

FLUXSWISS 

FLUXYS 

TENP 

 GRTgaz

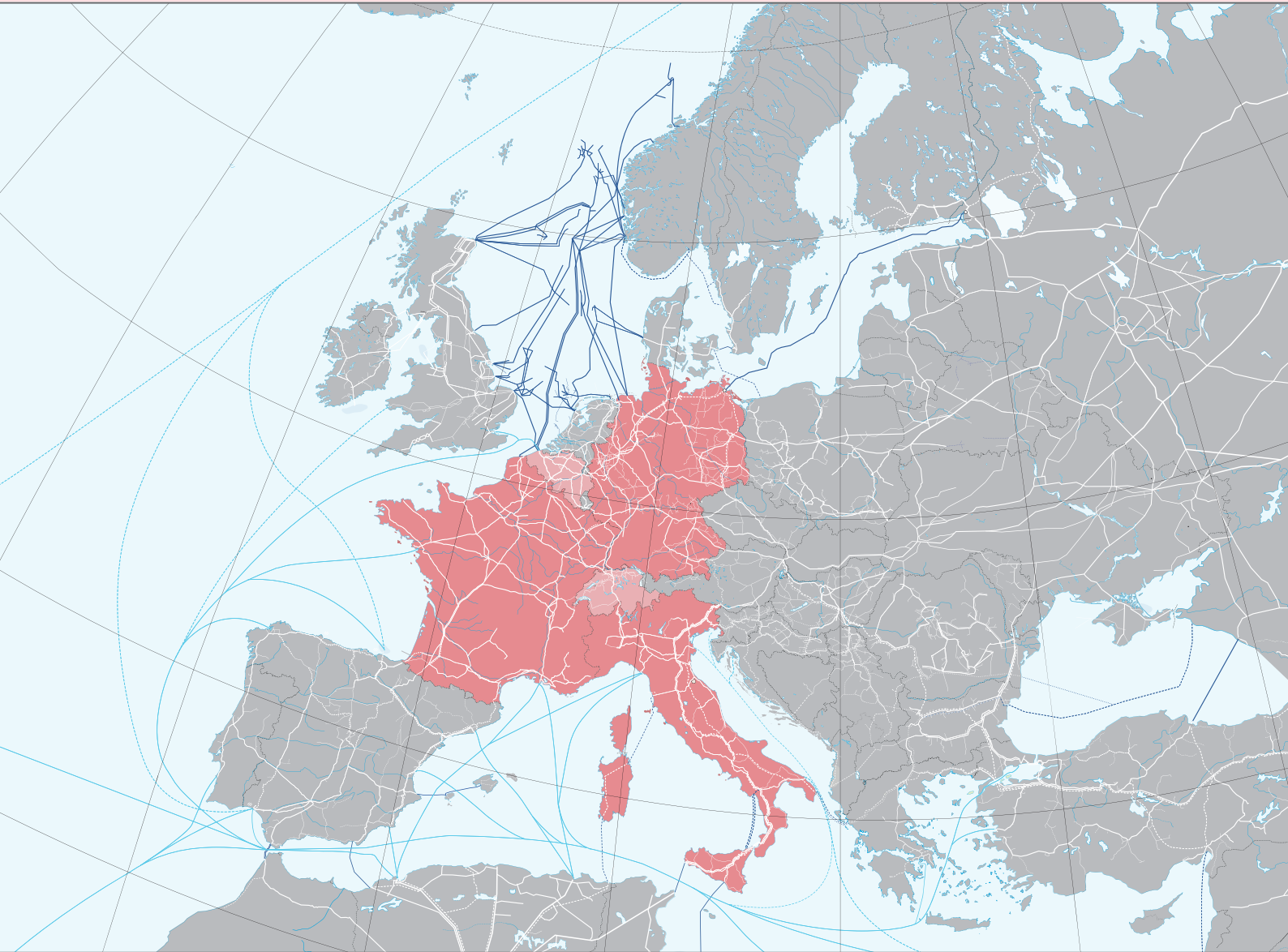
 GRTgaz
Deutschland

 Open Grid Europe
The Gas Wheel



SNAM RETE GAS

SWISSGAS 



Gas Regional Investment Plan South-North Corridor **2012 - 2021**

List of contents

1. FOREWORD.....	4
2. INTRODUCTION	5
3. REGIONAL OVERVIEW.....	6
3.1. Infrastructural elements	8
3.1.1. Transmission networks	8
3.1.2. Storage sites	9
3.1.3. LNG regasification plants	9
3.2. Market elements.....	10
3.2.1. Demand size	10
3.2.2. Market development indicators.....	11
3.3. The role the Region will play in the development of the European gas infrastructure	13
4. PROJECTS.....	15
4.1. SOUTH-NORTH CORRIDOR.....	17
4.1.1. General elements	17
4.1.2. Rationales of the Project	18
4.1.3. Project description	19
4.1.4. TSO-TSO coordination	25
4.2. The investments in the western area of the Region	26
4.3. The investments in the eastern area of the Region.....	28
4.4. The investments in the southern area of the Region	30
4.4.1. South-North developments in Italy	30
4.4.2. Other potential developments	32
4.4.3. GALSI and CYRENEE Projects	34
4.4.3.1. General elements	34
4.4.3.2. Additional Elements	34
4.4.3.3. Project description.....	34
5. CONCLUSION AND THE WAY FORWARD.....	37
6. LEGAL DISCLAIMER	38



List of Figures

Figure 1. Geography and supply sources of the Region	7
Figure 2. Regional transmission networks weight	8
Figure 3. Regional storage sites weight	9
Figure 4. Regional LNG regasification plants weight	9
Figure 5. EU and Regional market demand	10
Figure 6. PEGs volumes and transaction trends (100-basis)	11
Figure 7. NCG volumes (100-basis)	11
Figure 8. PSV volumes and transaction trends (100-basis)	12
Figure 9. Existing & new routes / flows for Europe supply offer	13
Figure 10. South-North Corridor	17
Figure 11. Gries Pass IP positioning	19
Figure 12. Gries Pass IP and northern Italian gas network developments- Phases 1 and 2	20
Figure 13. Oltingue IP positioning	22
Figure 14. Additional infrastructure foreseen	23
Figure 15. Wallbach IP positioning	24
Figure 16. Eynatten IP positioning	25
Figure 17. Additional piece of infrastructure foreseen on the western area of the Region	27
Figure 18. Projects proposed in Scen. II in the draft German Network Development Plan	29
Figure 19. South-North developments in Italy	31
Figure 20. New potential opportunities	32
