENTSOG increasingly focused on assessing the possibilities to inject hydrogen into the transmission system via internal assessments among ENTSOG members and ENTSOG will 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). ENTSOG is assessing the technical possibilities and associated costs of retrofitting the gas networks to 2 % vol., 5 % vol., and 10 % vol. hydrogen.

ENTSOG continued its dialogue with stakeholders along the gas value chain in the field of gas quality and hydrogen and delivered a workshop on this matter at the end of 2021.

Furthermore, at the end of 2021, ENTSOG contributed to the final deliverable of Subgroup 2 of the prime movers' group on gas quality and hydrogen handling recommendations, best practices and lessons learnt about existing and potential gas quality and hydrogen handling issues, options and tools. The report was published at the beginning of 2022.[1)]

CYBER SECURITY

ENTSOG has collaborated with GIE on the Cyber security TF to build a common understanding on the key areas identified by the EC regarding the new NIS 2.0 Directive and a potential Network Code on cyber security for the gas sector. These are at various stages of development, as follows:

- European Cyber security Maturity Framework
- Supply Chain Management
- European Early Warning System for Cyber Threats
- Cross-Border and Cross-Organisational Risk Management

Furthermore, ENTSOG and GIE investigated amongst their members the implementation status of the NIS directive. This information was used for the upcoming steps within this task force and this work will continue.

1) https://entsog.eu/sites/default/files/2022-02/Prime-Movers-Group-GQ and H2_SG2 report_FINAL.pdf

INTEROPERABILITY & DATA EXCHANGE NETWORK CODE IMPLEMENTATION AND EFFECT MONITORING

According to the agreement with ACER in 2019 on documenting detailed evidence of IAs' compliance with the INT NC, the total number of IPs was split for a partial execution for four years. Here below is the second list of 14 Interconnection Points (IPs) that had been selected by ACER for the 2020 assessment and agreed with ENTSOG to document detailed evidence from IAs.

For collection of a new progress update on the implementation of the INT NC by TSOs, ENTSOG continued to use the questionnaire from 2017. TSOs provided comprehensive information of IAs compliance with the INT NC and clarifying comments aiming to satisfy the level of details requested by ACER. The general conclusions from the data analysis described in the Implementation Monitoring Report (IMR) 2019 produced last year are fully relevant to the second list of 14 IPs analysed in the Annex 2, which was published in August 2021. The analysis confirms that during the last three years since the second IMR 2017, the adjacent TSOs have done significant work on improving cooperation for documenting in IAs their new steps of reaching consensus on the main terms and conditions envisaged in INT NC.

The evidence gathered confirms TSOs' continuous work and positive results in making the INT NC requirements as the recognised standard rules of IPs operation. With only few minor procedures that are still in progress for newly established IPs, all analysed IPs are operated in accordance with the INT NC.

All reviewed IPs are using the Lesser Rule for matching the nominations.

Countries	Interconnection Points (IP)	Comments
LT-LV	Kiemenai	
FI-EE	Balticconnector	
BE-NL	Hilvarenbeek L Physical	
BE-NL	VIP HILVARENBEEK	This VIP merged with IP Hilvarenbeek L Physical.
FR-BE	Blaregnies (BE)/Taisnières (L) (FR) Physical	
FR-BE	VIP VIRTUALYS_Blaregnies H (BE)/Taisnières H (FR)	
BE-NL	VIP BENE	
BE-NL	s Gravenvoeren Dilsen (BE)/Obbicht (NL)	This IP is part of VIP BENE.
BE-NL	Zandvliet H-gas	This IP is part of VIP BENE.
BE-NL	Zelzate 1 (BE)/Zelzate (NL)	This IP is part of VIP BENE.
SI-HR	Rogatec	
IT-SI	Gorizia (IT)/Šempeter (SI)	
BG-RO	Ruse (BG) – Giurgiu (RO)	
ES-FR	VIP PIRINEOS	

Table 1: The list of IPs for a review in 2020

Picture courtesy of Gas Connect Austria

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STRATEGY, POLICY AND COMMUNICATION

With publication of the European Green Deal, the major task of the Strategy, Policy and Communication (SPC) business area was to facilitate stakeholder dialogue and value chain cooperation, particularly in the framework of EC's 'Fit for 55' package, revision of TEN-E Regulation and the then-upcoming package of 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, Delta Energy Institute, Copenhagen School of 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 when preparing Transmission and Distribution relevant matchmaking sessions under Clean Hydrogen Alliance; creating the ENTSOG Hydrogen Project Visualisation Platform; and preparing the project collection for TYNDP. In 2021 enhanced cooperation with the NGOs, within the framework of Clean Hydrogen Alliance, was possible. Lastly, to promote the Energy System Integration, SPC coordinated with ENTSO-E and Hydrogen Europe regarding the revision of the TEN-E Regulation to promote integration of all energy carriers. The business area monitored numerous European Commission's (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 future of the European infrastructure.

