entsog

european network
of transmission system operators
for gas

ANNUAL REPORT **2016**

Securing Europe's energy future

implementing the internal market for gas

ENTSOG – A FAIR PARTNER TO ALL!

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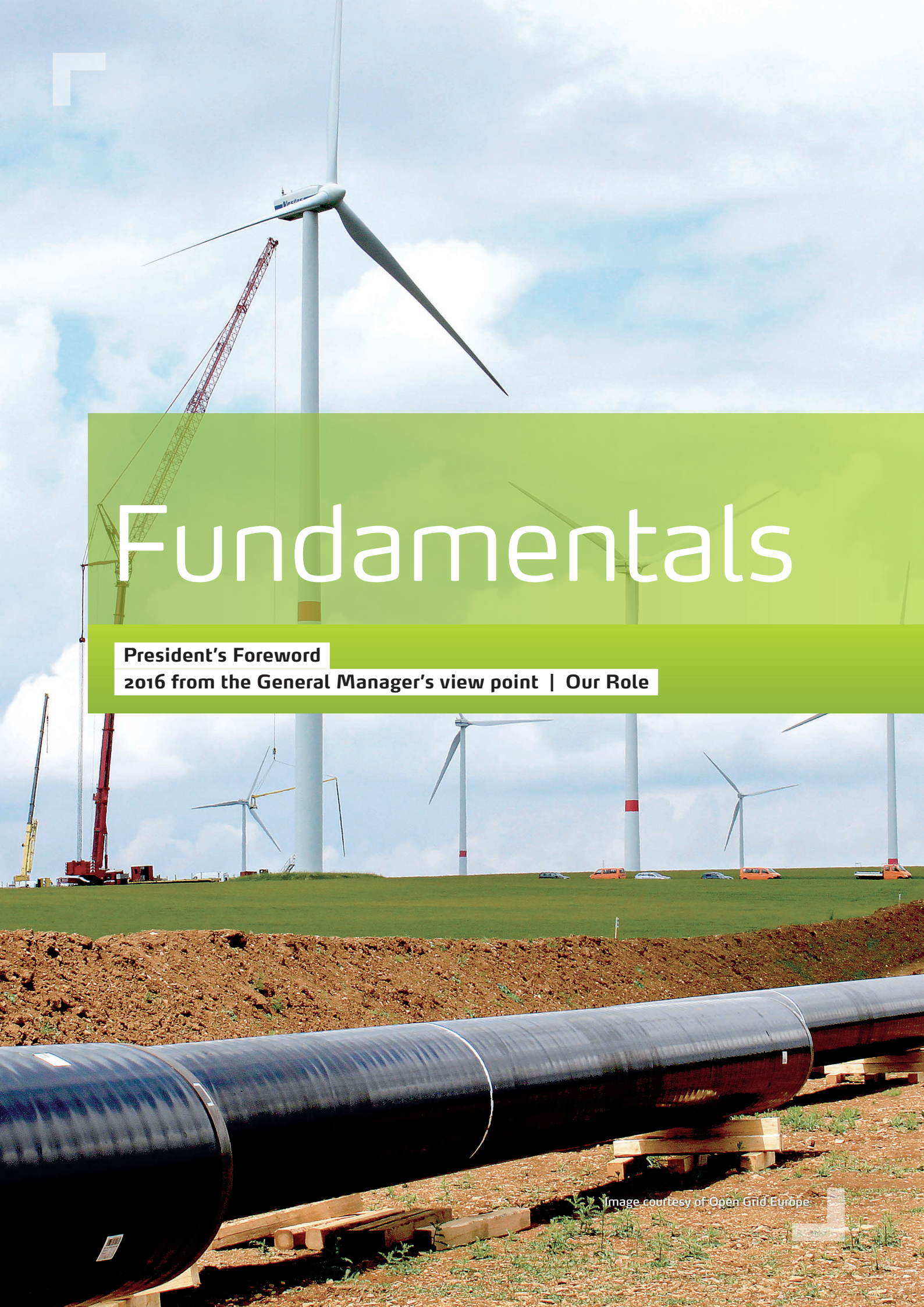

Image courtesy of Open Grid Europe

President's Foreword

In 2016 ENTSOG was well on its way to successfully completing its work on the development of Network Codes, by nearing the finalisation of the Network Code on Tariffs as well as the update of the Network Code on Capacity Allocation Mechanism, which includes new rules for incremental capacity as a core element. By early 2017, the implementation and effect monitoring stage of the network codes' lifecycle has commenced.

One important event in the last year that will influence the prospective work of the gas TSO business was the start the process for the "Quo Vadis EU gas market regulatory framework – a study on a Gas Market Design for Europe" by the European Commission. At the time this Annual Report is published the work on this study will be ongoing and I want to take the opportunity to contribute with some ENTSOG viewpoints.

There are a number of elements that need to be considered in the future gas market design. There is a need for a higher level of interaction between electricity and gas markets. This increased level of interaction will need to be assessed to ensure that the future gas market is able to respond to the requirements of the energy sector as a whole, which means from today's perspective higher gas system load flexibility and most probably also further investments into capacities and innovation. There will be a need for cooperation and optimisation between the various parts of the energy sector, such as the heating sector with an efficient balance between gas and electricity usage and the transport sector with an increasing use of gas fired vehicles and ships. The interaction between the various parts of the energy sector should be considered in meeting the EU climate targets. Gas market design should enable the transfer of energy across such sectors.

Any proposal also needs to consider the development and application of new technologies. The gas market design needs to accommodate the potential development and utilisation of power-to-gas as well as the increasing production of, and demand for, renewable gases. The market design should provide flexibility in how to encourage such development.

At ENTSOG we are looking forward to participate and contribute to these important discussions. We will be challenged as gas TSOs – but it is my firm belief that the gas transmissions systems of Europe have a lot offer for the energy transition and that we will continue to play an important role in this transition, now and in the future.

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STEPHAN KAMPHUES
President, ENTSOG

2016 from the General Manager's view point

In 2016 ENTSOG passed the 7th year since being established late in 2009. And it has been another challenging year for ENTSOG and its members and a year where ENTSOG has reached some important milestones.

After several years of extensive preparations, intense work and tough negotiations the Tariff Network Code – which may be the last of the gas network codes – was agreed in substance, though formally not agreed before early 2017. As of now, implementation of the Tariff Network Code – and the agreed changes to the Capacity Allocation Mechanism Network Code (regarding the handling of incremental capacity) – will now have the full attention of ENTSOG and the TSOs. In addition, ENTSOG is conducting its monitoring task – regarding implementation as well as effects of the network codes.

Collection of information for the 5th version of the Ten Year Network Development Plan, TYNDP 2017, project overviews, modelling, simulations etc. was taking place during 2016 and the draft report – containing more than 200 projects – was launched for consultation in December 2016. The main conclusions are that in general the European gas transmission system is robust and ready to support security of supply as well as the functioning of the gas market – but also that some regions of Europe still are in the need of further gas infrastructure developments.

For TYNDP we have taken the first steps of the cooperation between ENTSO-E and ENTSOG – a cooperation which will be further strengthened in the upcoming TYNDP. The cooperation between the electricity and gas sectors will become more important in order to meet the challenges of the energy transition in the most efficient and climate friendly way.

ENTSOG has in 2016 been contributing with its expertise and practical experience to the revision of the Security of Supply Regulation for Gas – cooperating with both the European Commission and the ITRE Committee of the European Parliament. In particular ENTSOG and its members have contributed with information on the structure of the various gas supply corridors to Europe as a cornerstone in the analyses and cooperation interfaces in relation to security of the gas supply. ENTSOG's regional coordination structure – the so-called ReCo System for Gas – will now as a part of the revised regulation contribute by ensuring the relevant cooperation on the operational level.

The DNA of ENTSOG's way of working is focused on integrating the viewpoints of stakeholders, EU institutions and TSOs – with the aim of creating solutions together with stakeholders and which are accepted by all to the largest extent possible. This requires open and transparent processes where dialogues with stakeholders are established and maintained on an early stage of every process. This approach may seem to take more time – but ENTSOG believes that this time is well spent and will result in better and more robust end results.

In 2016 ENTSOG was hosting/co-hosting and participating in 23 workshops with stakeholder involvement. In addition, ENTSOG conducted four General Assembly meetings, twelve Board meetings and 81 internal meetings with its members – and more than 1,500 different people were participating in these meetings. This shows both the interest of stakeholders to participate as well as the dedication of the gas TSOs and its representatives to participate, contribute and deliver – with the result that ENTSOG also in 2016 has delivered as expected.

ENTSOG was in the first years since its establishment focused on the initial development of network codes, on getting the first TYNDP versions done, on establishing the Transparency Platform with large amounts of operational gas data as well as a number of other activities.

Now, a new phase is approaching where ENTSOG is engaging in improving the existing network codes, TYNDP models, Transparency Platform – based on input from stakeholders and EU institutions as well as from the TSOs. Improvements on ENTSOGs deliverables and way of working will require a close and continuous dialogue with stakeholders, the EU institutions and ENTSOG's members – who are not only financing ENTSOG's work but are also executing the implementation, providing the data and allocating the human resources and expertise to ENTSOG.

Even though we may now have developed the necessary gas network codes, it is also clear the first version of the codes will not be the last one. ENTSOG finds that the process for the initial development of the network codes has proven in practice to work as hoped for. However, ENTSOG believes that similar processes for updating and amending the network codes will need to be further elaborated, in particular to include stakeholders and the ENTSOs more formally in such upcoming amendment processes.

ENTSOG will engage actively in the on-going debates on ENTSOG's work as well as in potential developments of the regulatory framework that ENTSOG is operating within. ENTSOG will therefore not only ensure that ENTSOG is compliant with the existing regulation, but also that ENTSOG will take up the role of a pro-active and trusted adviser on all ENTSOG relevant issues – bringing well-founded and balanced expertise as well as practical experience into the discussions and processes.

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JAN INGWERSEN
General Manager, ENTSOG

Our Role

ENTSOG (European Network of Transmission System Operators for Gas) works to facilitate and enhance cooperation between Europe's gas transmission system operators (TSOs) and to support the development of a European transmission system in line with European Union's energy goals.

In pursuit of this overarching objective, ENTSOG strives to complete an internal European market for gas and to set up a framework for cross-border trading, as well as to establish efficient management and coordinated operation of the European transmission networks. At the same time, ENTSOG is facilitating the technical evolution of Europe's gas network in a sound manner.

ENTSOG's tasks are mainly defined in Regulation (EC) No 715/2009. This includes developing network codes for market and system operation, elaborating the Ten-Year Network Development Plan (TYNDP), providing regular information on gas supply and demand for the European market and delivering common operational tools to ensure network security and reliability.

ENTSOG operates also the Transparency Platform, where TSOs provide technical and commercial data on transmission points and their interconnections. Having all TSOs' data available on one central website facilitates comparisons and quantitative analysis.

NETWORK CODES AND BEYOND

ENTSOG has developed network codes (NC) containing rules on how to integrate the gas market as well as for system operation and development. These NCs deal with subjects ranging from capacity allocation to network interconnections and operational security. The NC development process begins when the European Commission (EC) submits a request for a Framework Guideline to ACER (Agency for the Cooperation of Energy Regulators). Next, ENTSOG transforms the ACER Framework Guideline into a network code all the while conducting extensive public consultations.
Once approved through the European comitology procedure, a network code becomes legally binding for all TSOs.

On the way to EU law and to implementation

- **Guidelines on Congestion Management Procedures and on Transparency**
  Published as Annex to Regulation (EU) No 715/2009. Most CMP-rules implemented by October 2013
- **CAM NC – Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems**
  ENTSOG's first NC – published on 14 October 2013 as Regulation (EU) No 984/2013, implemented by November 2015
- **BAL NC – Network Code on Gas Balancing of Transmission Networks**
  ENTSOG's second NC – published 26 March 2014 as Regulation (EU) No 312/2014, implemented by October 2016
- **INT NC – Network Code on Interoperability and Data Exchange Rules**
  ACER recommendation to EC on 15 January 2014 – Comitology meetings in 2014 – 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**
  Invitation to draft NC from EC on 19 December 2013 – published on 16 March 2017 as Regulation (EU) 2017/460
- **CAM NC Amendment for Incremental capacity**
  Invitation to draft NC amendment from EC on 19 December 2013 – published on 16 March as Regulation (EU) 2017/459, entry into force as of 6 April 2017

The EU would meet its CO_2 target if gas replaced coal for power generation.

Image courtesy of Reganosa

UNION/EUROPEAN-WIDE NETWORK DEVELOPMENT PLAN

The Ten-Year Network Development Plan (TYNDP) provides a picture of the European gas infrastructure and its future developments, and it maps the integrated gas network according to a range of development scenarios. The TYNDP also includes a European Capacity Adequacy Outlook and an assessment of the network resiliency. Gas Regional Investment Plans (GRIPs) led by TSOs with ENTSOG assistance complement the TYNDP by focusing on issues of particular regional importance.

SEASONAL OUTLOOKS

The aim of seasonal Supply Outlooks is to give an overview of how the European gas system can potentially cope with the main challenges of the season ahead. This is done by taking into account the latest supply and demand trends captured by seasonal reviews. ENTSOG's Annual Summer and Winter Supply Outlooks review projections for the gas supply, demand and capacity of the near future. Supply Reviews analyse the actual situation over a particular period.

OPERATIONAL TOOLS

Regulation (EC) 715/2009 also envisages the use of common network operation tools to ensure the transparency and coordination of network operations under normal and emergency conditions.

Following the requirement of Article 5 of Commission Regulation (EU) 2015/703 establishing a Network Code on Interoperability and Data Exchange Rules, ENTSOG developed an interconnection agreement template covering the default terms and conditions set out in Articles 6 to 10 of the Network Code.

Infrastructure

ENTSOG Members | Members Map | ENTSOG Deliverables 2016
ENTSOG Structure 2016 | Work Programme Status

Image courtesy of Fluxys

ENTSOG Members

STATUS: END OF 2016

By the end of 2016 ENTSOG had 45 members, two associated partners from 26 EU countries and four observers from non-EU countries

MEMBERS (45)

Austria	– Gas Connect Austria GmbH – TAG GmbH
Belgium	– Fluxys Belgium S.A.
Bulgaria	– Bulgartransgaz EAD
Croatia	– Plinacro
Czech Republic	– NET4GAS, s.r.o.
Denmark	– Energinet.dk (renamed Energinet in 2017)
Finland	– Gasum Oy
France	– GRTgaz – TIGF SA
Germany	– bayernets GmbH – Fluxys TENP GmbH – GASCADE Gastransport GmbH – Gastransport Nord GmbH – Gasunie Deutschland Transport Services GmbH – GRTgaz Deutschland GmbH – jordgas Transport 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.
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) – Interconnector (UK) Limited – National Grid Gas plc – Premier Transmission Limited

ASSOCIATED PARTNERS (2)

Estonia	– Elering Gaas AS
Latvia	– Latvijas Gāze JSC (renamed Conexus in 2017)

OBSERVERS (4)

F.Y.R.O.M.	– GA-MA AD Skopje
Norway	– Gassco AS
Switzerland	– Swissgas AG
Ukraine	– PJSC UKRTRANSGAZ

Members Map

STATUS: END OF 2016

Members

Associated Partners

Observers

Since its foundation, ENTSOG member TSOs have provided wide coverage of the European gas market. In addition, ENTSOG's articles of association were modified in December 2010 to admit TSOs from EU countries currently derogated from the Third Energy Package, such as the Baltic States, as associated partners able to participate in its activities.

In February 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.

ENTSOG Deliverables 2016

22 January
CAM NC related Auction Calendars

20 April
ENTSOG publishes
Summer Supply Outlook 2016
& Summer Review 2015

JAN FEB MAR APR MAY JUN

11 February
Launch of Functionality Platform

8 June
ENTSOG publishes
BAL and CAM Implementation Monitoring Reports

9 June
ENTSOG publishes its Annual Report 2015

10 June
ENTSOG publishes Transmission Capacity Map

JUL AUG SEP OCT NOV DEC

2 September
BRS to support CAM NC and CMP implementation

15 September
ENTSOG publishes System Development Map

13 October
CAM NC amendment endorsed by Gas Committee

14 October
ENTSOG publishes Winter Supply Outlook 2016/17 & Winter Review 2015/16

31 October
ENTSOG publishes INT NC Implementation Monitoring Report

7 November
Management of BRS for Balancing

17 November
CNOTs for Data Exchange

24 November
CAM NC related Auction Calendar for 2017/18

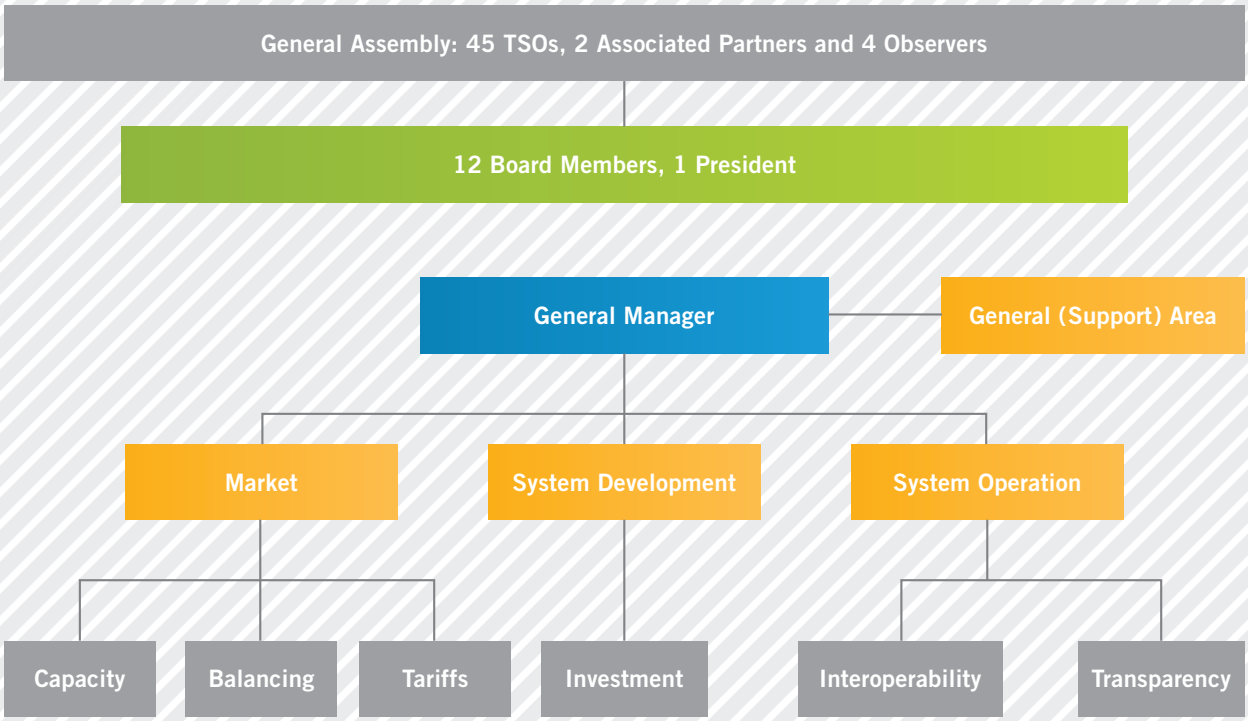
30 November
AS4 Usage Profile

15 December
Analysis of the impacts of a reference to EN16726: 2015 in the INT NC

20 December
TYNDP 2017 (including long term gas quality monitoring outlook) published for consultation

21 December
Submission of ENTSO-E/ENTSOG interlinked model to ACER and EC

ENTSOG Structure 2016



Work Programme Status

These tables provide an overview of the activities in ENTSOG's three main business areas. The commented tasks originate from the Annual Work Programme 2016.