Figure 21. GALSI project in the context of the Italian network	35
Figure 22. The CYRENEE project	36

For the figures included in this Report, the following representation has been adopted:

- the projects under construction or having a Final Investment Decision taken ("FID projects") are represented with a continuous red line;
- the projects planned but not having received a Final Investment Decision at the moment the Report has been closed ("non-FID projects") are represented with a dotted red line.



1. Foreword



Schwarzach (DE)

© Image courtesy of Fluxys

The European Union is now importing a major part of its gas demand, 62% in 2011 and forecast to rise to 78% in 2020[1]. The importation of gas from outside the EU has been occurring for many years, and as such Transmission System Operators (TSOs) have been cooperating for decades in order to ensure there is sufficient cross border capacity available. The close interaction and cooperation between European TSOs has been crucial for supporting market integration and developing the security of supply of all Member States.

At a European level the TSOs have worked together in order to fulfil the European Network of Transmission System Operators for Gas (ENTSO) obligation to produce the Community-wide Ten-Year Network Development Plan (TYNDP) for the period 2011-2020. This TYNDP was published on 17th February 2011 and is available on the ENTSOG website[2].

The requirement to further promote Regional cooperation has been enshrined in European law through the European Directive 2009/73/EC (Gas Directive) in Article 7 and further detailed by the European Regulation 715/2009 (Gas Regulation) in Article 12. TSOs will be publishing, every two years, a Gas Regional Investment Plan (GRIP) based on Regional co-operation, which will contribute towards

the fulfilment of tasks listed in the Gas Directive and Gas Regulation.

This first South-North Corridor GRIP aims at giving stakeholders a deeper understanding of infrastructure developments within the France - Germany - Italy - Switzerland region of Europe (Region) and is the foundation for the subsequent GRIP evolutions. The TSOs of the Region believe that this document will provide useful information to stakeholders to support an informed discussion on assessing the ability of investment projects to answer Regional market needs.