SPC also coordinated the ENTSOG Annual Report and the ENTSOG Annual Work Programme, with input from the ENTSOG business areas. ENTSOG's annual conferences are also coordinated by SPC. ENTSOG's social media activity was managed by the business area.

WORK STRUCTURE

The ENTSOG 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.

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 G2021 TF, as determined by the Board and/or GA.

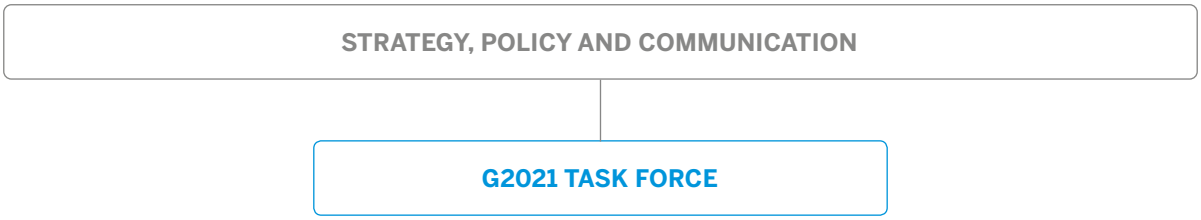
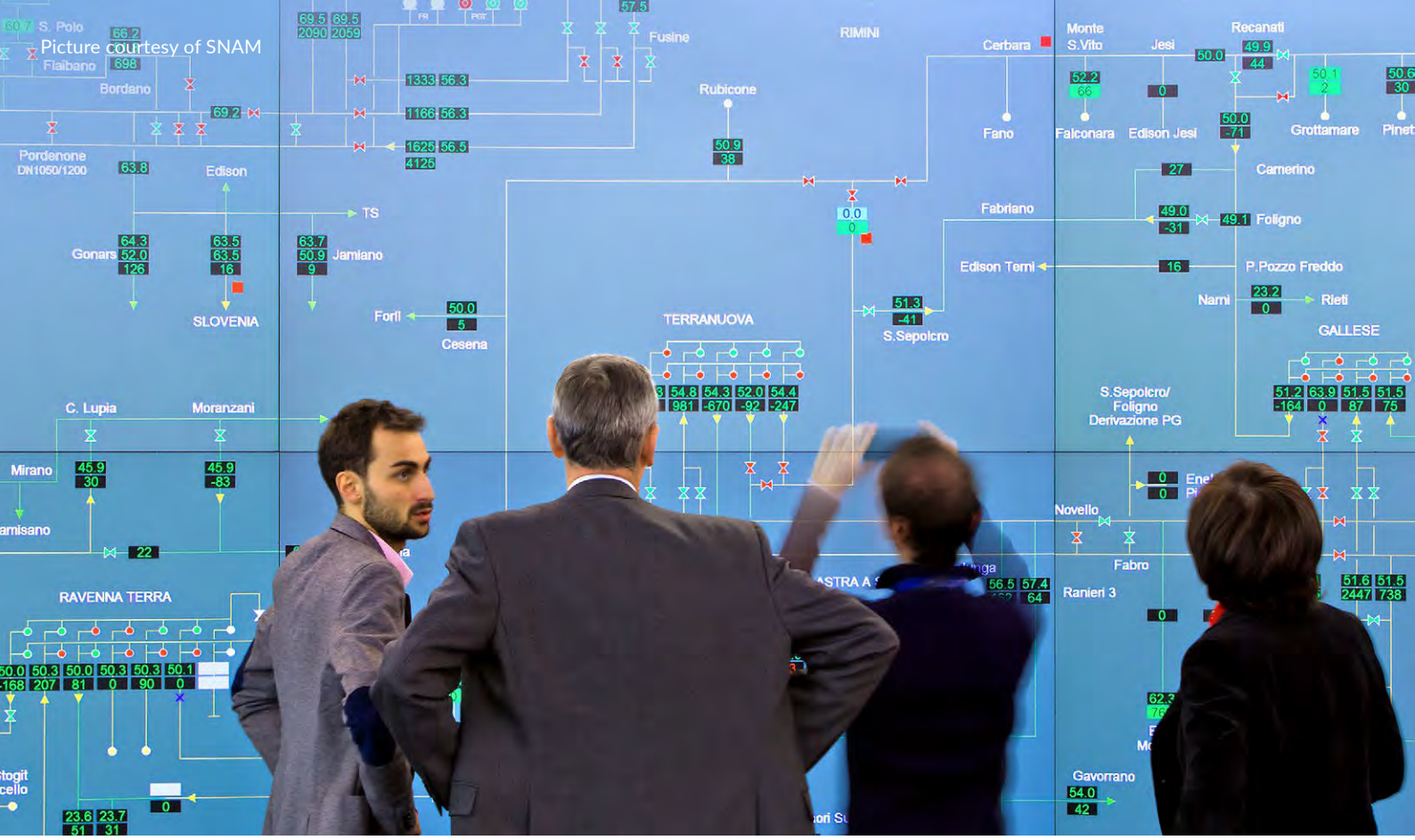


Figure 13: G2021 Task Force



ACTIVITIES

The G2021 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 2021, 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. It provided the prioritisation and policy overview of the European Commission 'Fit for 55' legislative files for decision by the ENTSOG Board.