ACTIVITY	GOAL	DELIVERABLE & COMPLETION DATE	CONSULTATION WITH	STATUS / COMMENTS
MARKET AREA				
Capacity				
Development of CAM NC auction calendar 2016	Publish the auction calendar for 2016	Publication in January 2016	TSOs	Completed
Development of CAM NC auction calendar 2017	Publish the auction calendar for 2017	Publication on 24 November 2016	TSOs	Completed
Development of ENTSOG CAM NC implementation Monitoring 2015	Publish the implementation Monitoring for CAM NC	Publication on 8 June 2016	TSOs	Completed
Development of ENTSOG CMP GL implementation Monitoring 2015	Publish the implementation Monitoring for CMP GL	Publication on 8 June 2016	TSOs	Completed
Development of CAM/CMP CNOTs specification (BRS + MIG)	Publish the BRS to support CAM NC and CMP implementation	Publication on 2 September 2016	Stakeholders, TSOs, EASEEgas	Completed
Cooperation on CAM amendment development	Amendment of CAM NC on incremental capacity	Endorsed by Gas committee on 13 October 2016	ACER, EC, TSOs	Completed
CMP and CAM NC implementation and effect monitoring report for 2016 Annual Report	Launch the questionnaire for CMP and CAM report to TSOs	Launched in November 2016	TSOs	On-going
Review of INC process – INC reality check WG	To test INC process on virtual case, propose amendments to EC	Launched in February 2016, Finished in October 2016	TSOs, EC, Stakeholders, GAC WS2 members	Completed
Alignment of GT & Cs	Publish a report identifying differences in categories of GT & Cs	Launched in November 2016 To be published in January 2018	Stakeholders, TSOs, ACER	On-going
Development of Demand assessment report template for INC capacity	Provide TSOs with final DAR template	Launched in November 2016 Finalized in March 2017	TSOs, ACER, NRAs	Completed
Development of ENTSOG capacity conversion Model	Publish ENTSOG Capacity conversion model	Launched in November 2016 To be published in October 2017	Stakeholders, TSOs, ACER	On-going
Supporting activities of Energy community secretariat with implementation of CAM NC and CMP in CP countries	Implementation of CAM NC and CMP in CP countries	Launched in July 2016	Energy community secretariat, TSOs and NRAs	On-going

ACTIVITY	GOAL	DELIVERABLE & COMPLETION DATE	CONSULTATION WITH	STATUS / COMMENTS
MARKET AREA				
Balancing				
Management of BRS for Balancing (potential change procedures or new BRS)	Publish the updated BRS for Nomination and Matching with the Common Data Exchange Solutions	Publication on 7 November 2016	Stakeholders, TSOs	Completed
Implementation support and sharing of implementation experiences	Organize a joint ACER/ENTSOG Workshop on Balancing	Organised Workshop on 7 November 2016	Stakeholders, TSOs, NRAs and ACER	Completed
Implementation monitoring	Publish the first ENTSOG report on the implementation for Balancing to assess implementation status as of 1 October 2015.	Publication on 8 June 2016	TSOs and ACER	Completed
Potential functionality process for BAL	Provide stakeholders the possibility to raise and discuss the implementation, functional and operational issues as well as involve stakeholders into prioritisation and propositions of solutions			No issues were raised in 2016
Update on implementation status report	Publish the second ENTSOG report on the implementation for Balancing to assess implementation status as of 1 October 2016.	Launched questionnaire to TSOs in December 2016	TSOs and ACER	On-going
Tariffs				
Support during the TAR NC comitology period	Ensure the adoption of the TAR NC	On-going in 2016, expected completion early 2017	EC, ACER, TSOs	On-going
Implementation discussion	Facilitate the efficient implementation of the TAR NC	Start Implementation Document and prepare for Implementation Workshop, both to be finished early 2017	TSOs, NRAs, ACER, Stakeholders	On-going
Develop TAR implementation monitoring	Prepare for the drafting of Implementation Monitoring report	Start process in 2016 so that ENTSOG is on time to launch questionnaire and collect data before 31 Dec 2017 and prepare the report by 31 March 2018	TSOs and ACER	On-going
Develop TAR effect monitoring	Prepare for the drafting of Effect Monitoring report	Start process in 2016 so that ENTSOG is on time to launch questionnaire and prepare the report by 31 March 2018	TSOs and ACER	On-going
Setting up stakeholder process for TAR FUNC	To prepare for functionality process to facilitate and resolve early identification of issues/challenges	Include the TAR NC in the J-FUNC process in Q2/2017	TSOs, NRAs, ACER, Stakeholders	On-going

ACTIVITY	GOAL	DELIVERABLE & COMPLETION DATE	CONSULTATION WITH	STATUS / COMMENTS
SYSTEM DEVELOPMENT AREA				
Summer Outlook 2016	Provide view on injection period ahead	Publication on 20 April 2016	ACER	Completed
Summer Review 2015	Analyse previous summer	Publication on 20 April 2016		Completed
Transmission Capacity Map 2016	Provide overview of annual capacity at IP level	Publication on 10 June 2016		Completed
System Development Map 2015/2016	Provide project map and graphic representation of supply-and-demand for past year	Publication on 15 September 2016		Completed
Winter Outlook 2016/17	Provide view on supply-and-demand balance for winter ahead	Publication on 14 October 2016	ACER	Completed
Winter Review 2015/16	Analyse previous winter	Publication on 14 October 2016		Completed
TYNDP 2017	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	Final TYNDP publication by end April 2017	Stakeholders, ACER	Draft version published on 20 December 2016 Preliminary results publication in October 2016 Input data publication in July 2016
ENTSO-E/ENTSOG consistent and interlinked model	Submit the ENTSOs model in line Art 11(8) of Regulation (EU) 347/2013	Submission to ACER and Commission for their opinion on 21 December 2016	ACER, Commission	Completed The ENTSOs may adapt the model in 2017 based on ACER and Commission opinions
TYNDP 2018 scenario development process	Joint scenario development process between both ENTSOs	Scenario Report to be published for public consultation mid-2017	Stakeholders, NRAs, Member States, ACER, Commission	Ongoing task Public consultation and workshops on story lines in May-June-July 2016
Support to TSOs for GRIPs	Support in modelling	3rd edition of GRIPs to be delivered in 2017		Ongoing task
Support to Regional Groups	Provide technical expertise during the third selection process. Support promoters on CBA at project level by handling modelling and providing templates.	Contribution to the EC/ACER/ENTSOs Cooperation Platform (ongoing) Operationalisation of the PCI call using ENTSOG Project portal (completed) Support to promoters (ongoing)		Ongoing task
Support to GCG				
Analysis of gas demand	Prepare framework for demand scenarios	Four demand scenarios developed for TYNDP 2017, making use of ENTSO-E TYNDP 2016 scenarios Three demand scenarios under joint development by both ENTSOs for TYNDP 2018	Stakeholders, NRAs, Member States, ACER, Commission	Completed for TYNDP 2017 Ongoing for TYNDP 2018
Analysis of supply flexibility	Prepare framework for supply potentials, for TYNDP and Seasonal Outlooks	Definition of supply potentials	Stakeholders, suppliers	Completed for TYNDP 2017 and Seasonal Outlooks
Investigation of transmission infrastructure role in supporting sustainability	Assess ability of gas infrastructure to support renewables	Analysis and assessment performed as part of TYNDP 2017		Completed
ENTSOG modelling tool	Ensure adequacy of the modelling tool with the assessment methodologies put in place by ENTSOG	Improvement of the modelling for TYNDP 2017 and information of stakeholders		Completed for TYNDP 2017
Update of CBA Methodology	Develop an updated and improved CBA methodology in line with Art 11(6) or Regulation 347			Task initiated end 2016

ACTIVITY	GOAL	DELIVERABLE & COMPLETION DATE	CONSULTATION WITH	STATUS / COMMENTS
SYSTEM OPERATION AREA: PROJECT PLAN FOR TRANSPARENCY WORKING GROUP				
Additional tools for Transparency Platform	Increased usability and user friendliness	Several new TP functionalities were implemented during 2016 with aim of enhancing data usability and publication comprehensiveness	Gas TSOs, TP users and other stakeholders	Completed as planned
10th public workshop on Transparency	Ensure transparent dialog with stakeholders	8 December 2016	Gas TSOs, TP users, ACER, EC and other stakeholders	Completed
Improvement of TP data quality	Enhance data publication comprehensiveness and usability	Ongoing process of data publication monitoring		On-going activity, in progress
Improvement of TP data frequency uploads	Publish physical flows in hourly granularity and frequency for cross-border points from 1 May 2016	39 TSOs have started to publish more frequently than required by the regulation during 2016	Gas TSOs, EFET	80 % complete The remaining TSOs will follow
Follow-up to REMIT	Ensure timely implementation and compliance of TSOs with REMIT requirements	7 April 2016 ensuring compliance ongoing activity		Completed On-going activity, in progress
Follow-up to NC transparency obligation	Ensure timely implementation of new transparency requirements.	Ongoing effort	Gas TSOs, ENTSOG Working Groups, TP users and other stakeholders	Ongoing activity, in progress
TP collaboration tool for information provision	Utilise the TP framework in emergency situations	Ongoing effort	RCSG KG	On-going activity embedded in the RCSG KG under Interoperability

Image courtesy of Ontras

ACTIVITY	GOAL	DELIVERABLE & COMPLETION DATE	CONSULTATION WITH	STATUS / COMMENTS
SYSTEM OPERATION AREA: PROJECT PLAN FOR INTEROPERABILITY WORKING GROUP				
Implementation monitoring	Assess the implementation status of the INT NC	Implementation monitoring report published by 31 October 2016	ACER and member TSOs	Published
Cooperation with Energy Community	Support member and EnC TSOs in implementing NC	NC implementation WS on 7 July 2016 and joint WS on System Operations 19 October 2016	Energy Community	
Analysis of an amendment of the INT NC regarding gas quality	Prepare a detailed analysis of the impacts across the whole EU gas value chain of a reference to EN16726:2015 in the INT NC	Final report published by 15 December 2016	EC, ACER, member TSOs and stakeholders across the whole gas value changed	Published
Long-term gas quality monitoring outlook	Identify the potential trends of gas quality in Europe for the next 10 years	Relevant chapter in TYNDP 2017 published by 20 December 2016	Member TSOs and TYNDP stakeholders	Published
Collaboration with CEN standardisation work on Wobbe Index	Facilitate TSOs contribution to completing the gas quality standard	ENTSOG joined as member of CEN SFGas WG Gas Quality	CEN	
Revision of SoS regulation	Contribute with ENTSOG's operational and technical expertise	ENTSOG supply corridor approach and ReCo System taken into account for draft regulation	EC, GCG, member TSOs	
Further development of the ReCo System	Facilitate the cooperation of TSOs in gas supply emergencies	On-going support activity		
Extension of the ReCo System to third countries	Supporting EnC regarding SoS	Invitation for EnC TSOs to ReCo teams		
Gas flow monitoring for Ukraine	Facilitate exchange of technical information among concerned parties	Meetings for monitoring of pressure drops in July 2016 and further development of the daily report		New version of daily report established and published
Development of BRSs and common data exchange solutions (CDES)	Reach an appropriate degree of harmonisation in data exchange	CNOTs for Nominations & Matching and CAM/CMP adopted and published 17 November 2016	ACER, member TSOs, auction platforms and network users	Published
Data exchange solution profiles	Ensure compatibility of CDES implementations	AS4 profile published by 30 November 2016	Member TSOs	
Cooperation with EASEE-gas	Facilitate TSOs contribution to EASEE-gas developments	Role Model workshop on 12 May 2016		
Operation of LIO office	Maintain and develop the list of EIC codes within ENTOSG scope	On-going service on ENTSOG's website		

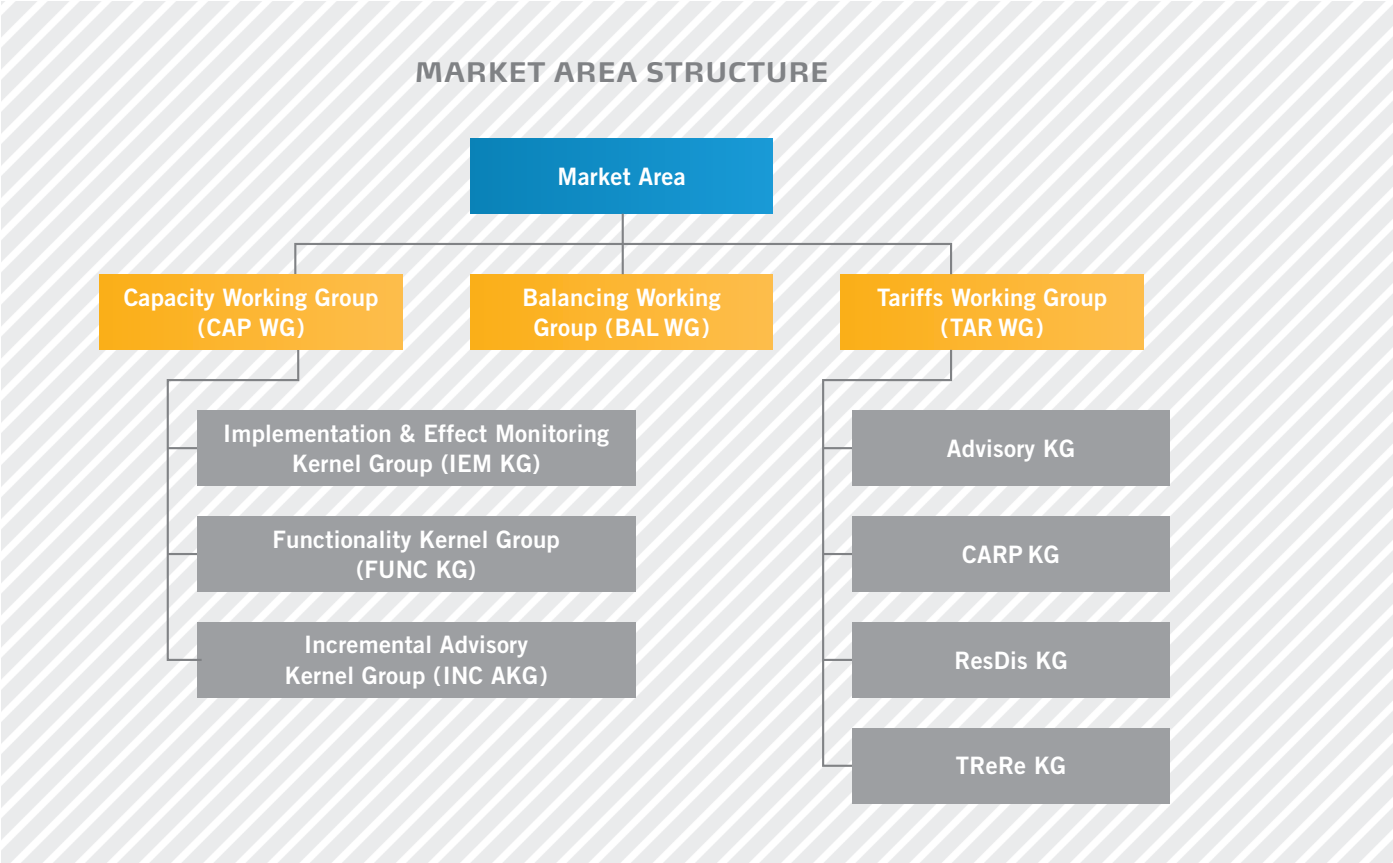
Work Space

Market Area | System Developement Area
System Operation Area | General Area | Monitoring Reports
IT and Research & Development Activities

Image courtesy of GRTgaz

Market Area

ENTSOG's Market Team is responsible for the market-related network codes that will promote the internal European gas market.



AREA STRUCTURE

The work within the Market Area is organised into three main areas, split to align with the relevant Network Codes. The work within these areas is managed via their corresponding Work Groups and supplemented by a number of Kernel Groups with more specialised tasks. The work areas are as show above.

CAPACITY

The Capacity Working Group (CAP WG) has been responsible for ENTSOG's activities related to the allocation of existing capacity (CAM NC – REG (EU) No 984/2013) and congestion management (Guidelines on CMP – Commission Decision of 24 August 2012 on amending Annex I to Regulation (EC) No 715/2009).

CAP WG consists of the following three Kernel Groups for detailed tasks:

- **Implementation & Effect Monitoring Kernel Group** (IEM KG)
- **Functionality Kernel Group** (FUNC KG)
- **Incremental Advisory Kernel Group** (INC AKG)
- **General Terms & Conditions Kernel Group**

Implementation & Effect Monitoring Kernel Group

The Implementation & Effect Monitoring Kernel Group is responsible for the monitoring under Article 8(8) of the Regulation (EC) No 715/2009 of Regulation (EU) No 984/2013 on Capacity Allocation Mechanisms (CAM NC) and the Commission Decision (2012/490/EU), known as Guidelines for Congestion Management Procedures (CMP guidelines). The IEM KG develops monitoring reports to all implementation deadlines in the CAM NC and CMP guidelines as well as analysis, reports and responses to ACER's implementation monitoring, where appropriate.

Functionality Kernel Group

The Functionality Kernel Group focus on how to facilitate the Regulation (EU) No 984/2013 on Capacity Allocation Mechanisms (CAM NC), and the Commission Decision (2012/490/EU), known as Guidelines for Congestion Management Procedures (CMP guidelines) to be working properly in practice across borders.

Incremental Advisory Kernel Group

The Incremental Advisory Kernel Group developed and drafted the proposal for incremental capacity, under the formal responsibility of the CAP WG. The INC AKG works in coordination with the TAR WG concerning tariffs for incremental capacity.

General Terms & Conditions Kernel Group

The GT&C KG is responsible for ENTSOG's activities related to the Regulation (EU) No 459/2017 Article 20 on Capacity Allocation Mechanisms (CAM NC) – the review and creation of a catalogue of the main terms and conditions of the transport contract(s) for bundled capacity products, identifying and categorising differences across member states in relation to the main terms and conditions and the reasons for such differences. The findings will be published in a report for the development of a final template for main terms and conditions.

BALANCING

The Balancing Working Group (BAL WG) is responsible for the Balancing Network Code (BAL NC). In 2016, the BAL WG focused on the implementation of BAL NC, monitoring obligations and the amendment of the Business Requirements Specifications on Nomination and Matching (BRS NOM & Matching). The BAL WG contains one joint Task Force with the Interoperability Working Group (INT WG) – the Common Network Operations Tools Task Force which focused on the amendment of the BRS NOM & Matching.

TARIFFS

The Tariff Working Group (TAR WG) is responsible for the development of the Tariff Network Code (TAR NC) proposal. In 2016, the TAR WG focused on supporting the TAR NC through the Comitology Procedure and started preparations for the implementation of the TAR NC. The TAR WG contains one joint Task Force – the 'Tariff Data Publication Task Force' (TAR DP TF) – hosted together with the Transparency Work Group (TRA WG).