The format and the content of this first edition of the South-North Corridor GRIP will change over time. The South-North Corridor TSOs welcome any comments and feedback for improving the effectiveness of the document in the future.

[1] Source: ENTSOG.

[2] <http://www.entsog.eu/publications/tyndp.html>.

Note that after 3-month public consultation, on July 18th 2011 the TYNDP 2011-2020 and a related Corrigendum have been officially transmitted to ACER.



2. Introduction



© Image courtesy of Snam Rete Gas

This report on the Gas Regional Investment Plan ("GRIP") has been prepared by the relevant TSOs of the Region. Compared to the ENTSOG Ten-Year Network Development Plan ("TYNPD"), the GRIP results from a direct cooperation between the TSOs, which are dealing with the Regional investment projects. It offers a higher level of details together with a relevant up-to-date informative insight on the projects part of the GRIP. It also supplements the national Ten-Year Network Development Plans by providing additional description on the coordination and the consistency of investments at Regional level.

However, this GRIP is basically a Regional investment plan, recapping planned investment at Regional level: in this view, this report does not perform any flow evolution analysis nor contains details on the processes and rules underlying the realization of the corresponding infrastructures, this being done at a national/company level.

The time horizon covered by the overview of the relevant projects for the Region is ten years. In this sense, the temporal scope of the GRIP matches the Ten-Year Network Development Plans timeframe.

The status and all information regarding the projects in the Report reflects the best information available to the co-authors at the moment of elaborating the report, not considering possible updates effective at the date of publication.

The Region for this GRIP has been identified following a project-based approach and gathers the following

four countries and the relevant associated TSOs ("GRIP co-authors"):

- France (GRTgaz)
- Germany (Fluxys TENP, Open Grid Europe and GRTgaz Deutschland)
- Italy (Snam Rete Gas)
- Switzerland (FluxSwiss and Swissgas)

It has to be noted that since 1st December 2011, Fluxys has completed the acquisition of eni's interests in the TENP (Germany) and Transitgas (Switzerland) pipelines.

According to a general approach elaborated at ENTSOG level early 2011, the GRIP has been performed by the involved TSOs and, as envisaged by Regulation (EC) 715/2009, a proper level of information exchange and coordination has been ensured with ENTSOG and the other European GRIPs through the TSOs members of the association.



3. Regional Overview



© Image courtesy of SNAM Rete Gas



France - Germany - Italy - Switzerland area (the Region) is positioned at the heart of the European Union, with Belgium playing also an important role as NW entry gate to the Region.

The future evolutions of this considerable infrastructural base will likely increase the weight of the Region in addressing both a competitive and a secure European market.

Its unique geographical location at crossroads for major gas import routes grants to this Region a strategically relevant role with respect to both fulfilling the European energy agenda and in preserving security of supply to final customers.

The Region is today supplied by gas routes of various origins, as highlighted on Figure 1 below. On top of historical gas supply from North Sea, Norway, Russia and North Africa, LNG regasification developments opened an access to gas from a very wide range of different sources.

Moreover, the aggregate infrastructural endowment that the gas systems have already created underpins the development of competitive dynamics, making the Region vital for the creation of a well-functioning European internal gas market.

Indigenous production is not displayed on the map, but has been historically contributing to supply the area, especially in two countries (Germany and Italy), further on increasing the level of supply diversification and security.