The TF continued in 2021 to cover ENTSOG's engagement as indicated in the ENTSOG 2050 Roadmap Action Plan which was published in 2020, by facilitating associated communication and stakeholder engagement.

In 2021 the TF was responsible for providing EU policy proposals and updates on the preparations for the European Green Deal developments – specifically on reopening of TEN-E Regulation, RED III Regulation and the then upcoming 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.

The TF provided updates about the positions of important stakeholders, including Gas Infrastructure Europe, New Gases Network, 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 MD 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 G2021 TF FOR 2021

1. STRATEGY PROPOSALS:

- Identified strategic focus areas for ENTSOG under the 'Fit for 55' package and the then-upcoming Hydrogen and Decarbonised Gas Markets package related to legislative actions, policy communications, action plans announced by the EC or other, as requested by the ENTSOG Board.

2. POLICY UPDATES:

- Monitored key energy & climate policy/regulatory developments put forward by EU institutions – specifically the revision of the TEN-E Regulation, revision of the Renewable Energy Directive, and then-upcoming Hydrogen and Decarbonised Gas Market package
- Monitored and engaged where relevant to EU analytical works (EC studies and stakeholder engagement processes).

3. EXTERNAL ENGAGEMENT

- Engagement in the European Clean Hydrogen Alliance's Roundtable on Clean Hydrogen Transmission and Distribution
- Engagement in the Advisory Panel for Future Gas Grids.

4. COMMUNICATION PROPOSALS:

- Provided recommendations on ENTSOG's priorities in dialogue with the European Commission, Parliament, and ACER.
- Proposed external and internal communication.
- 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 National Grid

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 2021, 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 2021, the Legal Team and the LAG were involved in implementing the 'Brexit' Trade and cooperation agreement (TCA). To this end, two Kernel Groups (the 'Legal, Structure & Governance' KG and the 'EU-UK cooperation' KG) were created in order to draft a 'Working Arrangements Agreement' (WAA) to be concluded between ENTSOG and the UK TSOs in accordance with the TCA and EC's instructions. The WAA was submitted to the EC and the UK Government for formal approval by the EC[1)] The LAG also issued formal recommendations to the Board and GA with respect to the applications for membership, Associated Partner membership and for Observer membership.

In 2021, the Legal Team, with the other areas, organised the two additional meetings of the External Contact Platform (ECP) in June and November. 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 focus on coordination and technical cooperation between ENTSOG and other non-EU gas transmission system operators, as framed by Regulation 715/2009. 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. They have ensured the right election process for renewing the Board composition for 2022 – 2024, supporting the elections which occurred in December 2021.

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 2021. ENTSOG's Financial Statement for 2021 is included in this report, the approval of which is supervised by an internal Financial Committee.

1) At the date of drafting this Annual report, ENTSOG was still waiting for such approval

IT

The list of the main IT projects for 2021 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.
- 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).
- PDWS (data warehouse) and TP Performance enhancements.
- Update of the UMM portal on TP including application for becoming an IIP.
- Developing the Projects Data Collection Portal for TYNDP 2022 and PCI.
- Open discussions and gathering requirements for the new/updated collaboration tool for emergency situations.
- Ongoing development of the PLEXOS simulation tool for System Development team.
- Delivery by ACER and ENTSOG of the new GAS-NCFUNC 2.0 platform.
- 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 2021 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 GAZ-Gaz-System

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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 the sections below.

In 2021 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 2021 by ENTSOG and its Members, to ensure readiness and facilitate those developments going forward.

RE-STREAM STUDY

ENTSOG, CONCAWE, GIE, and IOGP launched in 2020 the **Re-Stream study** to address the reuse of both onshore and offshore oil and gas infrastructure for hydrogen and Carbon Capture and Storage. The study was published in October 2021 by Carbon Limits and DNV, with support by ENTSOG, GIE, IOGP and Concawe. 67 pipeline operators participated in the Re-Stream study, providing data for approximately 58,000 km of pipelines (+24,200 km assessed by operators themselves as suitable for hydrogen reuse) representing half of the total offshore pipeline length and approximately 30 % of the onshore oil and gas pipelines. The quantity of pipelines covered in the Re-Stream project represents a significant portion of the oil and gas pipeline network in Europe. A webinar to discuss the findings was hosted by Carbon Limits and DNV in November 2021.

APPROACHES ON ADDRESSING HYDROGEN IN THE GAS GRIDS

In 2021, ENTSOG contributed to the work of the prime movers' group in gas quality and hydrogen handling by providing an overview of the challenges and solutions to handle different hydrogen concentrations and related gas quality variations in the TSO infrastructure system.

The assessment is intended to serve as a starting point to further investigate the technical feasibility of hydrogen blends and other renewables in gas transmission systems across the EU. Furthermore, TSOs are working towards increasing their knowledge for operating hydrogen grids, supported by ENTSOG internal knowledge sharing sessions but also through facilitating information sharing and discussion between stakeholders along the value chain. ENTSOG is currently assessing the technical possibilities and associated costs of retrofitting the gas networks to 2 % vol., 5 % vol., and 10 % vol. hydrogen. First results will be published in 2022. Further details are provided in Section "Gas Quality and Hydrogen" of this report.