Tariff Data Publication Task Force

The 'Tariff Data Publication Task Force' (TAR DP TF) was established in November 2016 comprising both TAR WG and TRA WG members and will be responsible for providing expertise, support and proposals for the activities related to the implementation of the transparency (data publication) requirements of the TAR NC. This will include the development of the standardised table for publishing tariff information directly on ENTSOG's Transparency Platform.

Activities in the Market Area in 2016

CAPACITY WORKING GROUP

Capacity Allocation Mechanisms

ENTSOG published two auction calendars in 2016. In January 2016 for the gas year 2016/2017 and in November 2016 for the gas year 2017/2018.

In June 2016 implementation monitoring report 2015 for CAM NC was published.

In Q4/2016 ENTSOG launched an implementation and effect monitoring process 2016 for CAM NC. This monitoring is required by Article 8(8) of the Regulation (EC) No 715/2009. ENTSOG launched the process in order to ensure timely publication of results in 2016 Annual Report.

On October 13th, 2016 the amendment of CAM NC was endorsed by the Gas Committee of EU member states. Article 21(3) states that ENTSOG has to develop a Capacity conversion model until 1 October 2017, which shall function as a basis for TSOs to offer capacity conversion services as of 1 January 2018. The ENTSOG conversion model according to CAM NC builds upon previous work done by ENTSOG in this area in 2015. The ENTSOG recommendation paper published in 2015 derived from extensive and transparent work stream included measures to prevent the "capacity mismatch issue" as well as potential options to handle this practically. Initially, the implementation of any of the measures and options was based on voluntary action and/or subject to approval on national level. The revised CAM NC Art 21(3) obliges TSOs to offer a capacity conversion service based on the ENTSOG model. ENTSOG Capacity conversion model is to be developed until October 2017, a process which ENTSOG started already in Q4/2016.

To fulfil ENTSOG's legal requirements as stated Article 20 CAM NC (EU 459/2017) – alignment of main terms and conditions for bundled capacity products – ENTSOG started in Q4/2016 a work on the review and creation of a catalogue of the main terms and conditions of the transport contract(s) for bundled capacity products. This work included identifying and categorising differences across the member states in relation to the main terms and conditions and the reasons for such differences including publication of findings in a report and the development of final template for main terms and conditions.

ENTSOG supported activities of Energy Community Secretariat related to implementation of CAM NC and CMP GL in Energy Community Contracting Party countries, ENTSOG experts participated at three physical meeting of EnC in order to provide know-how and best practices transfer from EU TSOs to EnC CP countries/TSOs/NRAs.

Congestion Management Procedures

In June 2016 the implementation monitoring report 2015 for CMP GL was published.

ENTSOG launched the implementation and effect monitoring process 2016 in Q4/2016. This monitoring is required by Article 8(8) of the Regulation (EC) No 715/2009.

Incremental Capacity work

In 2016 the activities of the INC AKG covered the ongoing development of the CAM amendment and the TAR NC. This included working closely with ACER and the EC.

For harmonizing the process for the development of incremental capacity, new rules for incremental capacity have been included in the Network Code on Capacity Allocation Mechanism (CAM NC). An amended version of CAM NC has been endorsed by the Member States in October 2016 (with application date in April 2017).

Based on the CAM NC amendment on incremental capacity ENTSOG developed in Q4/2016 two templates:

- Template for non-binding demand indications by network users to be sent to TSOs
- Demand assessment report template as requested by CAM NC Art. 26

ENTSOG was encouraged by stakeholders to organise a joint, ad-hoc, "reality check workgroup on Incremental capacity", under the management of ENTSOG. The objectives were to develop a more detailed understanding of the incremental process, to test the INC process on the basis of a virtual but realistic case for additional cross-border capacity and to propose improvements to CAM NC amendment for the identified inconsistencies within EC CAM NC comitology process in 2016.

On this basis ENTSOG established the so called INC Reality Check WG. Members of this workgroup were experts from 16 TSOs and experts from four stakeholders. The workgroup had twelve WG full day meetings in 2016. As a main output, the workgroup created nine recommendations to European Commission. Seven recommendations were adopted by DG ENER to the proposal of CAM NC amendment, however all nine recommendations were finally adopted during final comitology meeting on 13 October 2016.

BALANCING WORKING GROUP

The Network Code on Gas Balancing in Transmission Networks (Commission Regulation (EU) No 312/2014) was published in the Official Journal of the EU in March 2014 with a first implementation deadline as of 1 October 2015. The second implementation deadline for countries which applied transitory option passed on 1 October 2016.

During 2016, the BAL WG focussed on the implementation requirements set out in the BAL NC in preparation for the application of the Network Code in the respective Member States.

Following its monitoring obligation set out in Article 8(8) of the Regulation (EC) No 715/2009 and in order to assess the implementation plans of the individual TSOs, ENTSOG elaborated its first BAL NC monitoring report, in which the implementation status of the BAL NC by 1 October 2015 was identified.

ENTSOG Report was published in June 2016, followed by a joint ACER and ENTSOG Workshop on Balancing on 7 November 2016.

In addition to this, Business Requirements Specifications for the Nomination and Matching Procedures (NOM BRS) was updated with the relevant common data exchange solution for the respective data exchange requirement.

Continuing its monitoring tasks, ENTSOG developed indicators that aim to assess the effect of the BAL NC. A questionnaire to the ENTSOG members for the implementation and effect monitoring process was launched at the beginning of December 2016 in order to ensure timely publication of results in the 2017 Annual Report.

TARIFF WORKING GROUP

The Tariff Network Code on Harmonised Transmission Tariff Structures for Gas (TAR NC) was launched into the formal adoption process by the European Commission, entering into the Comitology Procedure in March 2016. The TAR NC passed through the final Comitology meeting on 30 September 2016, with validation by the European Council and the European Parliament expected early 2017. The Official Journal of the European Union is anticipated to publish the TAR NC on 17 March 2017, and it will enter into force 20 days later, on 6 April 2017. ENTSOG provided continuous support throughout the Comitology Procedure helping to deliver a positive outcome. This included regular discussions with the EC and ACER and gathering expert feedback from Members.

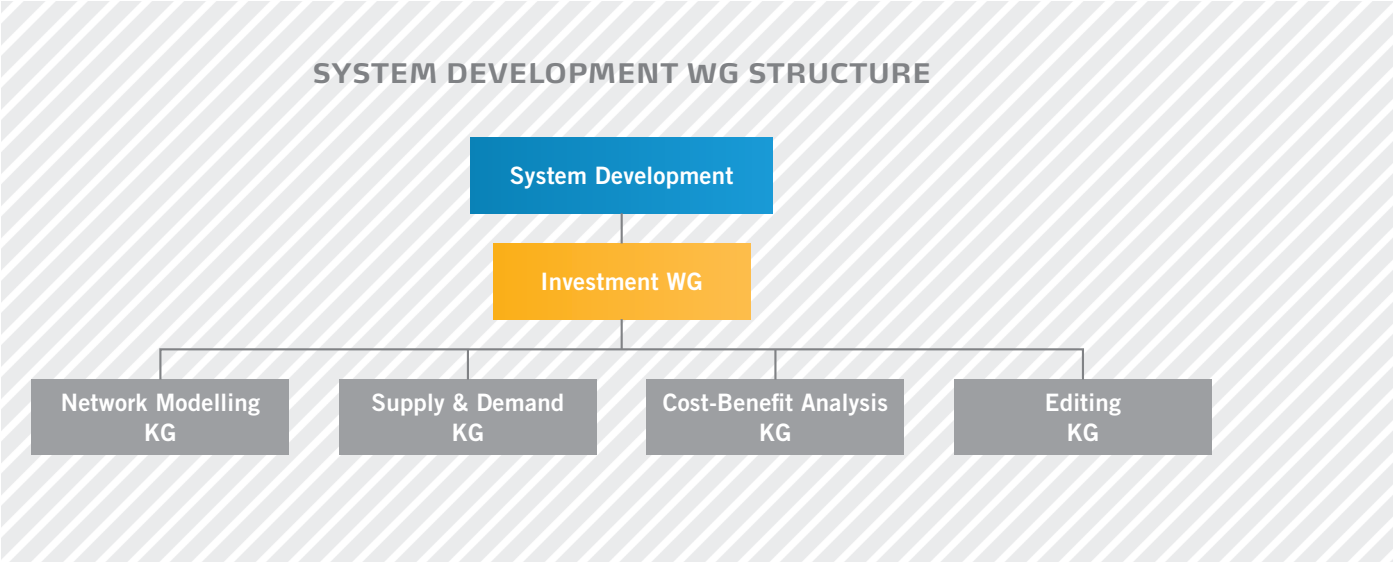
The TAR WG started developing the TAR Implementation Document (TAR IDoc) in October 2016. The TAR IDoc will be a non-binding document, prepared for information and illustrative purposes, and offer a set of examples and possible solutions for the implementation of the TAR NC. The 29th Madrid Forum in October 2016 invited ENTSOG and ACER 'to support and monitor the implementation' of the TAR NC 'and report back to the Forum'. The TAR IDoc is part of ENTSOG's response to this invitation. This is the first time that ENTSOG will produce such an extensive and detailed document to support the network code implementation throughout the EU.

In December 2016 the TAR WG established Knowledge Sharing Sessions to help TSOs with the implementation of TAR NC. These are internal sessions for TSO cooperation related to specific issues of the TAR NC with the aim of providing a forum for improved knowledge sharing amongst TSOs.

Tariff related activities during 2017 will focus on the implementation of TAR NC. Workshops are planned to inform and help ENTSOG members, stakeholders, and the wider market, about implementation itself and the collection of data for implementation and effect monitoring reports.

System Development Area

The System Development business area covers all ENTSOG activities related to gas supply, demand and infrastructures. The main deliverables are short and medium to long-term assessments such as the Ten-Year Network Development Plan (TYNDP) and Supply Outlooks. 2016 was marked by the development and draft publication of the TYNDP 2017 and by the support provided to Regional Groups for the 3rd selection of Projects of Common Interest.



AREA STRUCTURE

All activities within the System Development Area are managed via the Investment Working Group (INV WG) and supplemented by a number of Kernel Groups (KGs) with more specialised tasks.

The INV WG is responsible for developing regulatory deliverables: the Union-wide Ten-Year Network Development Plan (TYNDP), the Winter and Summer Outlooks and the update to the Cost-Benefit Analysis (CBA) methodology. It is also responsible for deliverables that ENTSOG is developing on a voluntary basis in line with its Annual Work Program: Winter and Summer reviews, the Transmission Capacity Map and the System Development Map developed in collaboration with GIE.

The Working Group (WG) is supported in its mission by four Kernel Groups (KGs), each of which focuses on specific areas:

- **Network Modelling Kernel Group (NeMo KG):** developing and enhancing ENTSOG's modelling tool and performing the simulations for ENTSOG deliverables in accordance with defined scenarios
- **Supply & Demand Kernel Group (S&D KG)**: developing the supply and demand approaches for ENTSOG deliverables based on analysis of current situation and potential future trends. Particular focus is given to the analysis of data to increase understanding of supply and demand developments, identify trends and outline approaches to defining and studying future scenarios.
- **Cost-Benefit Analysis Kernel Group (CBA KG):** update of CBA methodology under the TEN-E Regulation
- **Editing Kernel Group:** TYNDP editing, maintaining the terminology used and ensuring the stylistic consistency in reports.

TYNDP 2017

The draft version of the fifth edition of the Ten-Year Network Development plan was published on 20 December 2016, developed according to the CBA Methodology[1] currently in force. TYNDP 2017 introduced a number of new elements. Furthermore, in accordance with the Interoperability Network Code, a regional-level long-term gas quality monitoring outlook was incorporated for the first time.

The TYNDP process has been performed in an inclusive and fully transparent manner. ENTSOG endeavoured to simplify the report and make the results easier to understand.

Based on the experience gained from TYNDP 2015, which was the first to apply the CBA methodology, on the related stakeholder feedback and ACER opinion and building on the 2nd PCI selection process, TYNDP 2017 introduced a number of new elements. These new elements included demand scenarios that account for the EU energy and climate targets and aligned with those from the ENTSO-E's TYNDP 2016, an additional status to inform the advancement of projects submitted to TYNDP and a specific TYNDP projects map.

The beginning of the year saw ENTSOG commence with an extensive stakeholder engagement process. A kick-off workshop was held in January 2016, in which the European Commission and ACER provided their feedback on TYNDP 2015 along with their recommendations for TYNDP 2017.

From January to March, ENTSOG organised five full-day Stakeholder Joint Working Sessions (SJWS) and invited all interested stakeholders to contribute: project promoters, NRAs, Member States representatives as well as associations and NGOs took part to the process.

The SJWS were designed to inform and get feedback from stakeholders on the new elements of TYNDP, as well as on all building blocks: projects collection process, consideration of projects in the assessment, scenario storylines, supply potentials, modelling and outputs. This feedback was used to refine the TYNDP concept, presented in the concluding workshop in early May.

During the same period, in order to facilitate the submission of projects by promoters, ENTSOG further improved and developed its online Project Data Portal. This was supported by a project submission Documentation Kit, targeted communication and multiple webinars towards promoters.

In July, to aid transparency of the TYNDP process, ENTSOG released the detailed TYNDP input data publicly and organised a workshop to present stakeholders with an overview on the related information, including scenarios and projects submitted to TYNDP. In October, ENTSOG published a map displaying the projects submitted to the TYNDP.

Along the TYNDP development process, ENTSOG has ensured constant and early information for the Regional Groups in the frame of the third process of selecting projects of common interest (PCI).

On 20 December, a draft of TYNDP 2017 was released along with all supporting information. This also launched the public consultation phase which would last until 6 February 2017 to collect stakeholder views on the TYNDP 2017. ENTSOG presented TYNDP to stakeholders in January 2017. The final TYNDP 2017 is expected to be published in April 2017, complementing the draft with an analysis of the public consultation outcome and reflecting on the feedback received from stakeholders and on ACER opinion, published on 16 April 2017.

TYNDP 2017 confirms that the European gas infrastructure is highly resilient and well equipped to support Europe in achieving its energy and climate targets. In the specific areas where further investments are needed, the projects addressing these needs are included in TYNDP 2017. Most of them are already at an advanced stage.

SUPPORT FOR REGIONAL GROUPS

ENTSOG has brought its constant support to the Regional Groups in the third process of selecting projects of common interest (PCI).

The European Commission kicked-off the third PCI selection process in 2016, with a view of anticipating some process activities compared to the second PCI selection process. Early in 2016, the European Commission also proposed to both ACER and the ENTSOs to join the Commission in a Cooperation Platform aimed at preparing for and streamlining the third PCI selection process.

ENTSOG is convinced of the value of an early start to the PCI process and of cooperating with the European Commission and ACER towards a streamlined process. ENTSOG therefore actively engaged, throughout 2016, in the platform activities and in providing its support to the Regional Groups, although the intensity of those activities had not been anticipated in the annual work programme.

TYNDP is a key input to the PCI process, in terms of identifying the remaining infrastructure gaps and setting the frame for individual assessment of PCI candidates. ENTSOG has therefore informed the Regional Groups on TYNDP 2017

1) Energy System Wide Cost-Benefit Analysis Methodology, approved by the European Commission in February 2015

throughout 2016, and well ahead of the report publication in December 2016. In May 2016, ENTSOG presented the TYNDP 2017 scenario framework and the type of infrastructure needs. In October and November 2016, ENTSOG presented the identification of the infrastructure gaps stemming from the preliminary TYNDP 2017 results, and in early December presented further TYNDP data. By receiving thorough information at such an early stage, the Regional Groups were able to reach a decision on the infrastructure needs per region by mid-December, ahead of TYNDP publication.

ENTSOG has provided further support to the PCI selection process. It has closely cooperated with the European Commission in configuring and offering its technical platform – the ENTSOG Project Portal – to perform the call for PCI projects. This has allowed the use of a platform that promoters are familiar with, and to make use of the project information already collected in the previous TYNDP process. Upon formal invitation by the European Commission, and under the mandate of project promoters, ENTSOG in 2016 additionally prepared the modelling part of the project-specific CBAs of PCI candidates to be performed from February to March of 2017.

In view of the fourth PCI process, ENTSOG would appreciate holding early discussions between Commission, ACER and ENTSOG on the PCI process timeline, in order to best plan the contributing processes, including the TYNDP development process.

ENTSOG MAPS

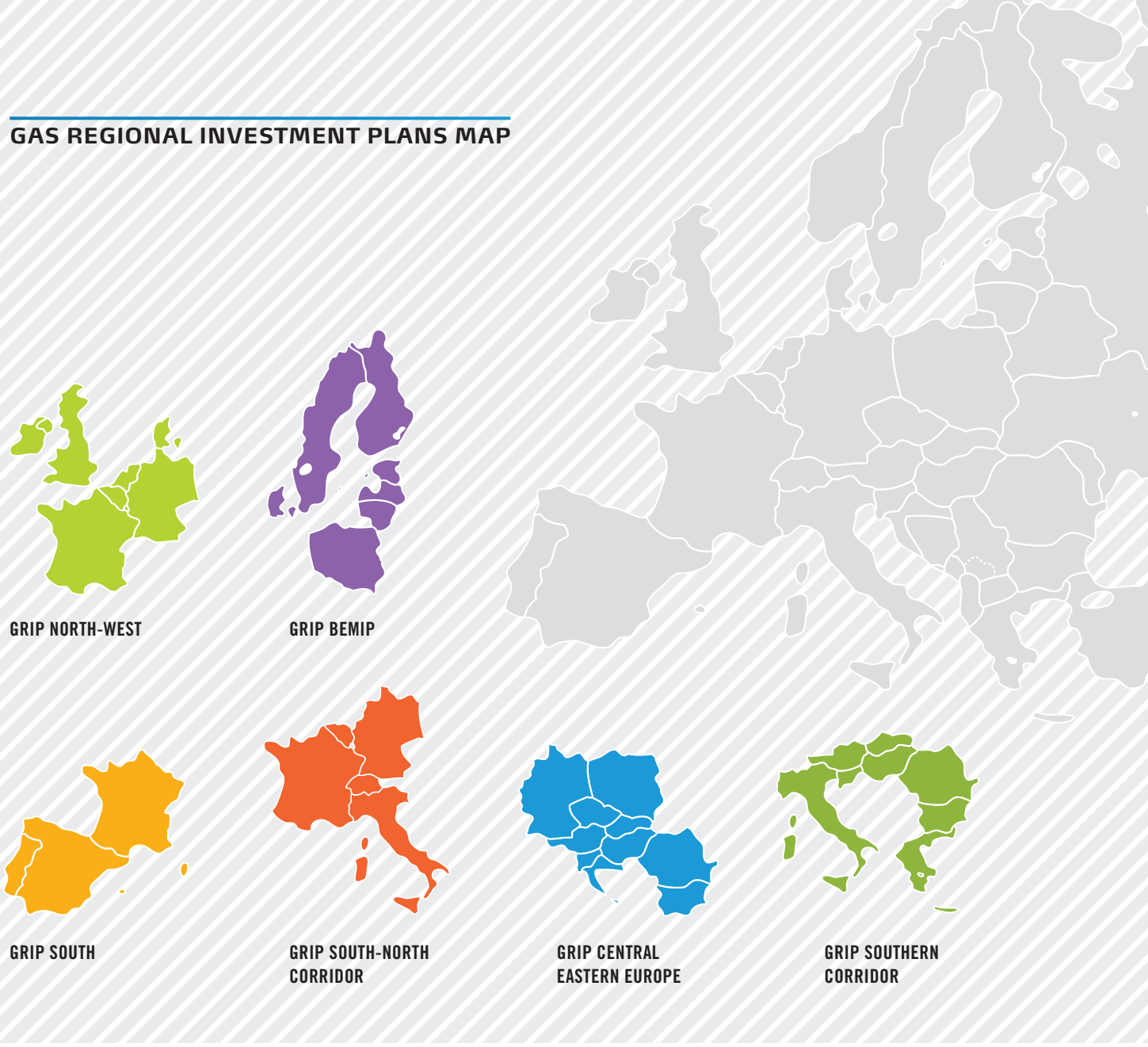
In 2016 ENTSOG kept up with the publication of its well-known maps, the Transmission Capacity Map 2016 and the System Development Map 2015/16, the latter in collaboration with GIE.