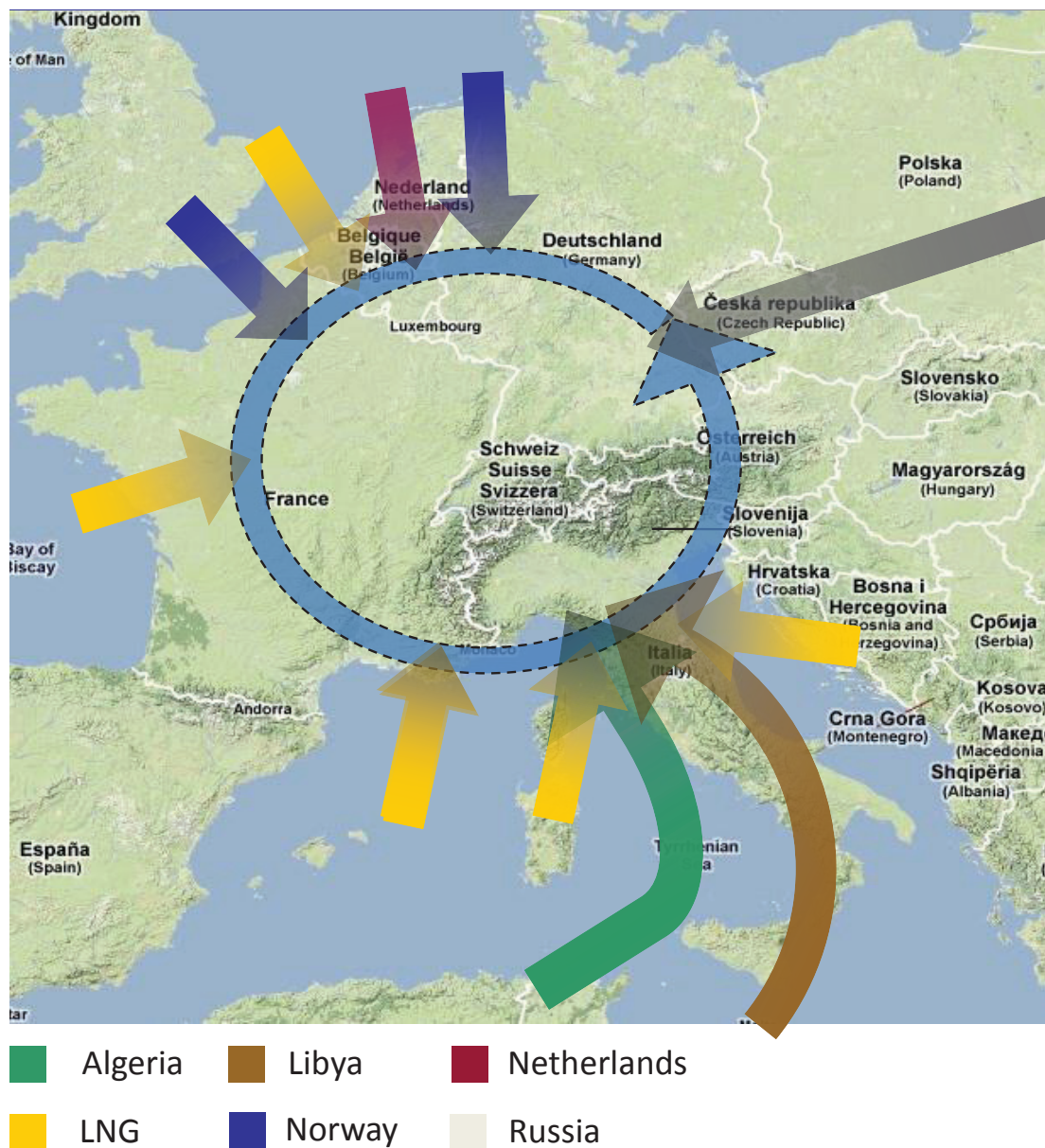


Figure 1: Geography and supply sources of the Region



The following sections illustrate more in detail some of the key features of the Region with relation to both market and infrastructural elements.

3.1 Infrastructural elements

Infrastructures are the backbone for the development of competitive gas markets.

The services that infrastructure operators can provide to their users rely on the availability of an adequate and flexible transmission network, complemented by the presence of equally advanced services offered by storage and LNG operators.

Considering the present aggregated Regional weight of transmission, storage and LNG systems, the users active in the Region can benefit from a wide range of market possibilities, made available by a unique infrastructure base which guarantees also a substantial level of supply diversification and security for all customers.

3.1.1. Transmission networks

The Regional aggregated gas high-pressure network lengths sums up to about 104,500 km. This figure represents about the 54% out of 192,150 km of total European transmission grid^[3].