HYDROGEN PROJECT VISUALISATION PLATFORM

ENTSOG created in September 2021 a comprehensive platform called the **Hydrogen Project Visualisation Platform** to showcase the growing number of renewable and low-carbon hydrogen projects in Europe. The platform includes more than 300 hydrogen projects, which encompass the whole emerging value chain, with specific emphasis on more than 80 repurposing and retrofitting projects of existing pipelines to transport hydrogen. The platform is based on open-source data and intends to provide a thorough overview of current hydrogen projects along the whole value chain – from production, via transmission and distribution to end-use. It shows where the first hydrogen valleys could emerge and how they can be connected via retrofitted and repurposed pipelines due to the planned and ongoing hydrogen projects included on the platform. The platform is regularly updated using information received from project promoters.

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

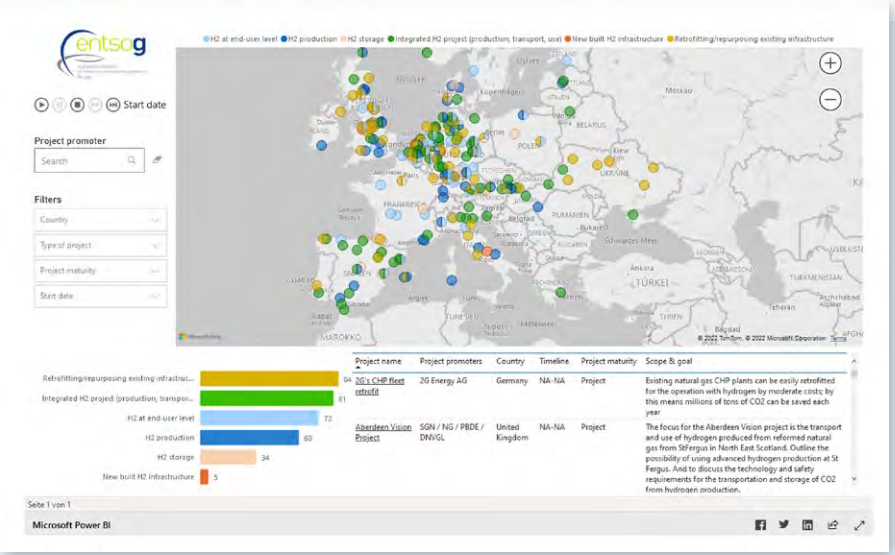
ENTSOG started to work on a web platform providing visualisation of a relevant range of operational data on an EU level to monitor security of supply. The development of this Regional Coordination System for Gas (ReCo) 2.0 platform can support the TSOs' dispatching centres and ReCo teams during emergency situations. As a first step, a visualisation of daily flows at relevant points is envisaged. Work on the development of the ReCo 2.0 platform will continue into 2022.

ENTSOG TRANSPARENCY PLATFORM AND PDWS MIGRATION TO THE CLOUD (MICROSOFT AZURE)

The ENTSOG data warehouse (PDWS) and Transparency Platform (TP), which are used by both the ENTSOG System Development and System Operation teams, have been migrated to the cloud (Microsoft Azure). Development started in 2020 and was finished in December 2021 and the final production delivery occurred in January 2022. This is the largest IT infrastructure project by ENTSOG and the biggest change to the PDWS and TP. Having the entire system in the cloud will allow ENTSOG to better manage the resources used and improve the performance of the data integration. Also, the report capabilities will be improved on the newer infrastructure, to provide a better overview of who uses the system, and how the system is being used.

After this migration, the focus in 2022 is fine-tuning the configuration and upgrading the SharePoint used for the Data Portal.

Hydrogen Project Visualisation Platform



Picture courtesy of Enagas

9

ENTSOG BOARD AND TEAMS

ENTSOG **BOARD**

On 30 June 2021, ENTSOG General Assembly approved the following nominations within the ENTSOG's Board as of 1 July 2021:

- **Mr. Bart Jan Hoevers (GTS)** as President of the association, in replacement of Mr. Stephan Kamphues; and,
- **Mr. Torben Brabo (Energinet)** as Board Member

On 27 October 2021, ENTSOG General Assembly designated **Mr. Piotr Kuś** as General Director for the term 1 January 2022 to 31 December 2024.

Listed below are ENTSOG Board members, as of 31 December 2021.

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

Miroslav Bodnár
(eustream a.s.)

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.)

Chris Logue
(National Grid Gas plc.)

Szabolcs I. Ferencz
(FGSZ Ltd)

Olli Sipilä
(Gasgrid Finland Oy)

Tomasz Stępień
(GAZ-SYSTEM S.A.)