An additional map with focus on the TYNDP 2017 projects as an Annex to the report was introduced.

The Transmission Capacity Map provides an overview of Europe's main high-pressure transmission lines with information on the technical capacities at cross-border interconnection points. The 2016 edition was published in May.

Order your copy of our maps on http://maps.entsog.eu

GAS REGIONAL INVESTMENT PLANS MAP



SUPPORTING GAS REGIONAL INVESTMENT PLANS

Establishment of Gas Regional Investment Plans (GRIPs) is a requirement under Art 12(1) of Regulation (EC) 715/2009. These GRIPs are developed by member TSOs under the umbrella of ENTSOG. These plans help to coordinate activities between neighbouring TSOs and provide support for further infrastructure development wherever necessary. GRIPs serve as a link between TYNDP and national plans.

In 2015, member TSOs determined that the third editions of GRIP reports would be developed jointly with TYNDP 2017. This ensures the use of a common dataset for GRIPs and TYNDP and complementarity between the reports.

For the GRIPs to be published in spring and summer 2017, ENTSOG handled a joint TYNDP and GRIPs data collection, centralisation of data processing and modelling of the European gas system during 2016.

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 taking into account the latest supply and demand trends, which are shown in the correspondent Reviews.

Summer Supply Outlook 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 through the use of sensitivities targeting different stock levels under different supply situations.

Summer Supply Outlook 2016 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 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 two sensitivity analyses, first on the different climatic profiles of the winter, and secondly on the resilience to potential transit disruptions through Ukraine.

Under these assumptions, Winter Supply Outlook 2016/17 confirmed the gas infrastructure is able to handle potential disruptions to Russian transit through Ukraine under severe climatic conditions in most parts of Europe. The analysis indicated that South-Eastern Europe is not yet resilient to disruptions of the Ukrainian transit route. Analysis in TYNDP 2017 indicates that projects in the area expected to be commissioned in the coming years would significantly improve the resilience of the area. The Winter Outlook also indicated that the European gas infrastructure is capable of supplying Ukraine with significant volumes of gas.

ENTSOG and ENTSO-E cooperated on their Winter Outlooks, 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. Both ENTSOs organised a common webinar on their Winter Outlooks on 1 December 2016.

Seasonal Reviews are an ENTSOG initiative based on the internal analysis of the supply-and- demand trends used to feed the TYNDP and Supply Outlooks. ENTSOG publishes these analyses in order 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 balance, 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.

Reviews of Summer 2015 and Winter 2015/16 confirmed a significant decrease in the European indigenous production while the overall gas demand in Europe was comparable to the previous year. This resulted in increasing European supply needs.

SUPPORT FOR GAS COORDINATION GROUP

The Gas Coordination Group (GCG) is a platform established by Regulation (EU) 944/2010 that introduces 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.

ENTSOG is responsible for coordinating TSO expertise with respect to assessing the gas infrastructure, especially through modelling analyses. Publication of the Seasonal Outlooks contribute to support the Gas Coordination Group.

The System Development Map produced in collaboration with Gas Infrastructure Europe focuses on supply and demand trends from April 2015 to March 2016. The map name now includes two years reflecting better both, the contained data period and the release year. The 2015/16 edition was published in September.

The TYNDP 2017 map demonstrates ENTSOG's commitment to continuously improve its deliverables. It builds on the experience from the existing maps and shows project information in line with the project submissions to TYNDP 2017. The map was first released in October.

ENTSO-E/ENTSOG CONSISTENT AND INTERLINKED MODEL

Both ENTSOs submitted their consistent and interlinked model to ACER and the European Commission in December 2016.

Article 11(8) of Regulation (EU) 347/2013 foresees that the ENTSOs shall jointly submit by December 2016 to the European Commission and ACER a "consistent and interlinked electricity and gas network and market model". Once approved by Commission, the model is to be included in both the electricity and gas Cost-Benefit Analysis (CBA) methodologies.

Throughout 2016, both ENTSOs have closely worked together on designing this model (the Model). The expertise of both ENTSOs members have been gathered through a joint task force, the CoGasEl Task Force. The ENTSOs have closely cooperated with ACER and the Commission on the topic to understand their expectations in regard to the contribution of the Model to the CBA methodologies. The Model was submitted to the Commission and ACER on 21 December 2016. The proposed concept intends to address the most valuable fields for interlinkage.

ENTSOG and ENTSO-E also cooperated in 2016 on aligning the TYNDP 2017 scenarios with the corresponding ENTSO-E TYNDP, and on the Winter Outlooks.

For their TYNDPs 2018 ENTSOG and ENTSOE have engaged in a joint scenario development process.

As part of making the Model come true, the ENTSOs have engaged in a joint scenario development process for their TYNDP 2018s. Within both ENTSOs, this process relies on a Scenario Building Task Force, comprised of ENTSO-E and ENTSOG members, which is in charge of developing the scenarios for both TYNDPs with strong stakeholder engagement. As part of this engagement, the ENTSOs held a joint public consultation from May to June 2016 and two workshops in June and July 2016 directed towards stakeholders as well as Member States and NRAs. The ENTSOs have also organised a request for data and webinar in October 2016. This cooperation will result in the publication of a joint Scenario Development Report in mid-2017 for public consultation. This joint scenario development process will ensure that the electricity and gas infrastructures are assessed against the same background.

ENTSOG has aligned itself towards the ENTSO-E scenario development timeline. This timeline demands that ENTSOG commence development of the scenarios for TYNDP 2018 already starting early in 2016 – more than one year earlier than initially planned. This has resulted in ENTSOG performing scenario tasks in parallel for TYNDP 2017 and TYNDP 2018. Although this has proved very challenging – both resource-wise and in terms of engaging the gas sector stakeholders – ENTSOG has fully engaged with this process in recognition of its value.

UPDATE OF THE COST-BENEFIT ANALYSIS (CBA) METHODOLOGY

The Cost-Benefit Analysis (CBA) methodology currently in use was approved by the European Commission on 4 February 2015 and published by ENTSOG on 13 February 2015. The current CBA methodology has been used to develop both TYNDPs 2015 and 2017 to support the project assessment of the 2nd and 3rd PCI selection process.

For TYNDP 2017 and the 3rd PCI selection process, ENTSOG has provided additional elements that complement the application of current CBA methodology on a voluntary basis.

Art. 11(6) of Regulation (EU) 347/2013 foresees that the CBA Methodology "shall be updated and improved regularly" and defines the update process.

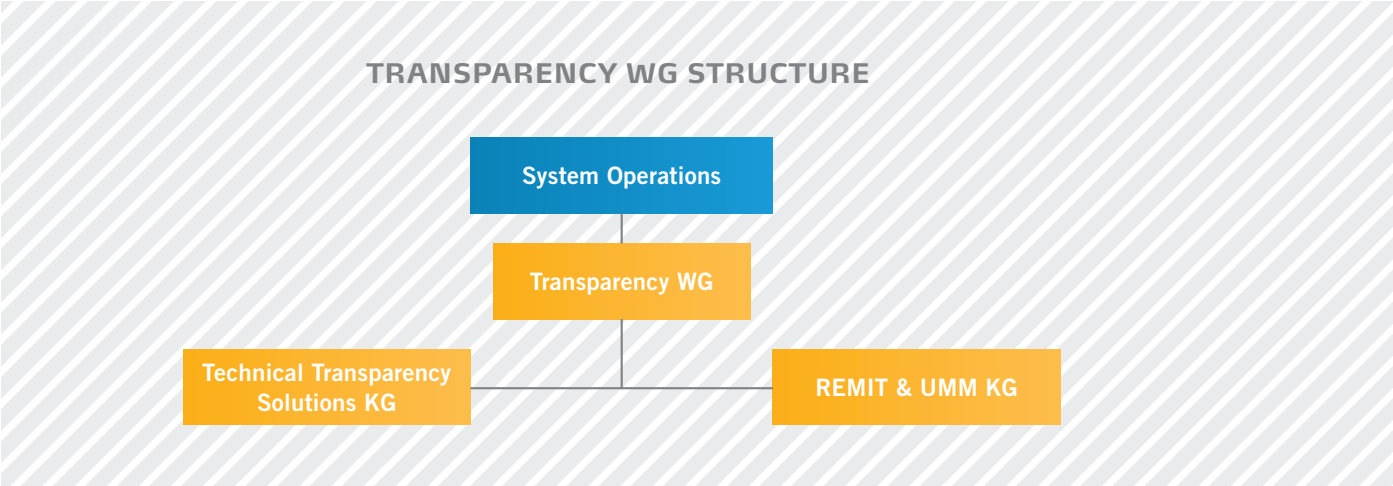
As part of its 2017 Annual Working Programme (AWP), ENTSOG has identified the benefits to an update of its CBA methodology for TYNDP 2018. At the end of 2016, ENTSOG has accordingly created the CBA Kernel Group to support the Investment Working Group in the process of updating the CBA Methodology.

In early 2017, ENTSOG created a dedicated Prime Movers group where concerned stakeholders can provide their input.

During 2017, ENTSOG will pursue the regulatory process of updating the CBA Methodology.

System Operations

The System Operations business area is mainly in charge of developing technical network codes, evaluating all activities related to gas quality standardisation, developing and maintaining existent Common Network Operation Tools (CNOT), and the performance of ENTSOG's Transparency Platform (TP).At present, System Operations comprises two main working groups: Interoperability (INT WG) and Transparency (TRA WG).



Transparency

The energy market liberalisation process, aimed at securing a genuine, well-functioning, open and efficient internal market in gas, has significantly changed the gas transmission business and increased the need for transparency. In this respect, specific obligations for gas TSOs have been introduced through Regulation (EC) No 715/2009, which defines the basic transparency rules, further specified in Chapter 3 of Annex I (and its amendments).

The network codes have been developed to provide rules and procedures to reach an appropriate level of harmonisation towards efficient gas trading and transport across gas transmission systems in the EU, increasing data publication requirements.

Regulation (EU) No 1227/2011 and its Commission Implementing Regulation (EU) No 1348/2014 introduced additional publication and reporting obligations to the market participants, aimed at supporting market monitoring, fostering open and fair competition in wholesale energy markets and the completion of a fully functioning, interconnected and integrated internal energy market. The obligations are also handled within the Transparency Area in ENTSOG.

GROUP STRUCTURE

The Transparency Working Group (TRA WG) is supported by the Technical Transparency Solutions Kernel Group and the REMIT & UMM Kernel Group.

ENTSOG TRANSPARENCY PLATFORM (TP)

ENTSOG's Transparency Platform (TP) provides technical and commercial data on the gas transmission systems, which includes interconnection points and storage connections, LNG facilities, distribution networks, final consumers and production facilities. 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 gas TSOs to fulfil their data publication obligations (see Chapter 3, Annex I, Regulation (EU) No 715/2009). ENTSOG received strong support from many stakeholders with regard to TP functionality and the information provided therein.

Link to the Transparency Platform: https://transparency.entsog.eu/

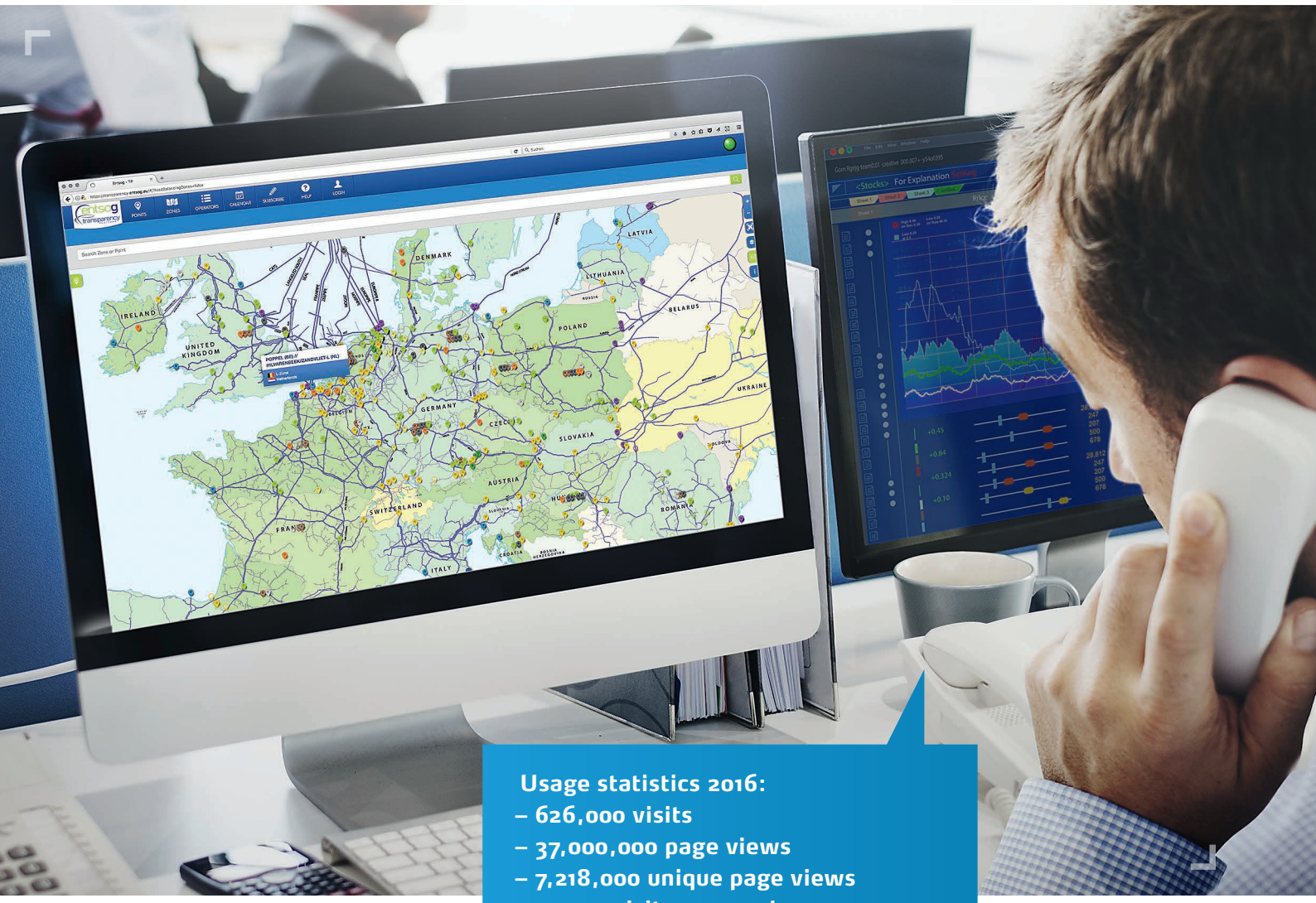
Released Functionalities and Improvements During 2016

- To improve TP performance and response times, the database was optimised.
- To provide practical information on how to use the TP and its functionalities, a TP User Manual was published.
- To facilitate the work of TP users, export of data in *.xlsx format was added to the list of downloadable formats.

Additional information about the export status was also added to give users a better understanding of the export process details such as: elapsed time, querying, idle, whether the export was successful, no data available, and cancelled due to time-out.

- The templates for the export files were improved for more user-friendliness, e. g., the date and time formats were aligned and redundant parameters were removed.
- The Operator section was updated with a link to TSOs' websites, where users can find hourly gas quality publications. This was done within the scope of implementing Art. 16 INT NC.
- Hourly publication of physical data flow: On top of the requirements already laid out in the regulation, ENTSOG has decided to provide further information to the market by publishing hourly physical flows at all cross-border interconnection points independently from balancing regimes etc.
- Periodisation of capacity and interruptions data: In order to improve how stakeholders utilise indicators for Capacity and Interruption data, a new functionality was added that allows the user to display the data in a periodised or compact manner
  - Periodised manner – display of a single value per gas day
  - Compact manner – display of variable time periods with constant capacity values[1)]
- In order to display the tariffs so that they can be compared with each other, the list of allowed units for tariffs was modified from only allowing currency to now allowing currency per energy unit.
- Introduction of a question form to the TP Help section to facilitate the communication between TP users and the, ENTSOG team and TSOs.

1) Changes related to daylight savings mean that a new value will also be displayed in March and October for TSOs with hourly capacity regimes.



Usage statistics 2016:

- **626,000 visits**
- **37,000,000 page views**
- **7,218,000 unique page views**
- **12,000 visits per week**
- **62,480,000 downloads**
- **28,158,000 unique downloads**

In early 2017, ENTSOG will be delivering new functionality related to data presentation, which was undergoing testing at the end of 2016:

- Indication of which Booking Platforms are used to market the capacity of the CAM-Relevant points (as an integrated module in TP Data and the TP Export tool).
- Indication of CAM and CMP relevance per "IP side" as a module in TP Data and the TP Export tool (previously indicated at point level). "IP side" is a term used to describe the different operator point directions at a point.
- Introduction of full-text point direction labels as a module of the TP Data part, to make it easier for TP users to understand the legends in the recently viewed items.
- Display of Pipe-in-Pipe situations: Improved visualisation of Pipe-in-Pipe points on TP. Pipe-in-Pipe is a term used to indicate TP points where several TSOs market capacities.

TP Usage, Stakeholder Involvement and Data Publication

ENTSOG and TSOs work closely together on a daily basis 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 has been 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 2016, this entailed extensive work on reports to ACER in relation to their monitoring obligations for application of CMP measures and CAM NC, and data exports to EC with data on the physical flows in the CESEC region.

In 2016, ENTSOG launched its first TP Satisfaction Survey, aimed at getting a better understanding of user satisfaction with TP and providing an additional forum for receiving TP user input. Since only twelve users participated in the survey[2)], it was decided that no valid conclusions could be derived. However, ENTSOG did receive many good suggestions and these were discussed in the Transparency working group and prioritised for processing.

In October 2016, a joint workshop on network codes and implementation of transparency requirements was organized by ENTSOG and the Energy Community. The history of TP was presented, alongside with the requirements stemming from various legislations, rules and a practical description for data publication on TP. Furthermore, the Energy Community Contracting Parties were informed that only ENTSOG observers, associated partners or full members can publish information on TP. As such, the first step in the publication process is to approach ENTSOG and apply for such a status/membership.

2) Report published after running the survey: http://www.entsog.eu/public/uploads/files/publications/Transparency/2016/TRA0359_20160905_Announcement%20result%20of%20 2016%20TP%20Satisfaction%20survey_rev0.pdf .