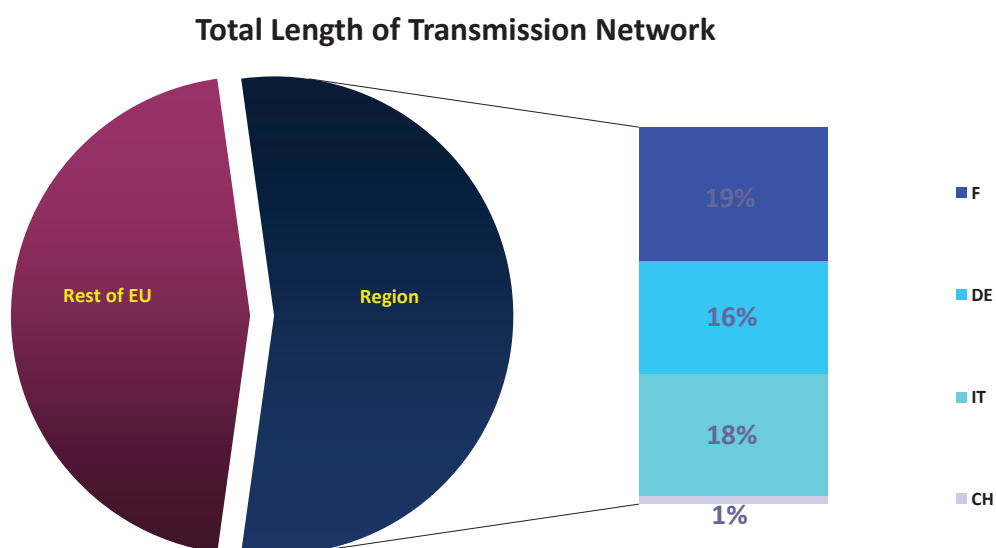


Figure 2: Regional transmission networks weight

[3] Source: elaboration from the "Country Profiles Annex B to ENTSG TYNDP 2011-2020".

3.1.2. Storage sites

The Regional aggregated working gas volumes add up to around 513 TWh (48.5 billion cubic meters), representing a 53% out of 969 TWh (91.6 billion cubic meters) totalised by the aggregate of the overall European working gas volumes^[4].

Working gas volume

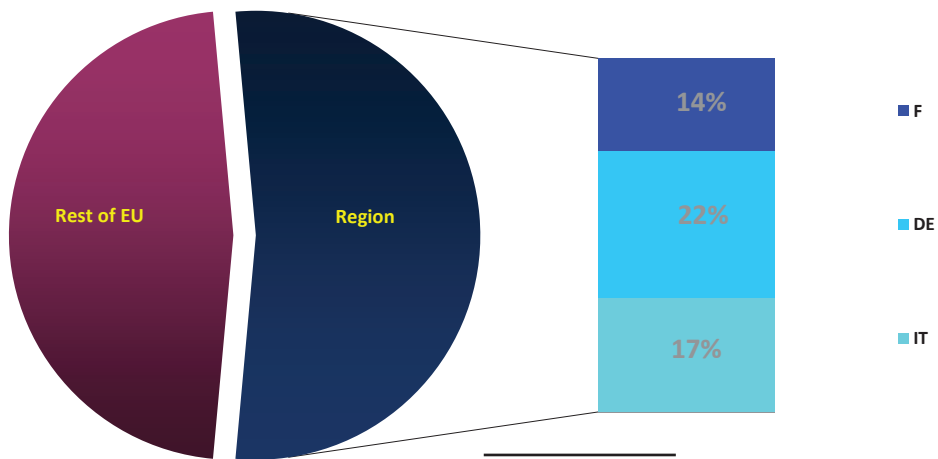


Figure 3: Regional storage sites weight

[4] Source: data processed from "GSE Storage Map" (June 2011) and referred only to EU 27.

3.1.3. LNG regasification plants

The LNG plants operating in the Region offer an aggregated regasification capacity nearly equal to 370 TWh/y (35 billion cubic meters/year). This value represents more than a fifth (22%) of the total European regasification capacities of 1,714 TWh/y (162 billion cubic meters/year). Adding the Zeebrugge LNG and Gate LNG Terminal, this would bring the level up to 34% of the European regasification capacities^[5].