Harald Stindl
(Gas Connect Austria)

Thierry Trouvé
(GRTgaz)

Christoph von dem Bussche
(GASCADE Gastransport GmbH)

ENTSOG **TEAMS**

MARKET TEAM

From left to right: Manfred Cadez, Madeleine Hammerman, Laurent Percebois, Irina Oshchepkova, Matt Golding, Alessia D'Addabbo, Claude Mangin, Alexandra Kiss; above: Kateryna Dolzhenko, David Gil

SYSTEM DEVELOPMENT TEAM

From left to right: Mareike Dollinger, Alexander Kättlitz, Dante Powell, Stefano Astorri, Joan Frezouls, Alexandra Kiss, Louis Watine, Kacper Żeromski; above: Mads Vejlby Boesen, Magdalena Bogucka, Maria Castro, Jacques Reberol

MANAGEMENT

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

SYSTEM OPERATION TEAM

From left to right: Rosa Puentes, Gerald Creaven, Alexandra Kiss, Lilia Jakobsson, Thilo von der Grün, Hendrik Pollex, Kathrine Stannov, Douglas Hill, Viktoria Medvedeva-Tšernobrivaja; above: Anton Kolisnyk

STRATEGY, POLICY & COMMUNICATION TEAM

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

MANAGEMENT SUPPORT TEAM

From left to right: Nicolas Van der Maren, Bogdan Gugescu, Agata Musial, Piotr Kuś, Maria Dhénin, Mauro Barbosa

ENTSOG **FINANCIAL STATEMENT 2021**

The Financial Statement 2021 was approved by the ENTSOG General Assembly on 28 April 2022.

ASSETS

Values EUR	Code	2021	2020
FORMATION EXPENSES	20		
FIXED ASSETS	21/28	**142,051.27**	**185,853.18**
211000 – Concessions, patents, licenses, know-how (D)		**16,873.00**	**16,873.00**
211009 – Concessions, patents, licenses, – Depr. (D)		**–16,873.00**	**–16,873.00**
Tangible fixed assets (explanation 6.1.2)	22/27	**141,551.27**	**185,353.18**
Furniture and vehicles	24	**106,147.68**	**140,373.48**
240000 – Furniture – acquisitions (D)		**345,901.07**	**345,901.07**
240009 – Furniture – depreciations (D)		**–283,556.84**	**–261,816.00**
241000 – Office equipment – acquisitions (D)		**297,556.55**	**273,165.49**
241009 – Office equipment – depreciations (D)		**–253,753.10**	**–216,877.08**
Other tangible fixed assets	26	**35,403.59**	**44,979.70**
260009 – Property kept as immovable property rese (D)		**–728,670.98**	**–714,159.53**
264000 – Expenses from fitting-out rented propert (D)		**764,074.57**	**759,139.23**
Financial fixed assets (explanation 6.1.3)	28	**500.00**	**500.00**
288000 – Cash guarantees (D)		**500.00**	**500.00**
CURRENT ASSETS	29/58	**3,320,422.13**	**2,943,100.41**
Amounts receivable within one year	40/41		**39,372.51**
Trade debtors	40		**39,372.51**
400000 – Customers (D)			**39,372.51**
Cash at bank and in hand	54/58	**3,210,422.13**	**2,853,727.90**
Deferred charges and accrued income	490/1	**110,000.00**	**50,000.00**
491000 – Accrued income (D)		**110,000.00**	**50,000.00**
GL accounts not in the standard Belgian schema	AXX		
TOTAL ASSETS	20/58	**3,462,473.40**	**3,128,953.59**

EQUITY AND LIABILITIES

Values EUR		Code	2021	2020
CAPITAL AND RESERVES		10/15	**1,735,107.02**	**1,735,107.02**
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	**815,215.02**	**815,215.02**
140000 – Accumulated profits (C)			**815,215.02**	**815,215.02**
PROVISION AND DEFERRED TAXES (explanation 6.2)		16		
AMOUNTS PAYABLE		17/49	**1,288,726.13**	**1,393,846.57**
Amounts payable within one year (explanation 6.3)		42/48	**1,018,726.13**	**1,158,013.57**
Trade debts		44	**949,542.18**	**1,062,315.87**
Suppliers		440/4	**949,542.18**	**1,062,315.87**
440000 – Suppliers (C)			**875,518.05**	**1,062,315.87**
444000 – Invoice to be received (C)			**74,024.13**	
Taxes, remuneration and social security		45	**69,183.95**	**95,697.70**
Taxes		450/3	**–58,635.28**	**–89,570.45**
451900 – Current VAT account (C)			**–58,635.28**	**–89,570.45**
Remuneration and social security		454/9	**127,819.23**	**185,268.15**
454000 – Social Security payable – expired (C)			**–76,249.02**	**13,367.73**
456000 – Provision for holiday pay – employees (C)			**204,068.25**	**171,900.42**
Accruals and deferred income		492/3	**270,000.00**	**235,833.00**
492000 – Accrued charges (C)			**270,000.00**	**235,833.00**
GL accounts not in the standard Belgian schema		BXX		
TOTAL LIABILITIES		10/49	**3,023,833.15**	**3,128,953.59**