Further R&D in gas would enable technologies such as storage, cleaning and entry into the high-pressure transmission system of biogas.

Image courtesy of Energinet

REMIT ACTIVITIES

REGULATION ON ENERGY MARKET INTEGRITY AND TRANSPARENCY (REMIT)

Regulation (EU) No 1227/2011 (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 Agency for the Cooperation of Energy Regulators (ACER) in close collaboration with national regulatory authorities. 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). On behalf of gas TSOs, ENTSOG reports 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, as defined in Article 9(1) of Commission Implementing Regulation (EU) No 1348/2014.

The ENTSOG reporting system was developed according to the provisions of Commission Implementing Regulation (EU) No 1348/2014 and other supportive documentation issued by the Agency with regard 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.

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

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 shall resend the relevant information to the ENTSOG Transparency Platform. It will then be transmitted to ACER through the ENTSOG Reporting System

TSOs' Implementation of REMIT

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 as a result 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 renominations of booked capacities, specifying the identity of the market participants involved, and the allocated quantities.

The TSOs reporting obligations under REMIT commenced 7 April 2016.

In order to facilitate the TSOs' REMIT implementation processes, ENTSOG has established the following:

- Regular REMIT panels during monthly Transparency Working Group Meetings
- An ad-hoc TSO REMIT Implementation group, which was formalised into an official stakeholder group for biweekly discussion sessions between the ENTSOG Transparency Team, TSOs and ACER REMIT Team. The aim is to provide clarity on various technical and policy questions, guide TSOs through RRM registration, and resolve issues related to data reporting during 2016, ENTSOG Transparency Team and Transparency Working Group participated in the following events:
- ACER REMIT Expert Group meeting
- ACER RRM User Group meetings
- ACER Roundtable for inside information disclosure
- ACER Associations Energy Market Participants Roundtables
- ACER ENTSOG stakeholder webinars
- ACER public consultation on Functioning and Usefulness of EREMP
- ACER survey for RRMs on the REMIT schemas, including the schema for the Disclosure of Inside Information

ACTIVITIES FOR TARIFF NETWORK CODE PREPARATIONS

The Transparency Area has been following the development of the Tariff Network Code (TAR NC) closely through dedicated updates from the Transparency working group meetings. After receiving a positive opinion on the network code in September 2016, ENTSOG decided to establish a joint taskforce between the Transparency and Tariff working groups to facilitate the implementation of the transparency requirements laid out in TAR NC. The taskforce will remain active until the tariff data publication requirements have been fully implemented.

Image courtesy of Gascade

Natural gas is easier and more affordable to store than electricity. Ongoing technology developments enabling the capture and sequestration of CO_2 (Carbon Capture and Storage, or CCS) gas are actually more efficient on gas than on comparable fuels.

ANNUAL PUBLIC WORKSHOP ON TRANSPARENCY

ENTSOG 10th Annual Public Transparency Workshop was held on 8 December 2016. The workshop was organised in three sessions dedicated to the following topics:

- ENTSOG Transparency Platform
- REMIT implementation status and suggestions for schema improvements
- Upcoming Tariff Network Code Requirements on Transparency

As part of the workshop, ENTSOG demonstrated the new functionalities of the Transparency Platform and added a live demo about the usage of selected new features. The plans for future development were also shared and two representatives from Bloomberg's energy division shared their user experience and feedback of the TP data and functionalities with the audience.

ACER presented its feedback on the platform and suggested improvements in some functional and data publication areas.

On behalf of TSOs, ENTSOG presented the status of the TSOs REMIT implementation, and provided feedback to current schemas in place for reporting under REMIT.

During the session dedicated to the upcoming TAR NC, ENTSOG informed the audience about performed and upcoming activities relating to network code development as well as current discussions regarding the content of the transparency requirements in TAR NC.

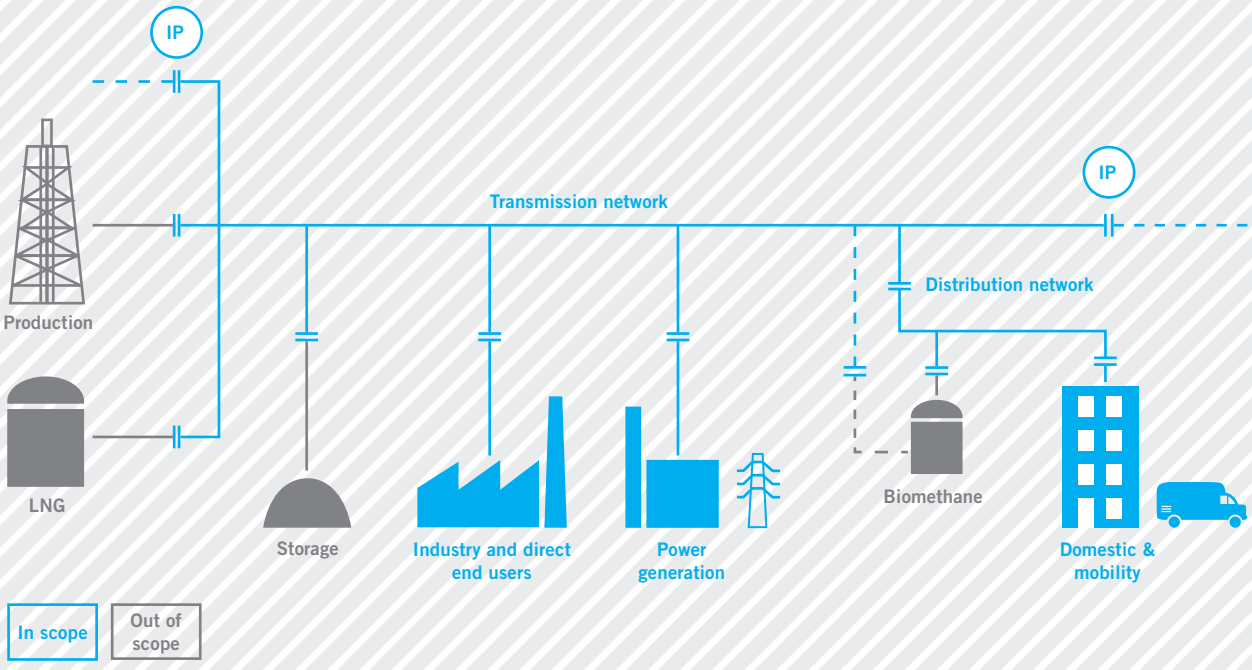
Interoperability

The aim of the Interoperability team and WG of ENTSOG is to facilitate an appropriate level of harmonisation in technical, operational and communication areas to enable market integration and prevent barriers to the free flow of gas in the Union.

GROUP STRUCTURE

- The **Business Rules KG** monitors the implementation of NC provisions related to technical cooperation between TSOs especially regarding interconnection agreements
- The **Gas Quality (GQ) KG** elaborates the long-term gas quality outlook in cooperation with System development area; supports European standardisation activities in the field of gas quality and monitors the implementation of the relevant provisions of the network code
- The **IT & Communications (ITC) KG** develops common data exchange solutions and the related communication profiles streamlining communication solutions for data exchange
- The **Technical Solutions Adoption & Implementation (TSAIG) KG** is responsible for developing the Business Requirement Specifications (BRS) part of CNOTs; required for data exchange in the implementation of already developed network codes
- The **Regional Coordination System for Gas (ReCo System) KG** supports the different ReCo Teams (North West, East and South) to facilitate regional coordination system in case of a gas supply crisis

Scenario 1: Whole EU chain



Explanatory diagram used in the gas quality workshop for one of the implementation scenarios

GAS QUALITY

Impact analysis of a reference to the EN16726:2015 in the network code on Interoperability and Data Exchange

ENTSOG published the detailed **impact analysis** as requested by EC and recommended not to amend the Interoperability network code. This conclusion is consistent with the announcement of EC at Madrid Forum on the 7 October 2016.

The analysis has shown that a whole EU chain implementation of the EN16726, despite providing certainty on the rules and removing any contracting difficulties, would face significant legal barriers and produce widespread negative impacts across segments and Member States.

According to stakeholder input to the process, security of supply would be compromised by a reduced access to existing or new sources and supply routes whose qualities are accepted today but would be rejected if the standard is applied (e.g. 20 % of UK supplies in 2015 due to the CO_2 and O_2 limits). Sustainability and competitiveness could be also unintendedly impaired.

In this process as well as in the monitoring of the INT NC, as of today, no evidence of cross-border trade restrictions in normal conditions has been revealed. An amendment of the network code to include a reference to EN16726:2015 – even as an optional tool – is not deemed necessary.

Public consultations – both among the most responded in ENTSOG's record – have shown that any voluntary national application of the standard should carefully examine implications for the whole chain, including cross-border effects, and consider higher flexibility for specific requirements at entry and exit points.

First long-term gas quality monitoring outlook alongside TYNDP 2017

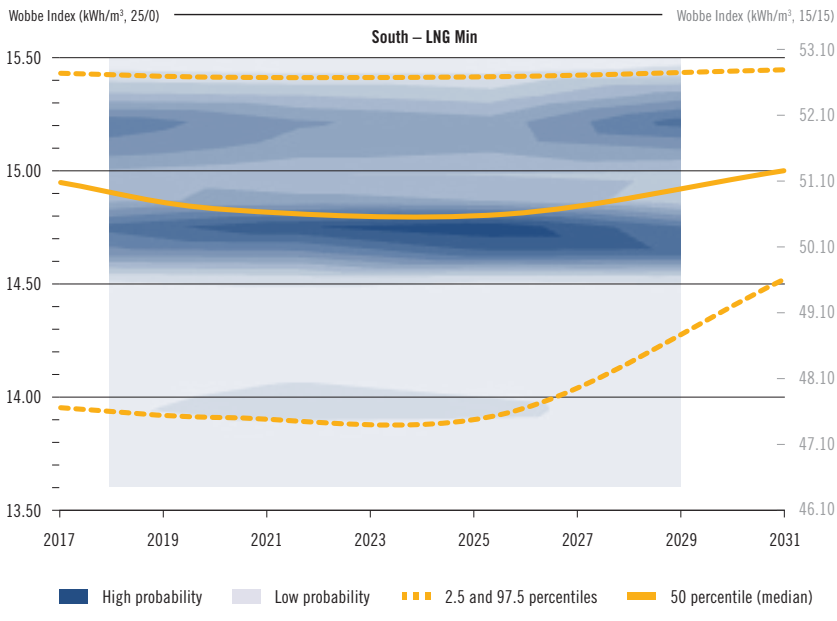
Article 18 of the Interoperability Network Code requires ENTSOG to publish, alongside TYNDP, a long-term gas quality monitoring outlook for transmission systems in order to identify the potential trends of gas quality parameters – namely WI and GCV – and respective potential variability within the next 10 years. TYNDP 2017 is the first edition incorporating the Gas Quality Outlook

The WI and GCV ranges in the outlook depend more strongly on regions than on any other factor and seem to remain relatively stable for the next ten years. Trends seem to be in general not very sensitive to different price configurations.

However, within one region, ranges may actually differ depending on the influence of different sources: LNG rising the higher limit and indigenous production the lower.

Collaboration with CEN standardisation work on Wobbe Index

ENTSOG continued supporting the standardisation work being carried out by CEN to find a European agreement on Wobbe Index. A definition of this parameter (including possible regional bands) is key for safety and necessary for completing the gas quality standard. ENTSOG has joined the relevant CEN working groups and will contribute with its expertise to achieving the common target.



Example gas quality outlook graph

SECURITY OF SUPPLY (SOS)

Revised SoS Regulation 994/2010

From 15 January to 8 April 2015, the European Commission held a public consultation on how to enhance security of supply. ENTSOG established a dedicated SoS TF in order to prepare its answers and positions for the public consultation but also to be ready for the tasks and work that possibly could arise from a revised SoS Regulation 994/2010.

In February 2016, the Commission proposed an update to its Security of Gas Supply (SoS) Regulation. At a very early stage, ENTSOG worked with the EC to gain clarity particularly on the composition of and reasons behind the pre-defined regions given in Annex 1 and on how to carry out the first Union-wide simulation as foreseen for ENTSOG by 1 November 2017. It became clear that ENTSOG and its members thought a different approach would better fit the regional cooperation. Therefore ENTSOG, together with its members, developed the Emergency Supply Corridor Approach (ESCA).

ESCA is a pragmatic and result-oriented approach to identify which Member States would benefit from greater coordination, based on scenarios and simulations for the three main Emergency Supply Corridors East, North-West and South Europe for gas being imported from Russia, Norway and North-Africa.

ESCA was discussed several times with the EC, ITRE rapporteurs and with other relevant stakeholders. In addition to the discussions that were held, the EC asked ENTSOG at the end of 2016 for its opinion on a new set of pre-defined risk groups to replace the pre-defined regions as mentioned above.

In order to be ready with the first Union-wide simulation by the 1 November 2017, ENTSOG started to plan the Union-wide simulation including scenario definitions.

Furthermore, it has to be mentioned that ENTSOG's Regional Coordination System for Gas will also be part of the revised SoS Regulation. It is seen as an important tool for cooperation between TSOs in cases of emergency and it is the ideal supplement for the ESCA (more on this topic follows in the next section).

Further Development of Regional Coordination System for Gas (RCSG)

In 2014, ENTSOG established RCSG with a Regional Coordination Team East consisting of 17 TSOs including Ukrtransgaz that has been in place since 1 October 2014 and a Regional Coordination Team North-West consisting of eleven TSOs that has been in place since 1 July 2015. The Regional Coordination Teams can provide operational expertise and information on short notice in the event of a security of gas supply crisis in the Russian supply corridor or the Norwegian Supply Corridor. For both teams, communication exercises to test the proper functioning of the whole communication chain were successfully carried out.

On 1 July 2016, the Regional Coordination Team East successfully got together on request of Ukrtransgaz due to pressure drops and gas flow fluctuations on the Ukraine – Russian border. Information was exchanged and, on request by the EC, a report was written and sent to the EC. This demonstrated that the RCSG functions as required.

Furthermore, in 2016 a group of experts from Enagás and Snam Rete Gas was established to investigate whether or not a third Regional Coordination Team for the Southern Europe should be established in 2017. The decision on this will be made in early 2017. In addition, the Operational Map is foreseen as another important tool of supporting the Regional Coordination Teams in case of a crisis. This tool was further defined and specified. Upon completion, this map will be made available to all relevant TSO dispatching centres.

Supporting the Contracting Parties (CPs) to the Energy Community (EnC) regarding SoS

See Chapter "Facilitation of regional cooperation with the EnC"

Supporting the EC in their gas flow monitoring activities for Ukraine

In line with the provision set out in Regulation (EU) 994/2010 Article 11 Para. 7 and Articles 5 and 6 of the "Rules of procedure for the Gas Coordination Group", the EC formally asked ENTSOG for its support in establishing a Ukrainian Monitoring Mission in November 2014. Since then several trilateral talks and meetings have been held between Ukrtransgaz, EC and ENTSOG. A daily monitoring report was developed and issued by Ukrtransgaz and is shared with the EC and ENTSOG on a daily basis.

New pipelines now connect or will soon connect European countries with the Caspian and North Africa, two major producing regions whose gas will reinforce Europe's security of supply.

In July 2016, Ukrtransgaz informed the EC about systematic pressure drops on the border between Ukraine and Russia (see also point 5.2). In order to gain a better understanding of the technical background and reasons for those pressure drops, additional trilateral talks were held and new elements were added to the above-mentioned daily report. The extended daily report provides a better understanding on the development of flows and pressures and as such enables a better assessment of the general situation.

In addition, necessary preparations were made for a possible fact-finding mission including physical visits to the interconnection points between Russia and Ukraine as well as relevant compressor stations.

ENTSOG would like to mention that all trilateral talks and meetings took place on a basis of trust and good reliable communications.

Facilitation of regional cooperation with the EnC

Supporting the Contracting Parties (CPs) to the Energy Community (EnC) regarding SoS

A major disruption of gas supply can not only affect all Member States, but also the Union as a whole and the CPs to the EnC . Therefore ENTSOG foresaw also the CPs to the EnC and other relevant third countries participation in the RCSG in line with the cooperation requirements mentioned in Annex IV of the existing SoS Regulation 994/2010. So far GASSCO, the Norwegian TSO as well as Ukrtransgaz from Ukraine are part of the RCSG.

Workshop with the EnC and the CPs

According to Article 8(3)(c) of Regulation 715/2009, ENTSOG is in charge of providing "recommendations relating to the coordination of technical cooperation between Community and third-country transmission system operators". In line with this provision, ENTSOG is organizing a workshop together with the EnC Secretariat on a yearly basis for the CPs to the EnC and other relevant stakeholders. In 2016, the workshop was held on 19 October at the premises of the EnC Secretariat in Vienna and this time it was dedicated to the following two main topics:

- Implementation of transparency requirements of Regulation (EC) No 715/2009 by CPs to EnC – scope of transparency requirements within EnC and CPs
- Implementation of NC on INT&DE

Several points were discussed and questions asked during the workshop. In addition some of the participants contacted ENTSOG's interoperability and transparency team after the workshop and ENTSOG was able to provide its expertise and recommendations on request.

EC Initiative to Establish WG with EnC, ACER, EC and ENTSOG for NC Implementation

In April 2016 the EC asked ACER and ENTSOG to be part of a "working group" to be set up to address the issue of implementation modalities which would (in addition to ACER and ENTSOG) also consist of EnC Secretariat and the EC. The aim of the working group was to develop a proposal for an implementation plan especially for the timing and the content for the NCs. Several talks as well as three physical meetings took place between the members of the WG and the CPs to the EnC.

Development, Support and Maintenance of CNOTs

Further development of Business Requirements Specifications and adoption of Common Data Exchange Solutions

ENTSOG had to define the common data exchange solution by 1 May 2016. During early 2016, the System Operations Business Area (SOBA) worked with our members to make a proposal for an industry wide stakeholder public consultation (PC) to define the common data exchange solutions for use in data exchanges that are part of the NC BAL, CAM and CMP and INT NC.

The PC was held during April 2016, the result was that there was limited stakeholder input and many diverging opinions on the proposed solutions, therefore the SOBA team preferred to delay the process to try to come to the common solution. ENTSOG informed ACER of the delay to the obligation and continued to work on accommodating the views of the stakeholders.

On 6 September 2016, a Data Exchange Harmonisation Workshop was held, where stakeholders had the opportunity to debate key issues. Following the workshop a second public consultation was carried out from 7 September to 30 September 2016. The outcome of the second consultation enabled ENTSOG to establish final CNOTS with Business Requirement Specifications. In addition, ENTSOG provided suggestions for optional solutions to aid in the resolution of any debate between larger and smaller stakeholders.

On 7 November 2016, ENTSOG published the agreed CNOT table, the updated BRSs for BAL and CAM and CMP and on 17 November 2016 issued a press-release announcing the finalisation of the CNOT process.

On 9 February 2017, the Agency delivered a favourable opinion on the adoption of common network operation tools by ENTSOG, acknowledging the significant work that ENTSOG had undertaken in developing the CNOTs.

Data Exchange Solution Profiles

Throughout 2016, the ITC KG worked on continued development of the AS4 Usage Profile and started to develop the Interactive and Integrated Data Exchange Profiles.