In comparison with gas transportation or storage, the weight of the Region in the total European regasification capacity is lower: this creates a clear incentive to develop further the connection of existing and planned LNG supply sources with the whole Region.

Annual Regasification Capacity

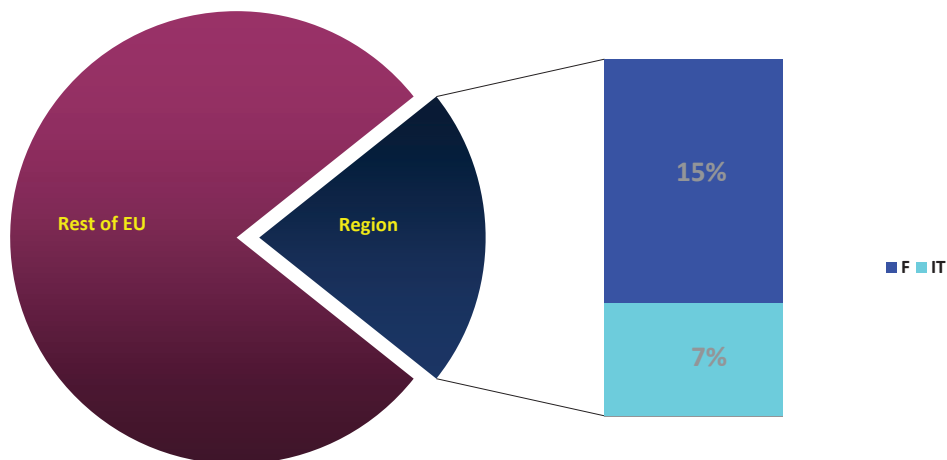


Figure 4: Regional LNG regasification plants weight

[5] Source: data processed from "GLE LNG Map" (June 2011).



3.2 Market elements

The described infrastructure base is the fundamental prerequisite for a sound growth of the gas markets grouped in the Region. In fact, a well-developed transmission network provides the physical structure for linking the national market areas and, in the same time, it enables to share the flexibility potential provided by storage and LNG operators.

The Report provides hereby a brief analysis of some relevant markets elements aimed at highlighting the relevance of the Region both in terms of market size and of development of competitive dynamics.

3.2.1. Demand size

The Regional aggregated consumption is totalling around 42 % of the overall EU gas consumption^[6]. The near equivalent Italian and German figures sum up together to near a third of the EU gas needs, while France add another 10% to the Regional gas requirements. Swiss share is less than 1%, but future perspective of growth could be foreseen if changes in power mix will materialise favouring CCGT technology.

In absolute terms, the Regional annual demand amounted in 2010 to about 2,400 TWh (equal to around 227 billion cubic meters) compared to a the total EU 27 annual gas consumption slightly less than 5,650 TWh (around 534 billion cubic meters).

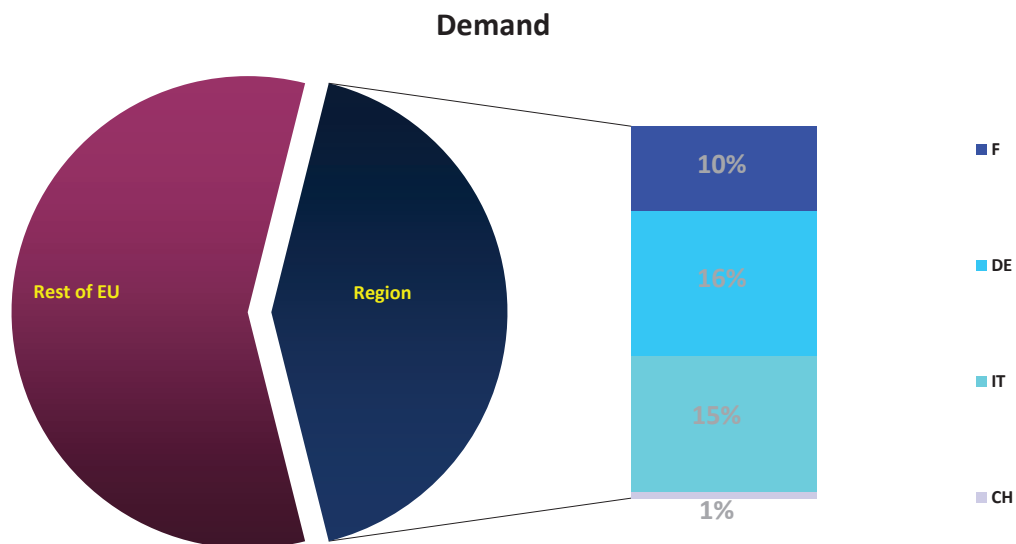


Figure 5: EU and Regional market demand

[6] Source: Eurogas Statistical Report 2011 (data referred to year 2010).