Values EUR		Code	2021	2020

INCOME STATEMENT

Operating income and charges				
Gross operating margin	(+)/(–)	9900	2,335,285.66	2,198,183.82
Turnover		70	9,232,797.73	8,860,095.89
700000 – Sales & Provided services (C)			8,991,001.95	8,755,498.25
740900 – Withholding tax not to pay (C)			91,226.64	
741001 – Gain on disposal of other tangible fixed (C)			4.00	47.96
745200 – Meal-checks (employees intervention) (C)			3,208.96	3,349.57
745300 – Damage compensation (C)				507.95
745900 – Sundry recovered costs (C)			144,386.18	97,848.16
749100 – Benefit in kind (C)			2,970.00	2,844.00
Raw materials, consumables, services and other goods		60/61	6,897,512.07	6,661,912.07
610000 – Rent land and buildings (D)			631,887.14	565,610.33
610100 – Rent plant, fittings and fixtures (D)			733.29	
610200 – Rent machinery and equipment (D)			14,013.36	15,903.50
610300 – Maintenance informatica (D)			1,431.00	1,728.00
611000 – Maintenance land and buildings (D)			22,413.59	53,535.14
611100 – Maintenance plant, fittings and fixtures (D)				1,008.22
611300 – Maintenance office fittings and equipmen (D)				10,071.97
612400 – Prints and office supplies (D)			22,756.41	32,382.96
612410 – Documentation (D)			25,930.37	19,302.97
613100 – Fees and service benefits (D)			2,579,410.79	2,171,513.05
613101 – Fees				1,161.96
613102 – Fees			261,153.00	260,000.00
613103 – Fees			76,666.67	130,000.00
613104 – Fees				130,000.00
613105 – Fees			138,000.33	10,833.00
613106 – Fees				8,100.00
613107 – Fees			604,333.33	623,333.33
613108 – Fees			623,000.00	550,000.00
613109 – Fees			40,000.00	170,833.33
613111 – Fees			100,000.00	130,000.00
613112 – Fees				5,400.00
613113 – Fees			375,000.00	407,500.00
613114 – Fees			295,000.00	360,000.00
613116 – Fees				106,666.67
613118 – Fees			134,630.13	
613119 – Fees			284,333.34	194,999.67
613124 – Fees				130,000.00
613126 – Fees			233,419.27	260,000.00
613127 – Fees			132,083.33	130,000.00

Values EUR		Code	2021	2020
613140 – General insurance (D)			147.82	
613150 – External training charges (D)			120,006.47	47,192.08
613160 – Meetings organised by Entsog (D)			69,508.36	23,155.81
613170 – Conference fees (attendence) (D)			9,555.00	11,839.30
613200 – Subscriptions to professional organizati (D)			2,000.00	32,914.00
613250 – Legal publication and reporting (D)				1.67
613300 – Gifts and liberalities (D)				219.06
613500 – Legal publications (D)			2,272.55	
613700 – Telephone (D)			7,110.90	24,239.01
613710 – Cell phone (D)			25,088.62	16,239.76
613730 – Postal charges (D)			4,895.21	2,312.00
613801 – Catalogues, printed matter and document (D)			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)			3,396.34	
615000 – Personnel transportation (D)				1,647.00
615100 – Travel/moving costs (local) (D)			341.92	765.36
615101 – Travel/moving costs (abroad) (D)			26,170.35	21,388.89
615304 – Other transport and travel charges (D)				114.03
617000 – Temporary staff – workers (D)			4,500.00	
617010 – Temporary staff – employees (D)			11,391.02	
Remuneration, social security costs and pensions	(+)/(–)	62	1,799,243.95	1,574,529.92
Depreciation of and other amounts written off formation expenses, intangible and tangible fixed assets		630	73,128.31	78,013.82
630200 – Depreciation of tangible fixed assets (D)			73,128.31	78,013.82
Other operating charges		640/8	3,340.39	10,807.89
640400 – Registration fees (D)				8,467.31
640800 – Various taxes (D)			840.39	2,340.58
642000 – Losses realization trade debtors (D)			2,500.00	

INCOME STATEMENT

Values EUR		Code	2021	2020
Operating profit (loss)	(+)/(−)	9901	**459,573.01**	**534,832.19**
Financial income (explanation 6.4)		75/76B		**28.22**
Recurring financial income		75		**28.22**
751011 – Interests on Bonus account ING (C)				**21.12**
751400 – Bank interests (C)				**5.25**
757000 – Received discounts from supplier (C)				**–0.40**
758400 – Payment differences (C)				**2.25**
Financial charges (explanation 6.4)		65/66B	**20,932.76**	**9,361.89**
Recurring financial costs		65	**20,932.76**	**9,361.89**
650000 – Interest on loans payable after more tha (D)				**2.00**
650080 – Interests current account payable within (D)			**4,767.54**	
654000 – Realised exchange losses (D)			**6,011.50**	**1,483.57**
655000 – UnRealised exchange losses (D)				**1,660.87**
657000 – Other financial charges (D)			**28.75**	**1,431.88**
657010 – Payment differences on sales (D)			**7.97**	
658100 – Bank charges (D)			**10,108.35**	**4,785.05**
658400 – Payment differences (D)			**8.65**	**–1.48**
Profit (Loss) of the financial year before taxes	(+)/(−)	9903	**438,640.25**	**525,498.52**
Gain (loss) of the period	(+)/(−)	9904	**438,640.25**	**525,498.52**
Profit (loss) of the financial year available to be appropriated	(+)/(−)	9905	**438,640.25**	**525,498.52**
PROCESS PROFIT/LOSS				
Profit (loss) to be appropriated	(+)/(−)	9906	**438,640.25**	**525,498.52**
Profit (loss) of the financial year available to be appropriated	(+)/(−)	(9905)	**438,640.25**	**525,498.52**
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)	**438,640.25**	**525,498.52**
693000 – Profit to be carried forward (D)				**525,498.52**