Inputs in to the AS4 Usage Profile came from increased activity from stakeholders implementing AS4 product solutions. From 26 April 2016 through to 29 September 2016 ENTSOG facilitated stakeholder communication sessions on the testing of AS4 implementations. The output from this facilitation provided input into the further refinement of the AS4 Usage Profile, culminating in a draft revision 2.4 which was published on 19 July 2016.

In addition to the above, the ITC KG developed an AS4 specification to aid all implementers of AS4 to exchange and update agreements in an automated way. This specification together with revised documentation on how to set up an AS4 system, an updated version of the ENTSOG AS4 Mapping Table and updates to the AS4 Questions and Answers document were published on 30 November 2016.

Cooperation with EASEE-gas: implementation guides and role model

ENTSOG continued its support to the Role Model TF of EASEE-gas in their aim of finding a common terminology to describe actions between different market participants in the gas industry with the main focus on information exchange. A Role Model workshop was hosted by ENTSOG on the 12 of May. EASEE-gas released the first version of the Role Model in November on the 5th of December.

Activity 5: Operation of local issuing office for energy identification code scheme

The EIC, standardised and maintained by ENTSO-E, provides a unique identification of the market participants and other entities active within the European Internal European Energy Market. It is widely used in the Electronic Document Interchange and shall be used to identify parties and objects for REMIT.

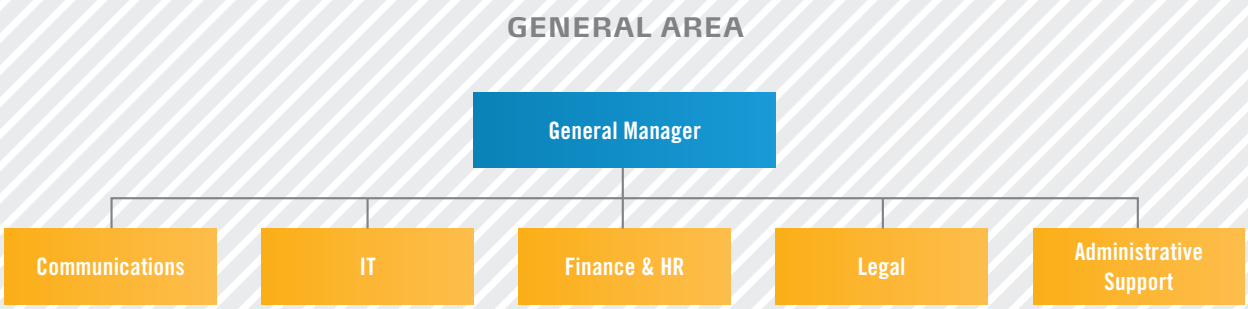
ENTSOG continued to operate the LIO Office 21 throughout 2016 and ENTSOG now manage 1124 EIC codes on behalf of market participants.

In 2016, ENTSOG attended joint CIO/LIO meetings and contributed to the upgrading of the EIC Reference Manual.

LIO Tool Development:

During 2016, we provided support and worked with other LIO Offices to make improvements to the LIO EIC Tool. This work continues in 2017 and will result in an updated tool incorporating a new schema and bug fixes.

General Area



Area Structure

The General Area serves as a support team for the ENTSOG Management.

The General Assembly, the Board, the General Manager and all three Business Areas are the "internal customers" of the small team. The functions of the General Area comprise of Communications, IT, Finance, HR, Legal and the Administrative Support.

With liquefied natural gas (LNG), nearly 80 % of the world's proven gas reserves are accessible to Europe within a radius of 7,000 km.

Image courtesy of Gasum

Monitoring Reports

Balancing Network Code

SECOND IMPLEMENTATION MONITORING 2016

The Balancing Network Code (Code) entered into force on 16 April 2014. It has been already applicable since 1 October 2015 but allows its application to be postponed until 1 October 2016 if allowed by the national regulatory authority ('NRA') following the TSO's justified request. For those countries which applied for a transitory period, the deadline for full implementation of the Code was 1 October 2016.

Interim measures can be implemented for up to five years[1] from the entry into force of the Code (i.e. until 16 April 2019). Such interim measures would be applied consistent with the options laid down in Chapter X of the Code as well as general principles of the Code, while all the other provisions in the BAL NC shall be implemented by 1 October 2015.

Both ACER and ENTSOG are required to publish monitoring reports. In its monitoring report, ENTSOG has continued monitoring the implementation of the Code by 1 October 2016, following Article 8(8) of Regulation (EC) No 715/2009. It takes the obligatory (annual) reviews, the implementation deadline by 1 October 2016 for countries applying transitory period option as well as the changes due to the on-going implementation of the BAL NC provisions into account.

In general, a shift can be observed from the planning to the implementation phase particularly for countries applying interim measures and transitory period option. But changes have also been observed in the balancing regimes for countries that implemented the Code in 2015. TSOs were also observed to have improved in fulfilling transparency obligations towards network users for better balancing of portfolios.

The on-going implementation regarding the provision of information on forecasts, updates and allocations can be noticed as several updates or new implementation have been reported by different countries by 1 October 2016. For example, some countries provide more frequent updates than the minimum foreseen by BAL NC whereas some other countries have still not designated an information model and/or the forecasting party.

In all countries the described CBA process on information provisions has not been fulfilled two years after the BAL NC entering into force. In some countries, it is being progressed, in others, it is planned or postponed into the future. The progress will be further monitored in the next implementation monitoring report. Nevertheless the implementation or the improvement of information provisions was reported in several countries.

Of ten countries (AT, BE/LU, DE, DK, FR, HU, NL, SI and UK-GB) applying the deadline by 1 October 2015, nine of them (AT, BE/LU, DE, DK, FR, NL, SI and UK-GB)[2] stated the implementation of BAL NC. One country (HU) reported having most of the provisions in place by 1 October 2016.

Of eleven countries including Estonia (BG, DE, EL, IE, LT, RO, SE, SK and UK-NI) that applied for interim measures until April 2019, eight of them (DE, IE, LT, PL, RO, SE, SK and UK-NI) reported having the interim measures in place. Two respondents (EE* and EL) partially implemented the planned interim measures by 1 October 2016 while one country (BG) is planning to implement the interim measures during 2017.

Three respondents (DE, IE, and UK-NI) stated that, except interim measures, all other provisions in place while other eight countries including Estonia (BG, EL, LT, PL, RO, SE and SK) reported having partially implementing them by 1 October 2016.

Of five countries (CZ, ES, HR, IT and PT) which applied for the transitory period option until 1 October 2016, Spain and Italy have implemented the BAL NC while three countries (CZ, HR and PT) still have to perform further implementation steps. For these five countries annual reviews will be monitored with the next monitoring report.

Balancing implementation is an ongoing process – even following implementation. Due to continuous changes in the market environment, adjustments of the provisions such as imbalance prices might be needed to better achieve the goal of the Code.

1) And additional 5 years for the case of the interim measure of a balancing platform, pursuant to Article 47(3) of the NC.

2) Including some exceptions for three countries (LU, DK and FR).

FIRST EFFECT MONITORING 2016

Following Article 8(8) of Regulation (EC) No 715/2009, European Network of Transmission System Operators (ENTSOG) shall monitor the effects of the Balancing Network Code (BAL NC) in the European market.

The first ENTSOG report on effect monitoring covers the implementation of the BAL NC and aims to monitor some of its effects per balancing zone across countries in the EU after the first implementation deadline as of 1 October 2015 for the period gas year (GY) 2015/2016. Both ACER and ENTSOG are required to publish monitoring reports. ENTSOG has aimed to produce reports that can be considered supplementary to ACER's reports. Regarding the effect monitoring, ENTSOG's focus has in particular been to identify to which extent the main aims of the network codes have been achieved.

ENTSOG introduces four market-based indicators (BAL.1 to BAL.4) in order to show certain effects of the implementation of the BAL NC.

The 24 countries (AT, BG, BE/LU, CZ, DE, DK, EL, ES, FR, HR, HU, IE, IT, LT, NL, PL, PT, SE, SI, SK, RO, UK-GB and UK-NI) where the BAL NC applies are clustered into three groups related to their chosen implementation deadline as follow:

- **Cluster 2015:** AT, BE/LU, DE, DK, FR, HU, NL, SI and UK-GB (ten countries)
- **Cluster 2016:** CZ, ES, HR, IT and PT (five countries) – Only Czech Republic participated in the effect monitoring due to an earlier implementation deadline by 1 July 2016.
- **Cluster 2019[3]:** BG, EL, IE, LT, PL, SE, SK, RO and UK-NI (nine countries) – Only seven countries (EL, IE, LT, PL (H-Gas), SE, SK and UK-NI) participated in the effect monitoring as they have already implemented balancing products according to BAL NC, while the other countries indicated their plan for implementation after the period of GY 2015/2016.

The Table below illustrates that in all ten countries of cluster 2015 the TSOs used STSPs only or partially in their balancing merit order. Additionally, two of ten countries (DE and SI) have conducted balancing services where appropriate during GY 2015/2016 for balancing purposes.

3) In Germany in addition to a trading platform also a balancing platform applies as an interim measure. All other provisions of the BAL NC have been reported as implemented. In order to avoid duplication, Germany is clustered only once in cluster 2015.

OVERVIEW OF THE YEARLY BAL.1 INDICATOR PER COUNTRY

CLUSTER	COUNTRY/ BALANCING ZONE	BAL.1 INDICATOR (GY 2015/2016)
2015	AT	100 %
	BE/LU	100 %
	DK	100 %
	FR (GRTgaz North/TRS)	100 %
	HU	100 %
	NL	100 %
	UK-GB	100 %
	DE (Gaspool)	96.88 %
	DE (NCG)	81.58 %; (as of 1 May 2016) 100%
	SI	85.85 %
2016	CZ*	100 %
2019	PL (H-Gas)	99.91 %
	SK	33.66 %
	LT	0 %
	EL, SE, IE, UK-NI	No STSP, only interim measures/ balancing services in place**
	BG, PL (L-Gas, TGPS), RO	-

* Czech Republic provided data due to its implementation deadline for the period 1 July 2016 until the end of GY 2015/2016.

** Estonia holding derogation is using balancing services only, but has not provided any data.

Overview of the yearly BAL.1 indicator per country which indicates the TSO usage of STSP for balancing purposes

The TSO in Czech Republic traded STSP on the trading platform in total one time for balancing purposes in the 3-month-period after the implementation deadline of 1 July 2016, while net shipper imbalances occur on a daily basis. This can be explained by the offer of line pack flexibility service.

Seven out of nine countries (EL, IE, LT, PL, SE, SK and UK-NI) in Cluster 2019 which apply interim measures due to an absence of sufficient liquidity in the wholesale gas market, have implemented short-term standardized products (STSPs) and balancing services or products under interim measures for balancing purposes, by 1 October 2015. Three countries (LT, PL (H-Gas) and SK) reported the implementation of STSPs and balancing services in the balancing merit order. It can be seen that Poland (H-Gas) and Slovakia conducted STSPs and additional balancing services, while Lithuania only used balancing services in GY 2015/2016 for its balancing purposes.

Independently from the categorisation of countries in the cluster, it can be seen that the number of days when the TSO is performing balancing actions, as well as the range of daily total TSO balancing volumes compared to the market entry volumes, vary per balancing zone – even in countries where the same balancing regime applies. While in some countries within-day-obligations (WDOs) are implemented to further incentivise shippers to balance, in other countries TSOs in their residual balancing role might be incentivised in other ways. In Germany, due to their model, TSOs also have to take into account gas quality conversion and the handling of non-daily metered (NDM) off-take volumes in addition to shipper imbalance volumes.

A correlation between daily shipper imbalances and the behavior of a TSO on days when performing balancing actions is in most of the cases visible, depending on the countries and days. Additionally, it indicates that shippers might behave different and therefore are incentivized differently and/or able to balance their portfolios in different systems. In Slovenia the daily net shipper imbalances are constantly positive, which might explain why the TSO mainly sells gas to the market.

In all countries, except Austria and Slovakia shipper imbalances occur on a daily basis. The majority of TSOs perform balancing actions on less days compared to when shipper imbalances occur. Exceptions can be seen in three countries (BE/LU and DE) where balancing volumes are conducted on a daily basis.

The TSO balancing actions in five countries (AT, BE/LU, NL and DK) are triggered by market signals which also provide an indication to shippers before a TSO will enter the market, while in other countries TSO balancing actions are triggered by physical signals from the system. The flexibility of gas systems for handling shipper imbalances varies in different countries, TSOs in their residual balancing role have to take this into account when balancing their system. This might indicate why for some countries TSOs do not usually undertake balancing actions on a daily basis.

CAM Network Code

IMPLEMENTATION MONITORING 2016

The implementation of CAM NC is an important step in the harmonisation and development of an integrated energy market within the European Union. Network Users can join and operate within the integrated market more easily than in a multitude of separate national markets with different rules and regulations for network access and capacity trading.

In the European Union, standard procedures for capacity booking are provided within the integrated market, like unified capacity auction dates for capacity products offered on no more than one common booking platform, with two exceptions, at any single interconnection point instead of individual TSO websites for the booking procedures. Moreover, capacity products are harmonized and operational steps are facilitated by booking the entry and exit capacity at an IP in one single step by bundling the respective products. Since the application deadline of CAM NC on 1 November 2015, significant progress was made towards achieving an integrated energy market. The vast majority of TSOs have implemented all of the mandatory requirements from CAM NC on time, thus providing strong support for the integrated EU gas market. To fully achieve the desired results, certain measures that have not yet been implemented by some TSOs and/or at some IPs need to be completed as soon as possible. The implementation monitoring report shows further developments regarding the implementation of provisions in comparison with the monitoring report for the year 2015.

Both ACER and ENTSOG are required to publish monitoring reports. ENTSOG collected data for CAM NC implementation monitoring purposes independently from ACER. This differs from 2015 when ENTSOG and ACER had decided to develop a joint process for collecting data. But this year ACER changed the time frame for their data collection. ENTSOG's and ACER's implementation monitoring reports are complementary. ENTSOG's report was developed based on data provided by TSOs.

The survey conducted by ENTSOG regarding TSO implementation of CAM NC shows that of the 41 TSOs required to apply CAM NC, 32 of them have already developed and applied all or at least all mandatory CAM NC measures. This means that they fully comply with the obligations defined in the CAM NC.

Nine TSOs claimed to have partially implemented the CAM NC requirements, while the Member States of five TSOs have been granted derogation by the EC under Article 49 of the Gas Directive. Nonetheless, one of these TSOs has partially implemented CAM NC. Furthermore, three TSOs have IPs that are not relevant to CAM NC.

The situation regarding CAM NC implementation by TSOs is also reflected in the results of the IP survey, which was sent to 328 IP sides where CAM NC is applicable. The number of IP sides was the same as in 2015. Even though some IPs had merged together into VIPs, other IPs were newly created. Generally it has been shown that CAM NC has already been implemented at the vast majority of relevant IP sides. Furthermore, the number of IP sides where CAM NC provisions have been implemented has increased in comparison with the previous year.

Standard capacity products have been introduced at all IP sides where TSOs are obliged to offer them (according to Article 9) and tariffs are calculated uniformly in the intended manner (according to Article 26.2).

At a small number of IP sides, some CAM NC Articles have not yet been fully implemented (up to 10 % of all IP sides). Some delays in implementing CAM NC provisions are still present in the capacity calculation and maximisation (according to Article 6.1) and the offer of bundled capacity products (according to Article 19). However, in case of capacity maximisation there is a significant decrease of almost 39 % of the number of IP sides compared to the previous evaluation, where capacity was not calculated and maximized according to CAM NC provisions. In case of implementing Article 16, an improvement of almost 50 % was observed relative to 2015. Some IP sides have not yet implemented auctions, however the uniform gas day (according to Article 3.7) has not yet been implemented at all IP sides.

One obstacle for TSOs implementing the provisions of the CAM NC is the necessity of offering all their bundled capacity at one IP on one capacity platform. Some TSOs were not able to reach an agreement on which capacity booking platform to use, e.g. DE-PL, while in the case of BG-GR, the decision has been taken and the adjacent TSOs have agreed on the booking platforms to be used. Regarding the AT-HU border, the adjacent TSOs, FGSZ and GCA, reached an agreement in December 2016 to start a pilot project to allocate yearly capacities at the Mosonmagyaróvár IP (AT>HU) on RBP in March/April 2017 in compliance with the CAM NC.

Some TSOs have applied interim measures from the Commission Regulation (EU) No 312/2014, also known as Network Code on Gas Balancing of Transmission Networks. In these cases, certain provisions laid out in the CAM NC are not applicable, e.g., the introduction of an over-nomination procedure or the offer of within-day interruptible capacity.

Progress has been made in dealing with competing capacities at the AT-DE IPs. Thanks to the agreement achieved between the concerned TSOs and NRAs, and due to the technical development of the booking platform, the capacities are already offered as bundled.

Moreover, at some IPs it is not possible to implement all CAM NC articles in daily use since all technical capacity has already been booked on a long-term basis. Hence, no auctions can take place and neighboring TSOs cannot bundle the available capacity.

However, such restrictions in applying of the CAM NC provisions, especially in the last case, do not necessarily mean a delayed implementation. Despite the non-application of certain rules, TSOs may still have implemented the required measures.

SO_2, NO_x and carbon monoxide emissions can all be significantly cut by switching from oil to gas in the transport sector, contributing to the improvement of air quality and reducing health problems in urban areas.

Image courtesy of National Grid

EFFECT MONITORING 2016

ENTSOG launched the annual effect monitoring process in December 2016 to ensure the timely publication of results in the 2016 Annual Report.

To measure the effects of the CAM NC on the European market, ENTSOG introduced three indicators that show the impact of the mechanisms.

To monitor the effects of CAM NC, the data was requested from all TSOs using any of the booking platforms for capacity allocation during the gas year 2015/2016. In addition, ACER undertakes its own monitoring. ENTSOG has aimed to produce its report to be supplementary to ACER's report. Regarding the effect monitoring, ENTSOG's focus has been to identify to which extent the main aims of the Network Code have been achieved.

Effect Monitoring Indicators and their results

CAM.1: Share of bundled capacity to sold capacity

The ratio of bundled capacity to firm capacity booked for yearly and daily products was the highest at 31.36% of overall sold yearly capacity and 31.86% for daily capacity. Next to having the highest ratios, these two standard products contain the largest share of booked firm and bundled capacities. This means that yearly and daily products are preferred by network users, and that the balance between long-term and short-term bookings promoted by the European Commission through the Third Energy Package is becoming a reality in Europe.

At the same time, quarterly and monthly products at 8.15 % and 27.86 % respectively are lower than the yearly and quarterly products (especially quarterly capacity). Monthly bookings are not far away from the daily values (booking of bundled capacity and booking of firm capacity), while the quarterly product seems to be the least preferred product but it still is relevant.

This is the first year where the effects of the applicable rules of CAM NC have been monitored. It is a rather complex manner to interpret the standalone ratio numbers; however this situation and the relatively low ratios can be explained as follows:

1. The IP is not CAM-relevant since it connects to a third/exempted country, but the relevant NRA nonetheless decided to apply CAM NC on their IP side.
2. Old unbundled booking difference with the adjacent TSO.
3. Differences in technical capacity volumes on the IP sides.
4. Different booking platforms on both sides of the IP.
5. Network users matching unbundled capacity in one side of the IP with interruptible capacity at the other side of the IP.
6. Connection to DSO on the other side, but relevant NRA decided to apply CAM NC to this point.