3.2.2. Market development indicators

The cross-border interconnections covered in this GRIP connect together three major trading points which are experiencing a steady growth both in terms of traded volumes and of number of transactions.

The following graphs show the trends of PEGs (aggregated French trading points), NCG (the merged market area NetConnect Germany) and PSV (the Italian virtual trading point) all on a 100-basis.

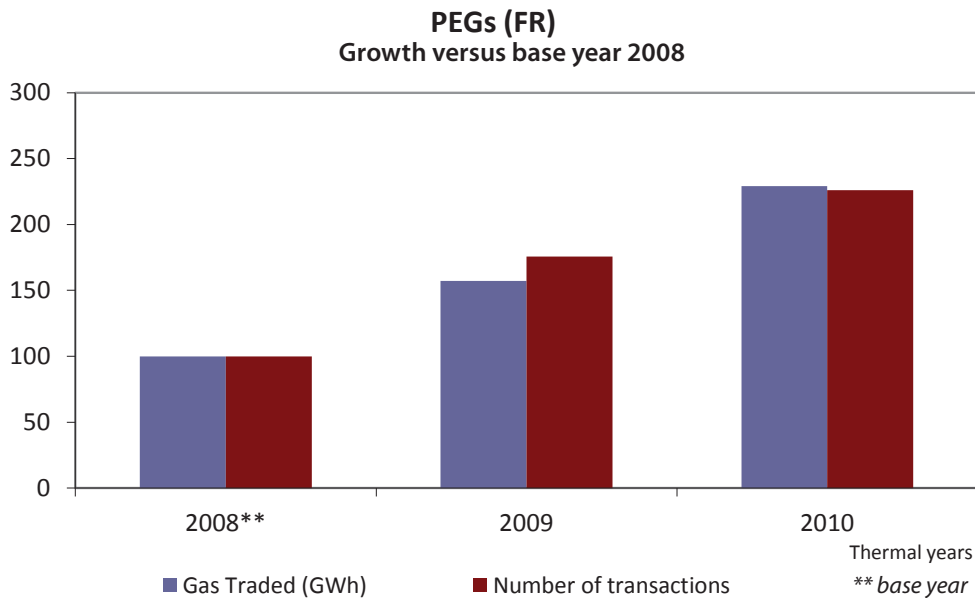


Figure 6: PEGs volumes and transactions trends (100-basis)

Between the thermal year^[7] 2008/2009 and the thermal year 2010/2011 PEGs traded volumes and the related number of transaction increased respectively of 129 % and of 126 %.