Picture courtesy of TAP

PRESS RELEASES AND STAKEHOLDER WORKSHOPS 2021

PRESS RELEASES

11 Jan ENTSOG and GIE publish System Development Map 2019 – 2020

12 Jan ENTSOG publishes Project-Specific CBA (PS-CBA) package of documents for draft TYNDP 2020

21 Jan ENTSOG publishes the CAM Network Code 'Capacity Auction Calendar' for 2021/2022

08 Feb Registration for 4th edition of ENTSOG and the Florence School of Regulation Gas Network Codes online course ends this week

09 Feb ENTSOG launches Public Consultation on the 'Amendment of the Common Data Exchange Solution Table'

10 Feb ACER and ENTSOG publish their Joint Policy Paper with recommendations to mitigate misconduct in EU gas balancing markets

08 Mar ENTSOG publishes its response to ECs Regulation on Trans-European Energy Networks revision

12 Mar ENTSOG publishes its response to European Commission's consultation on upcoming Gas and Hydrogen markets Decarbonisation Package

29 Mar ENTSOG publishes its position paper on European Commission's initiative to revise RED II – the Renewable Energy Directive

13 Apr ENTSOG publishes Summer Supply Outlook 2021 and Summer Supply Review 2020

26 Apr ENTSO-E and ENTSOG publish the final TYNDP 2022 Storyline Report

04 May ENTSOG publishes its Annual Report 2020 and two Monitoring Reports

10 May ENTSOG calls for collaboration on TEN-E Regulation to meet the European Climate and Energy objectives

18 May ACER and ENTSOG publish solution to issue of PRODOC requirement on Gas Network Codes Functionality platform

26 May ENTSOG calls for an integrated natural gas and hydrogen regulatory framework

27 May ENTSOG, GIE and Hydrogen Europe publish 'How to transport and store hydrogen? Facts and figures'

18 Jun ENTSOG submits its response to European Commission's consultation on upcoming Gas and Hydrogen markets Decarbonisation Package

21 Jun ENTSOG informs about the beginning of the third incremental capacity process commencing in July 2021

30 Jun ENTSOG appoints new President

13 Jul ENTSOG publishes Final Ten-Year Network Development Plan (TYNDP) 2020

19 Jul Gas Network Codes Functionality Platform: ACER and ENTSOG have published a public consultation summary and an issue solution

29 Jul ENTSOG opens public stakeholder consultation on its Annual Work Programme (AWP) 2022

09 Sep ENTSOG launches an EU-wide visualisation platform for low-carbon and renewable hydrogen projects

17 Sep ENTSOG publishes its Practical Implementation Document (PID) for TYNDP 2022

22 Sep ENTSOG plans to publish its Winter Supply Outlook 2021/2022 on 12 October 2021

07 Oct ENTSOG and ENTSO-E publish their joint draft scenarios for TYNDP 2022 and open public consultation

11 Oct ENTSOG publishes project collection supporting documents for TYNDP 2022

12 Oct ENTSOG publishes its Winter Supply Outlook 2021/22 and Winter Supply Review 2020/21

18 Oct ENTSOG Commences Project Collection For The Ten-Year Network Development Plan 2022

28 Oct	New Re-Stream study on transport of H_2 & CO_2 in European gas and oil infrastructure
05 Nov	ENTSOG publishes its Transmission Capacity Map 2021
25 Nov	ENTSOG appoints new General Director as of 1 January 2022
30 Nov	ENTSOG publishes revision of the Union-wide simulation of gas supply and infrastructure disruption scenarios report
09 Dec	ENTSOG updates on monitoring of the Incremental Capacity Process
15 Dec	ENTSOG initial reaction to the publication of the EC's Hydrogen and Decarbonised Gas Market Package
16 Dec	Participants discuss the newly published Hydrogen and Decarbonised Gas Markets Package at ENTSOG Annual Conference 2021
16 Dec	ENTSOG announces the ENTSOG President and Board Members for new term of 1 January 2022 until 31 December 2024
17 Dec	Transmission system operators of Central Eastern Europe region publish their Gas Regional Investment Plan 2021 and open public consultation 2021
20 Dec	ENTSOG publishes its Annual Work Programme 2022