CAM.2: Share of secondary market-traded bundled capacity to secondary market traded unbundled capacity

Share of bundled capacity reallocated due to secondary market trades is marginal at only 0.38 %. This is caused by the historical dominance of unbundled capacity.

CAM.3: Increase of market participants in a system

The indicator shows an important increase of both, "all participants" and "active participants" in the European market. Number of all participants has increased from gas year 2014/2015 to gas year 2015/2016 in almost 350 new network users approved in European systems to participate in the gas market. This means an increase of 15 % in one year.

Increase of active participants is even clearer, since the number of active participants in European markets has increased by 31 % compared to the previous year. In other words, there are 220 new network users that are now active on the European market.

CMP Guidelines

IMPLEMENTATION MONITORING 2016

ENTSOG launched its annual implementation monitoring exercise for CMP Guidelines in November 2016, independently from ACER implementation monitoring exercise. Both ACER and ENTSOG are required to publish implementation monitoring reports.

Most of ENTSOG members have already fully implemented the CMP Guidelines. 42 of 49 TSOs are fully compliant with the CMP Annex, and only a few members are still in the process of implementing some of the CMPs. Following NRA approvals of most implementation proposals for the remaining mechanisms during the last quarter of 2016, the majority of TSOs not yet fully compliant with CMP rules are now finalising the implementation of the remaining mechanisms and are expected to have them implemented by the end of the first quarter of 2017. Two TSOs expect to implement all CMP rules before the end of year 2017.

This means that, with the information received by ENTSOG during December 2016, total compliance with the CMP Annex is expected by the end of 2017 throughout Europe. This compliance is subject to the expected approval by the NRAs of the CMP implementation proposals provided by the TSOs, and assumes that the expected implementation times for the remaining CMPs will be accomplished and suffer no delays.

EFFECT MONITORING 2016

ENTSOG launched the annual effect monitoring process in December 2016 to ensure the timely publication of results in the 2016 Annual Report. ENTSOG has aimed to produce reports that can be considered supplementary to ACER's report. Regarding effect monitoring, ENTSOG's focus has in particular been to identify to which extent the main aims of the guidelines has been achieved.

To measure the effects of the CMP Guidelines on the European market, ENTSOG introduced two indicators that show the impact of the mechanisms.

To monitor the effects of CMP Guidelines, the data was requested from all TSOs that owned IPs considered congested by ACER in his Congestion Report 2015/2016. In addition, ACER undertakes its own monitoring and ENTSOG considers its report as supplementary to ACER's.


Image courtesy of Energas

Effect Monitoring Indicators and their results

- **CMP.1: Additional capacity volumes made available through each CMP**

	OS+BB	FDA UIOLI	SURRENDER	LT UIOLI
EFFECT MONITORING INDICATORS AND THEIR RESULTS				
Additional Capacity Offered	16396 MWh/h/y	679346 MWh/h/y	100541 MWh/h/y	–
(Re)allocated Capacity	–	2344 MWh/h/y	93041 MWh/h/y	–
Ratio	0%	0.35%	92.54%	–

As shown, FDA UIOLI is the CMP mechanism that releases the most capacity – on a cumulative basis for the period under consideration – at congested IPs while the LT UIOLI mechanism does not provide any additional capacity at congested IP sides to the market for the observed period. The capacity volume released through OS+BB is moderate in comparison with FDA UIOLI and Surrender of Capacity.

Surrender of Capacity appears to be the most effective of all four CMPs for network users since the ratio of allocated capacity relative to capacity on offer is close to 100%. This is due to the fact that Surrender of Capacity in the allocation process has, after available capacity, is first priority for yearly, quarterly and monthly products.

- **Indicator 2 (CMP.2): Share of capacity reallocated through CMP relative to total capacity reallocated**

$$CMP2 = \frac{ACMP}{(ACMP + ASM)} \times 100 = 48\%$$

The chosen indicator compares the allocation of additional capacity through CMP mechanisms with the allocation of the total additional capacity (additional capacity allocated from that offered through CMP mechanism + additional capacity allocated from offered capacity in the secondary market).

In the table above, we can see that both means of re-offering unused capacity via CMP mechanisms and the secondary market have been established in Europe. Almost half of the capacity reallocated is allocated via CMPs. Nonetheless, bilateral agreements between network users (secondary market) are still the preferred solution for trading unused capacity.

Additionally, it is worth noticing the importance of the secondary market in offering additional capacity. Almost 13% of the total amount of reoffered capacity is traded on the secondary market. However, it is important to note that from the total amount of allocated capacity that is re-offered, 52% of it is allocated to other network users on the secondary market.

CONCLUSIONS

- The current ways of offering additional capacity from unused allocated capacity effectively allows network users to access markets in situations where IPs are contractually congested and technical capacity is not available.
- The current situation in the European gas market shows that, of the total amount of additional capacity offered through CMP mechanisms, around 12% is reallocated. This means that contractual congestion situations are not limiting market access to other network users who do not hold capacity at the relevant IPs. Otherwise, the demand for additional capacity and reallocated amounts would be much higher.
- Of all CMP mechanisms, Surrender of Capacity is the most widely used mechanism by network users due to its simplicity and prioritisation when allocating capacity after auctions compared to other CMPs.
- The secondary market is an important tool for trading unused capacity between network users and thus significantly helps to ease market access at congested IPs. It can therefore be considered to be a widely accepted alternative to CMP mechanisms by network users.


Image courtesy of GRTgaz

Network Code on Interoperability and Data Exchange Rules

Following AWP 2015 and to fulfil the monitoring obligations envisaged in Article 25 of the INT NC, ENTSOG members provided their responses to an implementation questionnaire agreed by ACER and ENTSOG, including both general and interconnection-point specific issues.

Based on the replies from participating TSOs, the **report** shows that the majority of interconnection points (IPs) are operated according to interconnection agreements (IAs) concluded between adjacent TSOs according to the rules foreseen in the INT NC.

In the vast majority of agreements, the lesser rule is implemented as the matching rule and the operational balancing account (OBA) is widely used as the allocation rule. Regarding measurement principles in the IAs, the majority of them take already into consideration the provisions of the INT NC and a number of them have been concluded on the basis of the ENTSOG template.

According to the report, no cross-border trade restrictions due to differences in gas quality or odourisation practices that cannot be avoided by mutual cooperation between TSOs have been detected. Regarding short-term monitoring requirements, more than 83 % of the TSOs are publishing on their websites Wobbe Index (WI) and Gross Calorific Value (GCV) for each Entry IP once per hour.

As for data exchange, the majority of TSOs have implemented or are in the progress of implementing one or more of the common solutions for Nominations & Matching and CAM/CMP processes. In addition to the common solutions, 82 % of TSOs have advised that existing solutions are staying in place.

Support the TSOs of Member States, Energy Community and third countries in the implementation of the NC

The Interoperability team and WG keep building a close cooperation with the Energy Community through the ReCo teams and joint workshop on Interoperability and Transparency (Vienna, 19 October) and advise on the roadmap for implementation of the NC within the Contracting Parties and adjacent Member States (1st meeting on implementation of Gas Network Codes in the Energy Community, Budapest, 7 July).

More information regarding cooperation with Energy Community and third countries could be found in paragraph 6.1.

IT and Reasearch & Development Activities

IT Activities

EVALUATE MAINTENANCE PDWS/TP

Various and significant evolutions were delivered in order to continuously improve the performance and functionality of the Transparency Platform (TP).

Notably, a major upgrade of the TP database version significantly improved the querying performance for the TP users. A features requested by several users was added, enabling them to download the data directly in Excel; another feature was delivered to give users the choice between downloading capacity and interruption data in a compact mode (as few distinct values as possible) or in a "periodized" mode (one value per gas day, or per gas hour).

Collecting feedback and evaluating the user experience of the TP has always been an objective of ENTSOG, and this is why the possibility to ask directly questions to the TP Administrative team was added to the TP. This feature has since been regularly used.

A less visible but nonetheless very real achievement led to a quite significant improvement of the system's loading performance, i.e. the time needed to process and display the data on the Platform. The TP is now performing quite well under the current conditions.

IMPROVEMENT DATA PORTAL

The Project Data Portal evolved significantly to cope with the TYNDP 2017 data collection, as well as with the PCI application collection.

A major revision of the project portal was necessary to be in line with the TYNDP 2017 data collection. Improvements were done along several axes. The layout was improved and made more user-friendly; unnecessary questions were removed, and new ones were added; usage of tool tips and explanatory texts was systematized.

A significant effort was spent to document the project portal, resulting in the production of an exhaustive handbook. ENTSOG provided regular support during the data collection to assist project promoters in their submission.

One important goal of ENTSOG was to give the promoters the tools to understand how their data was processed, in order to react rapidly and gain a better understanding of the way ENTSOG processes such inputs. A comprehensive set of reports was produced and integrated in the project portal interface, giving promoters a better insight into the inner workings of ENTSOG's data warehouse. Overall, the efforts paid off, enabling to collect data more quickly and in a better quality than before.

Another round of targeted improvements was delivered end of 2016. ENTSOG agreed to support the European Commission in collecting PCI applications for the PCI Third List. The project portal was adapted to this goal; the documentation was updated, and two webinars were held. Here also, the data collection was a success, completing in little more than a month.

STANDARDISATION AND AUTOMATISATION OF URGENT MARKET MESSAGES (UMM)

Work on the standardisation of UMMs continued. ENTSOG IT analysed the documents produced by ACER, and participated to a series of webinars tackling the implementation.

The second half of 2016 was spent addressing the documents produced by ACER, and analysing in detail the consequences for ENTSOG. Functional questions were discussed and documented via Question and Answers documents. The discussions on the UMMs standardisation and automatisation is continuing in 2017. Both via special ACER-ENTSOG-TSO stakeholder webinars and in the RRM User Group.

Research and Development Plan

To meet stakeholder expectations, ENTSOG methodologies, tools and data scenarios are continually being improved. The resulting improvements have provided benefits to a number of ENTSOG deliverables and activities. The Supply and Demand (S&D) and NeMo Kernel Groups form the core of the Investment Working Group in charge of developing innovative approaches and tools.

SUPPLY AND DEMAND KERNEL GROUP

The Group performs research to expand knowledge of the supply and demand aspects of European gas. This knowledge is used to develop an improved definition of the assumptions and approaches used in the Seasonal Outlooks and TYNDP.

Analysis of Gas Demand

During 2016, ENTSOG further developed its knowledge and analysis of gas demand, which was driven by a number of factors.

For long-term gas demand, developing the scenarios for both TYNDP 2017 and TYNDP 2018, including the extensive stakeholder engagement during these processes, has led to increased focus on sectoral demand behaviour, interrelationships and dynamics. This is especially so in the work completed in collaboration with ENTSO-E regarding the power sector, both in the use of data available from e-TYNDP 2016 to create the thermal-gap methodology for TYNDP 2017 and the joint development of TYNDP 2018 scenarios.

This has been achieved in both the context of country-level specifics and EU-level dynamics, with efforts to understand how these link in the greater context of European climate goals and how gas plays a key role in the future energy mix.

Analysis of Gas Supply

The framework for the gas supplies was developed by the **Supply and Demand KG** and completed **for TYNDP 2017** and both Seasonal Outlooks taking into account stakeholder feedback.

Regarding the **Seasonal Outlooks** reports, the definition of supply patterns were derived from the supply mixes captured for the **last Summer and Winter Reviews** respectively. This method makes it possible to cap the elasticity given to the model for each of the supplies to reliable levels, while giving additional flexibility only to some of the sources when needed to reach the correspondent seasonal targets.

For **TYNDP 2017**, the supply assumptions were defined as potential supplies from different sources. The word "potential" implies that these gas supplies were not considered as forecasts of future flows. In order to capture the uncertainty in the development of the different supplies, the minimum and maximum potentials were defined as the lower and upper limits for the expected imports coming from each source.

The development of these potentials by the **Supply and Demand KG** was based on publicly available literature and reports and later on discussions between members and stakeholders held during the feedback process. These potentials have covered supplies from outside the EU arriving via pipeline from Russia, Norway, Algeria, Libya, Azerbaijan, and also as LNG. Supplies also include conventional national production and green gases coming from inside the EU.

Moreover, based on stakeholder feedback for **TYNDP 2017**, it was decided to use a more realistic approach for the first year of the assessment (2017) by taking into account the expertise developed by ENTSOG on the seasonal outlooks. The supply potentials for the first year of the assessment were then built using the average of the maximums and minimums historically observed for each source in line with the approach retained for the **Seasonal Supply Outlooks**.

NEMO KERNEL GROUP

Improvement of the modelling tool

In 2016, ENTSOG factored in stakeholder feedback on TYNDP 2017 for improving its modelling approach. Parts of this improvement, such as separate modelling of high-demand situations, had already been successfully tested within the Winter Outlook 2015/2016. Other improvements covered the modelling of the two-week high-demand situation regarding LNG supplies, the introduction of an advanced infrastructure level, and of a specific supply configuration building on actual publicly reported gas import prices. The modelling of gas storages through definitions of injection and withdrawal curves was another significant aspect of the continuous improvement. ENTSOG also changed the programming language to allow for faster simulations.

When burned to heat homes or for industrial uses, natural gas releases 25–30% less CO_2 than oil and 40–50% less CO_2 than coal per unit of energy produced.

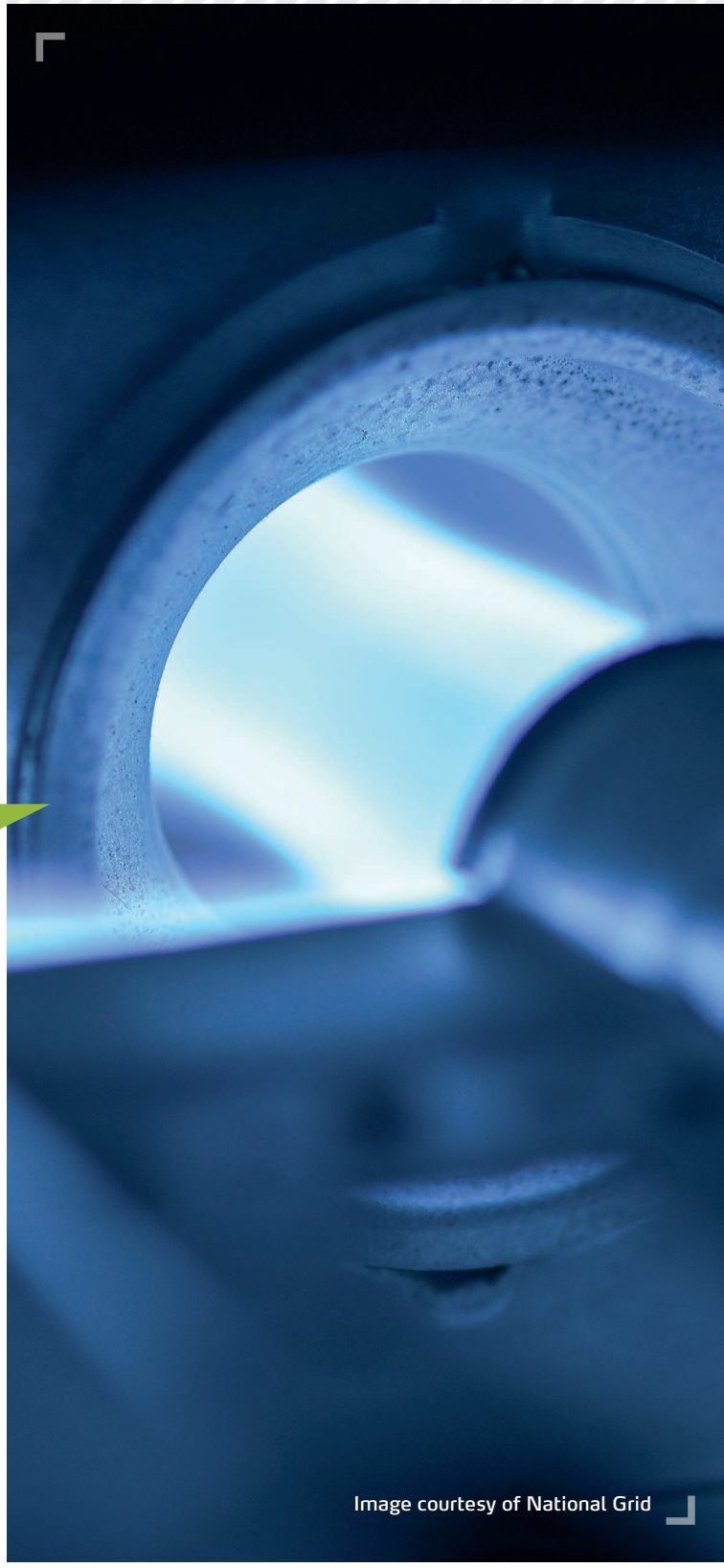
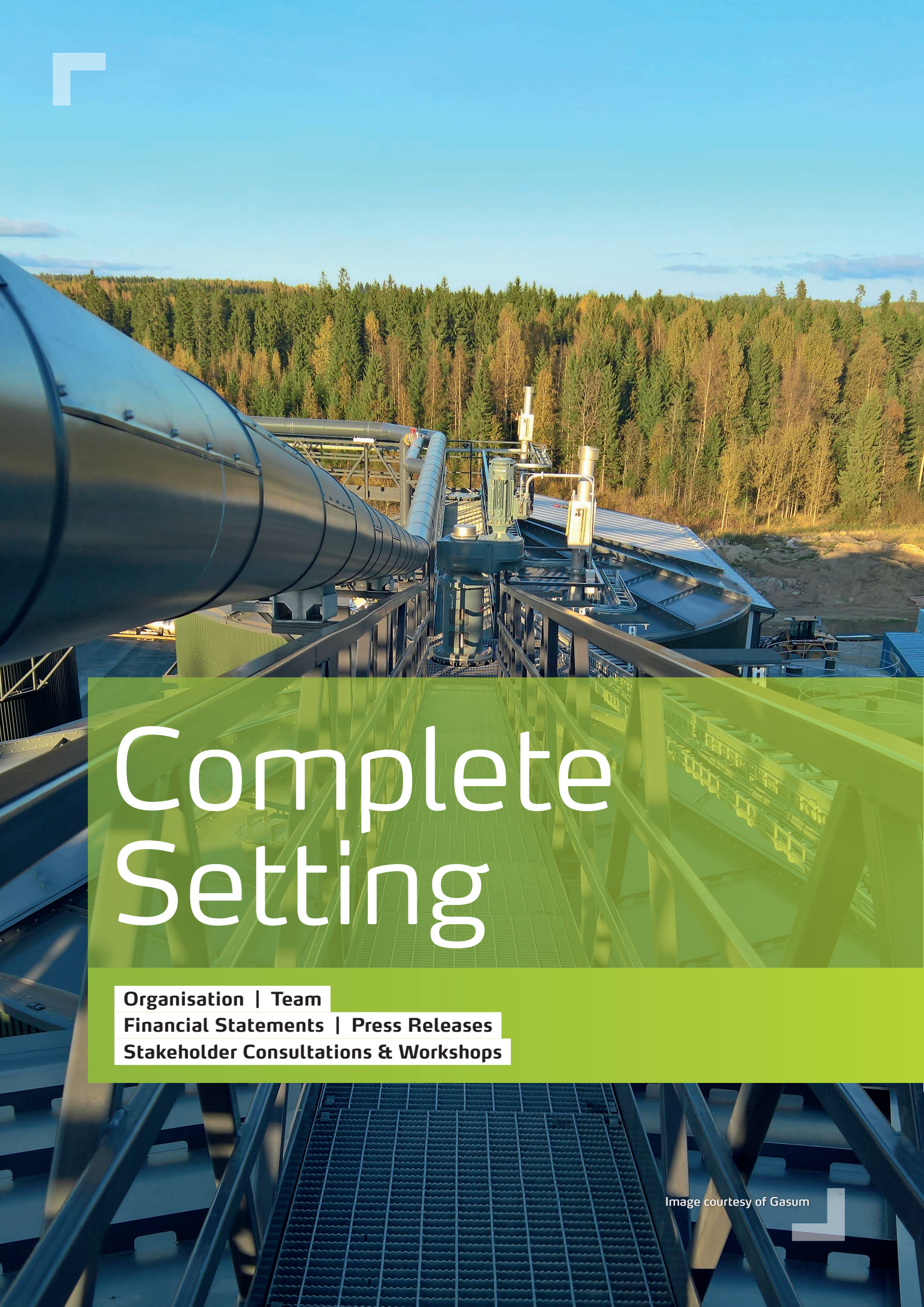