ENTSOG STAKEHOLDER CONSULTATIONS AND WORKSHOPS 2021

Jan–March	Market Codes & Interoperability	FSR/ENTSOG online Gas Network Codes course
27 Jan	Energy Transition	Advisory Panel for Future Gas Grids
09 Feb	Interoperability	ENTSOG launches public consultation on the 'Amendment of the Common Data Exchange Solution Table'
14 Apr	Energy Transition	Advisory Panel for Future Gas Grids
02 Jun	TYNDP	Webinar on the practical implementation document for (pid) developing TYNDP 2022
24 Jun	Energy Transition	Advisory Panel for Future Gas Grids
19 Jul	Market Codes	Gas Network Codes Functionality Platform: ACER and ENTSOG have published a public consultation summary and an issue solution
29 Jul	General	ENTSOG opens public stakeholder consultation on its Annual Work Programme (AWP) 2022
07 Oct	TYNDP	ENTSOG and ENTSO-E publish their joint draft scenarios for TYNDP 2022 and open public consultation
20–25 Oct	TYNDP	Webinars to assist promoters with the project submission for TYNDP 2022
20 Oct	TYNDP	ENTSO-E & ENTSOG TYNDP 2022 scenarios draft storyline report stakeholder consultation workshop
26 Oct	Energy Transition	Advisory Panel for Future Gas Grids
16 Nov	Gas Quality	Online webinar on Re-Stream study on transport of hydrogen and CO_2 in European offshore and onshore gas and oil infrastructure
17 Nov	Interoperability	Joint workshop on data exchange and cyber security in the gas sector
25 Nov	Gas Quality	Prime Movers Group on Gas Quality and Hydrogen Handling
15 Dec	Energy Transition	ENTSOG Annual Conference 2021: Infrastructure for a Hydrogen and Decarbonised Gas Market

LIST OF **ABBREVIATIONS**

ACER	Agency for the Cooperation of Energy Regulators
AR	Annual Report
ARIS	ACER's REMIT Information System
AWP	Annual Work Programme
BAL KG	Balancing Kernel Group
BAL NC	Balancing Network Code
BP	Booking Platform
CAM NC	Capacity Allocation Mechanism Network Code
CAP KG	Capacity Kernel Group
CBA	Cost-Benefit Analysis
CCS	Carbon Capture Storage
CCUS	Carbon Capture, Utilisation and Storage
CEN	European Committee for Standardisation
CIO	Central Issuing Office
CMP GL	Congestion Management Procedures Guidelines
CNOT	Common Network Operational Tool
EASEE-gas	European Association for the Streamlining of Energy Exchange – gas
EC	European Commission
ECP	External Contact Platform
EEA	European Economic Area
EFTA	European Free Trade Association
EIC	Energy Identification Code
EnC	Energy Community
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSOG	European Network of Transmission System Operators for Gas
ETS	European Trading Scheme
ETR	Energy Transition
EU	European Union
FDA UIOLI	Firm-Day Ahead Use It Or Lose It
FSR	Florence School of Regulation
FUNC	Gas Network Codes Functionality Platform
GA	General Assembly
GCG	Gas Coordination Group
GCV	Gross Calorific Value
GIE	Gas Infrastructure Europe
GHG	Greenhouse Gases
GIS	Geographical Information System
GO	Guarantee of Origin

GO KG	Guarantee of Origin Kernel Group
IAs	Interconnection Agreements
INT WG	Interoperability Working Group
INV WG	Investment Working Group
IP	Interconnection Point
KG	Kernel Group
LAG	Legal Advisory Group
LIO	Local Issuing Office
LT UIOLI	Long-Term Use It Or Lose It
LNG	Liquefied Natural Gas
MC WG	Market Codes Working Group
MD WG	Market Development Working Group
MS	Member State
NC	Network Code
NeMo KG	Network Model Kernel Group
NRA	National Regulatory Authority
OBA	Operational Balancing Account
PCI	Project of Common Interest
R&D	Research and Development
ReCo	Regional Coordination System for Gas
REMIT	Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency
RES	Renewable Energy Sources
RRM	Registered Reporting Mechanism
SCN WG	Scenario Working Group
SET	Strategic Energy Technology
SoS	Security of Supply
SPC	Strategy, Policy and Communication
TAR KG	Tariff Kernel Group
TAR NC	Tariff Network Code
Tariff Idoc	Tariff Network Code Implementation Document
TP	Transparency Platform
TRA WG	Transparency Working Group
TSO	Transmission System Operator
TYNDP	Ten-Year Network Development Plan
UMM	Urgent Market Message
VTPs	Virtual Trading Points
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**

This report was prepared by ENTSOG on the basis of information collected and compiled by ENTSOG from its members. All content is provided "as is" without any warranty of any kind as to the completeness, accuracy, fitness for any particular purpose or any use of results based on this information and ENTSOG hereby expressly disclaims all warranties and representations, whether expressly or implied, including without limitation, warranties or representations of merchantability or fitness for a particular purpose.

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