Image courtesy of National Grid



Complete Setting

Organisation | Team
Financial Statements | Press Releases
Stakeholder Consultations & Workshops

Image courtesy of Gasum

Organisation

In 2016, our Members, Associated Partners, Observers and Management Board underwent the following changes:

- The General Assembly endorsed the membership of Societá Gasdotti Italia S.p.A. (Italy) as of 1 January 2016
- The ENTSOG General Assembly on 16 December 2016 unanimously appointed the following:
  - Mr Stephan Kamphues as President of ENTSOG for the term 1 January 2016 to 31 December 2018
  - ENTSOG Board Members for the term 1 January 2016 to 31 December 2018 as pictured below
- The General Assembly designated Mr Jan Ingwersen unanimously as General Manager for the term 1 January 2016 to 31 December 2018, adopting the recommendation from the ENTSOG Board

ENTSOG Board, from left to right: **Zoltán Gellényi** (FGSZ, Hungary), **Pascal De Buck** (Fluxys, Belgium), **Marjan Eberlinc** (Plinovodi, Slovenia), **Nicola Pitts** (National Grid, Great Britain), **Thierry Trouvé** (GRTgaz, France), **Gabriela Mares** (Transgaz, Romania),**Christoph von dem Bussche** (GASCADE, Germany), **Gaetano Mazzitelli** (Snam Rete Gas, Italy), **Francisco Pablo de la Flor García** (Enagás, Spain), **Annie Krist** (Gasunie Transport Service, Netherlands), **Stephan Kamphues** (ENTSOG President, Open Grid Europe, Germany), **Miroslav Bodnár** (eustream, Slovakia)

Team

MANAGEMENT SUPPORT TEAM

From left to right: Agata Musial, Maria Dhénin, Paul McCarthy, Nicolas van der Maren, Jan Ingwersen, Sara Piskor, Armin Teichert, Laura Bordin, Vincent Scherrer.

MARKET TEAM

From left to right: Peter Hlusek, Maria Jost, Áine Spillane, Seán Kinsella, Andreas Martens, Irina Oshchepkova, Laurent Percebois, Pedro Miras, Veronika Herter, Jan Vitovský, Alexandra Kiss, Malcolm Arthur, Mihai Goage, Ksenia Berezina.

SYSTEM DEVELOPMENT TEAM

From left to right: Rares Mitrache, James Gudge, Louis Watine, Mirsada Spaho, Stefano Astorri, Céline Heidrecheid, Stefan Greulich, Arturo de Onís, Ádám Balogh.

SYSTEM OPERATION TEAM

From left to right: Maria Gerova, Katherine Stannov, Antonio Gómez Bruque, Mirsada Spaho, Marin Zwetkow, Anton Kolisnyk, Hendrik Pollex, Jackie Manning, Jef De Keyser.

Financial Statements 2016

Values EUR		Note	2016	2015

ASSETS

FIXED ASSETS		20/28	**377,322.65**	**429,121.35**
I.	**Formation expenses (Note I)**	20		
II.	**Intangible assets (Note II)**	21		
III.	**Tangible assets (Notes III)**	22/27	**377,322.65**	**429,121.35**
	A. Land and buildings	22		
	B. Plant, machinery and equipment	23		
	C. Furniture and vehicles	24	132,808.06	124,999.63
	D. Leasing and similar rights	25		
	E. Other tangible assets	26	244,514.59	304,121.72
	F. Assets under construction and advance payments	27		
IV.	**Financial fixed assets (Notes IV and V)**	28		
	A. Affiliated companies	280/1		
	1. Participating interests	280		
	2. Amounts receivable	281		
	B. Other companies linked by participating interests	282/3		
	1. Participating interests	282		
	2. Amounts receivable	283		
	C. Other financial fixed assets	284/8		
	1. Shares and interests	284		
	2. Amounts receivable and cash guarantees	285/8		
CURRENT ASSETS		29/58	**2,338,175.82**	**1,572,894.87**
V.	**Amounts receivable after more than one year**	29		
	A. Trade debtors	290		
	B. Other amounts receivable	291		
VI.	**Stocks and orders in progress**	3		
	A. Stocks	30/36		
	1. Raw materials and consumables	30/31		
	2. Work in progress	32		
	3. Finished goods	33		
	4. Goods purchased for resale	34		
	5. Immovable property acquired or constructed for resale	35		
	6. Advance payments	36		
	B. Orders in progress	37		
VII.	**Amounts receivable within one year**	40/41	**115,086.03**	**85,154.75**
	A. Trade debtors	40	38,860.74	12,932.76
	B. Other amounts receivable	41	76,225.29	72,221.99
VIII.	**Short-term investments (Notes V and VI)**	50/53		
	A. Own shares	50		
	B. Other inv estments and deposits	51/53		
IX.	**Cash at bank and in hand**	54/58	**2,211,348.79**	**1,484,055.12**
X.	**Deferred charges and accrued income (Note VII)**	490/1	**11,741.00**	**3,685.00**
TOTAL ASSETS			**2,715,498.47**	**2,002,016.22**

Values EUR	Note	2016	2015

LIABILITIES AND OWNERS' EQUITY

CAPITAL AND RESERVES		10/15	**1,895,248.67**	**1,363,509.17**
I.	**Capital (Note VIII)**	10	**619,892.00**	**619,892.00**
	A. Issued capital	100	619,892.00	619,892.00
	B. Uncalled capital	101		
II.	**Share premium account**	11		
III.	**Revaluation surplus**	12		
IV.	**Reserves**	13	**300,000.00**	**300,000.00**
	A. Legal reserves	130		
	B. Reserves not available for distribution	131		
	1. In respect of own shares held	1310		
	2. Other	1311		
	C. Non-taxable reserves	132		
	D. Reserves available for distribution	133	300,000.00	300,000.00
V.	**Profit carried forward**	140	**975,356.67**	**443,617.17**
	Loss carried forward	141		
VI.	**Investment grants**	15		
VII.	**Advance to associates on distribution of net assets**	19		
PROVISIONS AND DEFERRED TAXATION		16		
VIII.	**A. Provisions for liabilities and charges**	160/5		
	B. Deferred taxation	168		
CREDITORS		17/49	**820,249.80**	**638.507,0**
IX.	**Amounts payable after more than one year (Note X)**	17		
	A. Financial debts	170/4		
	B. Trade debts	175		
	C. Advances received on orders in progress	176		
	D. Other amounts payable	178/9		
X.	**Amounts payable within one year (Note X)**	42/48	**807,499.80**	**638,507.05**
	A. Current portion of amounts pay able after one year	42		
	B. Financial debts	43		
	1. Credit institution	430/8		
	2. Other loans	439		
	C. Trade debts	44	757,003.63	599,563.51
	1. Suppliers	440/4	757,003.63	599,563.51
	2. Bills of exchange payable	441		
	D. Advances received on orders in progress	46		
	E. Taxes, salaries and social security	45	50,496.17	38,943.54
	1. Income taxes	450/3		
	2. Salaries and social security charges	454/9	50,496.17	38,943.54
	F. Other amounts payable	47/48		
XI.	**Accrued charges and deferred income (Note XI)**	492/3	**12,750.00**	
TOTAL LIABILITIES			**2,715,498.47**	**2,002,016.22**

2. INCOME STATEMENT

Values EUR			Note	2016	2015
I.	**Sales and services**		70/74	**7,242,356.44**	**6,900,172.40**
	A.	Turnover (Note XII, A)	70	7,099,999.96	6.,844,466.33
	B.	Variation in stocks of orders and goods in progress and finished goods (increase +, decrease -)	71		
	C.	Own construction capitalised	72		
	D.	Other operating income (Note XII, B)	74	142,356.48	55,706.07
II.	**Costs on sales and services**		**60/64**	**(6,704,891.90)**	**(6,670,787.02)**
	A.	Raw materials, consumables and goods for resale	60		
	B.	Miscellaneous goods and services	61	6,098,327.10	5,990,698.18
	C.	Salaries and wages, social security costs and pensions (Note XII, C2)	62	462,685.90	560,756.51
	D.	Depreciations andamounts written down on formation expenses, intangible and tangible fixed	630	142,510.41	118,286.87
	E.	Amounts written down on stocks, orders in progress and trade debtors (increase +, decrease -)	631/4		
	F.	Provisions liabilities and charges (increase +, decrease -) (Notes XII, C3 and E)	635/7		
	G.	Other operating charges (Note XII, F)	640/8	1,368.49	1,045.46
	H.	Operating charges capitalised as reorganisation costs	649		
III.	**Operating profit**		70/64	**537,464.54**	**229,385.38**
Operating loss			64/70		
IV.	**Financial income**		75	**309.99**	**450.66**
	A.	Income from financial fixed assets	750		
	B.	Income f rom current assets	751	153.57	447.20
	C.	Other f inancial income (Note XIII, A)	752/9	156.42	3.46
V. Financial charges			65	**(5,985.03)**	**(4,942.05)**
	A.	Debt charges (Notes XIII, B and C)	650		0.70
	B.	Amounts written down on current assets other than mentioned under II.E. (increase +, decrease -)	651		
	C.	Other f inancial charges (Note XIII, E)	652/9	5,985.03	4,941.35
VI.	**Profit on ordinary activities before taxes**		70/65	**531,789.50**	**224,893.99**
Loss on ordinary activities before taxes			65/70		
VII.	**Extraordinary income**		76		
VIII.	**Extraordinary charges**		66		
IX.	**Profit for the period before taxes**		70/66	**531,789.50**	**224,893.99**
Loss for the period before taxes			66/70		
IX bis. A. Transfers from deferred taxation			780		
X.	**Income taxes**		67/77	**(50.00)**	**(140.97)**
	A.	Income taxes (Note XV)	670/3	(50.00)	(140.97)
	B.	Income tax adjustments and write-back of tax prov isions	77		

Values EUR	Note	2016	2015
XI. Profit for the period	70/67	**531,739.50**	**224,753.02**
Loss for the period	67/70		
XII. Transfers from non-taxable reserves	789		
Transfers to non-taxable reserves	689		
XIII. Profit for the period available for appropriation	(70/68)	**531,739.50**	**224,753.02**
Loss for the period available for appropriation	(68/70)		
A. Profit to be appropriated	70/69	**975,356.67**	**443,617.17**
Loss to be appropriated	69/70		
1. Profit for the period available for appropriation	70/68	531,739.50	224,753.02
Loss for the period available for appropriation	68/70		
2. Profit brought forward from preceding period	790	443,617.17	218,864.15
Loss brought forward from preceding period	690		
B. Transfers from capital and reserves	791/2		
1. to capital and share premium account	791		
2. from reserves	792		
C. Transfers to capital and reserves	691/2		
1. to capital and share premium account	691		
2. to legal reserve	6920		
3. to other reserves	6921		
D. Profit/Loss to be carried forward	793/693	**(975,356.67)**	**(443,617.17)**
1. Prof it to be carried forward	693	(975,356.67)	(443,617.17)
2. Loss to be carried forward	793		
E. Shareholders' contribution against the loss	794		
F. Profit to be distributed	694/6		
1. Dividends	694		
2. Directors' emoluments	695		
3. Other beneficiaries	696		

Press Releases 2016

22 January	ENTSOG publishes Auction Calendar
11 February	ENTSOG and ACER launch joint-functionality-platform
17 February	ENTSOG starts process to analyse and to develop a proposal to amend the Interoperability Network Code regarding gas quality
18 March	ENTSOG initiates the project data collection for the TYNDP 2017
20 April	ENTSOG adopts Summer Supply Outlook 2016 & Summer Review 2015
21 April	TYNDP 2017: Submission phase for project data collection ends 8 May 2016
27 April	ENTSOG Public Consultation for Common Network Operation Tools ends on 6 May 2016
03 May	ENTSOG reminder: Only few days left for TYNDP 2017 project submission
04 May	ENTSOG launches public consultation on CEN gas quality standard impacts
12 May	ENTSOG and ENTSO-E launch joint consultation on TYNDPs 2018 scenarios
08 June	ENTSOG publishes Implementation Monitoring Reports
09 June	ENTSOG launches its Annual Report 2015
10 June	ENTSOG publishes new edition of Transmission Capacity Map
07 July	ENTSOG opens public stakeholder consultation on its AWP 2017
07 September	ENTSOG Public Consultation for EU Data Exchange Harmonisation ends on 30 September 2016
15 September	ENTSOG publishes the System Development Map 2015/2016 in cooperation with Gas Infrastructure Europe
20 September	ENTSOG launches 2nd Public Consultation on CEN gas quality standard impacts
13 October	By the end of 2016 ENTSOG will have finalised the impact analysis of the CEN standard
14 October	European natural gas system ready for the winter 2016/17
21 October	ENTSOG publishes definitions used in relation to the gas network codes
28 October	Explore the map of the TYNDP 2017-projects and learn more about the related scenarios
17 November	ENTSOG has finalised CNOTs for each identified data exchange in the network codes
24 November	ENTSOG publishes CAM NC related Auction Calendar 2017–18
20 December	ENTSOG publishes TYNDP 2017 and opens consultation
21 December	ENTSOG recommends not to amend the Interoperability Network Code

Stakeholder Consultations & Workshops 2016

INTEROPERABILITY

28 April	Workshop on Interoperability Network Code regarding Gas Quality
06 September	ENTSOG EU Data Exchange Harmonisation Workshop
13 September	2nd Workshop on Interoperability Network Code regarding Gas Quality
19 October	Joint workshop between the Energy Community and ENTSOG on the developments on interoperability topics and introduction to transparency requirements
16 November	3rd Workshop on Interoperability Network Code regarding Gas Quality

TYNDP

12 January	11th TYNDP/CBA Workshop and 1st SJWS for TYNDP 2017
26 January	2nd Stakeholder Joint Working Session (SJWS#2) on TYNDP 2017
09 February	3rd Stakeholder Joint Working Session (SJWS#3) on TYNDP 2017
23 February	4th Stakeholder Joint Working Session (SJWS#4) on TYNDP 2017
10 March	5th Stakeholder Joint Working Session (SJWS#5) on TYNDP 2017
04 April	Webinar on Project Data Collection for TYNDP 2017
08 May	ENTSOG TYNDP 2017 Data Collection Project Submission Phase from 11 April until 8 May
11 May	12th TYNDP Workshop in Ljubljana on 11 May
02 June	Joint ENTSOs workshop: Let's develop together the future TYNDPs 2018 scenarios
12 June	Joint ENTSOs consultation: Build the Europe's future TYNDPs 2018 scenarios
13 July	6th Stakeholder Joint Working Session (SJWS#6) on TYNDP 2017
10 October	Joint ENTSOs Webinar on Request for input: Going from assumptions to data – Define with us the TYNDP 2018 scenarios
18 October	TYNDP 2017 – Webinar on preliminary TYNDP Low Infrastructure Level results
01 December	Winter Outlook 2016/17 ENTSOs Webinar
20 December	ENTSOG TYNDP 2017 Public consultation

CAM/CMP/FUNCTIONALITY/TRANSPARENCY

04 February	9th Transparency Workshop in Brussels
17 February	ACER and ENTSOG webinar on the new "Joint Functionality Process for Gas Network Codes"

BALANCING

09 November	ACER and ENTSOG organise a second joint workshop on Gas Balancing in Warsaw

Abbreviations

ATSO KG	Adjacent TSO Kernel Group
AUC KG	Auctions Kernel Group
ACER	Agency for the Cooperation of Energy Regulators
AWP	Annual Work Programme
BAL NC	Network Code on Gas Balancing of Transmission Networks
BAL WG	Balancing Working Group
BOA	ENTSOG Board
BRS	Business Requirement Specification
CAM	Capacity Allocation Mechanisms
CAM NC	Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems
CAM WG	Capacity Allocation Working Group
CARP KG	Cost Allocation and Reference Price Kernel Group
CBA	Cost-Benefit Analysis
CEER	Council of European Energy Regulators
CEN	European Committee for Standardisation
CIO	Central Issuing Office
CMP	Congestion Management Procedures
CNOT	Common Network Operations Tools
DSO	Distribution System Operator
EC	European Commission
EDS	European Dispatch Service
EASEE-gas	European Association for the Streamlining of Energy Exchange – gas
EFET	European Federation of Energy Traders
EFTA	European Free Trade Area
EIC	Energy Identification Coding
EIP	Energy Infrastructure Priorities
EIP KG	Energy Infrastructure Priorities Kernel Group
EnC	Energy Community
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSOG	European Network of Transmission System Operators for Gas
ERGEG	European Regulator's Group for Electricity and Gas
EU	European Union
FG	Framework Guidelines
GCG	Gas Coordination Group
GIE	Gas Infrastructure Europe
GRIP	Gas Regional Investment Plan
INC AKG	Incremental Advisory Kernel Group
INT NC	Network Code on Interoperability and Data Exchange Rules
INT WG	Interoperability Working Group
KG	Kernel Group(s)
LIO	Local Issuing Office
MoU	Memorandum of Understanding
MW	Megawatt
NeMo KG	Network Modelling Kernel Group
NRA	National Regulatory Authority
PCI	Projects of Common Interest
OS & BB	Oversubscription and Buy-Back
OS KG	Open Seasons Kernel Group
REMIT	Regulation on Energy Market Integrity and Transparency
RES	Renewable Energy Sources
ResDis KG	Reserve Prices and Discounts Kernel Group
S & D KG	Supply & Demand Kernel Group
SoS	Security of Supply
STSP	Short-term Standardised Products
TAR NC	Network Code on Harmonised Transmission Tariff Structures for Gas
TEN-E	Trans-European Energy Networks
TP	Transparency Platform
TRA WG	Transparency Working Group
TReRe KG	Transparency and Revenue Directory Kernel Group
TSO	Transmission System Operator
TYNDP	Ten-Year Network Development Plan
UIOLI	Use it or lose it
UGS	Underground Gas Storage
WS	Workshop(s)

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Global natural gas resources are vast and spread over many regions around the world. Conventional recoverable gas resources are equivalent to over 120 years of current global consumption and all major regions have recoverable resources of over 75 years of consumption.

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