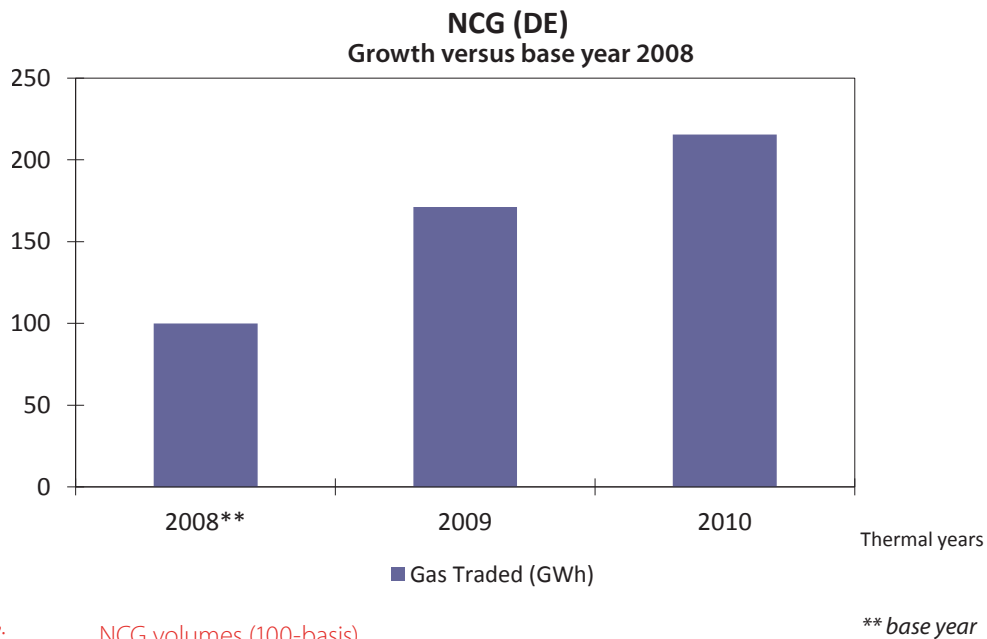


Figure 7: NCG volumes (100-basis)

Between the thermal year 2008/2009 and the thermal year 2010/2011 NCG traded volumes increased of 116%.

[7] "Thermal year" or "Gas year" is the period of time having an yearly duration and starting on each 1st of October.

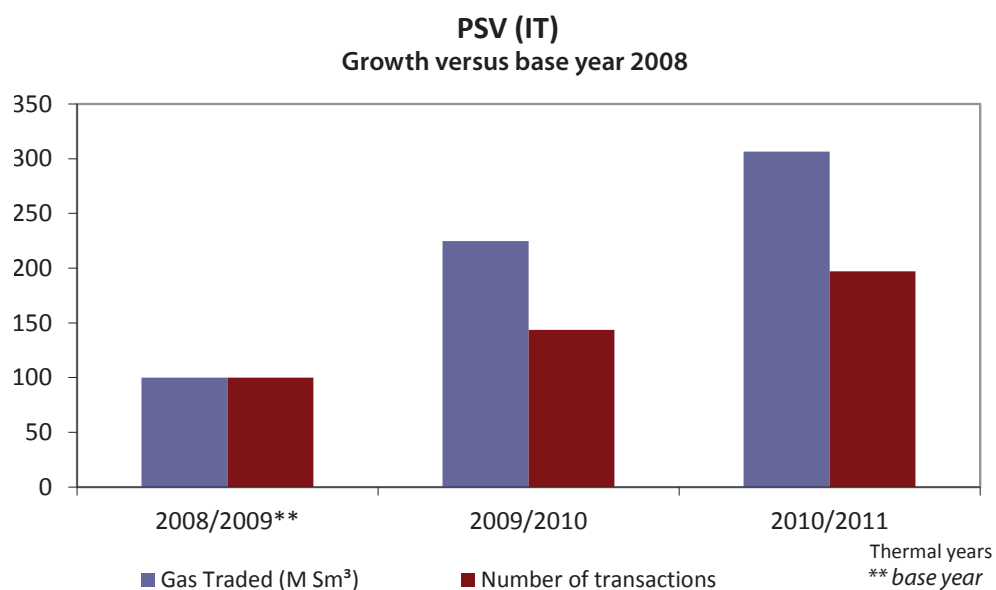


Figure 8: PSV volumes and transactions trends (100-basis)

Between the thermal year 2008/2009 and the thermal year 2010/2011 PSV traded volumes and the related number of transaction increased respectively of 206 % and of 97 %.

3.3 The role the Region will play in the development of the European gas infrastructure

Implementing the European gas corridors

The Region will play a significant role in developing gas infrastructures labelled as priority by the European commission.

The European Commission highlighted three priority corridors for the gas infrastructure in Europe. One of them is a North-South corridor in western Europe with two legs, including a west leg linking the Iberian Peninsula and the French Mediterranean coast to north-western region through France and an alpine leg linking Italy to the north-western region ("South-North Corridor")^[8].

This second leg, with the associated projects, is the main driver for the present GRIP, since it involves all the TSOs of the region.

The western leg aims at connecting the North West region with the demand and supply sources located in Iberia and the southern part of France. A significant LNG regasification capacity is located in this area, both existing and under development.

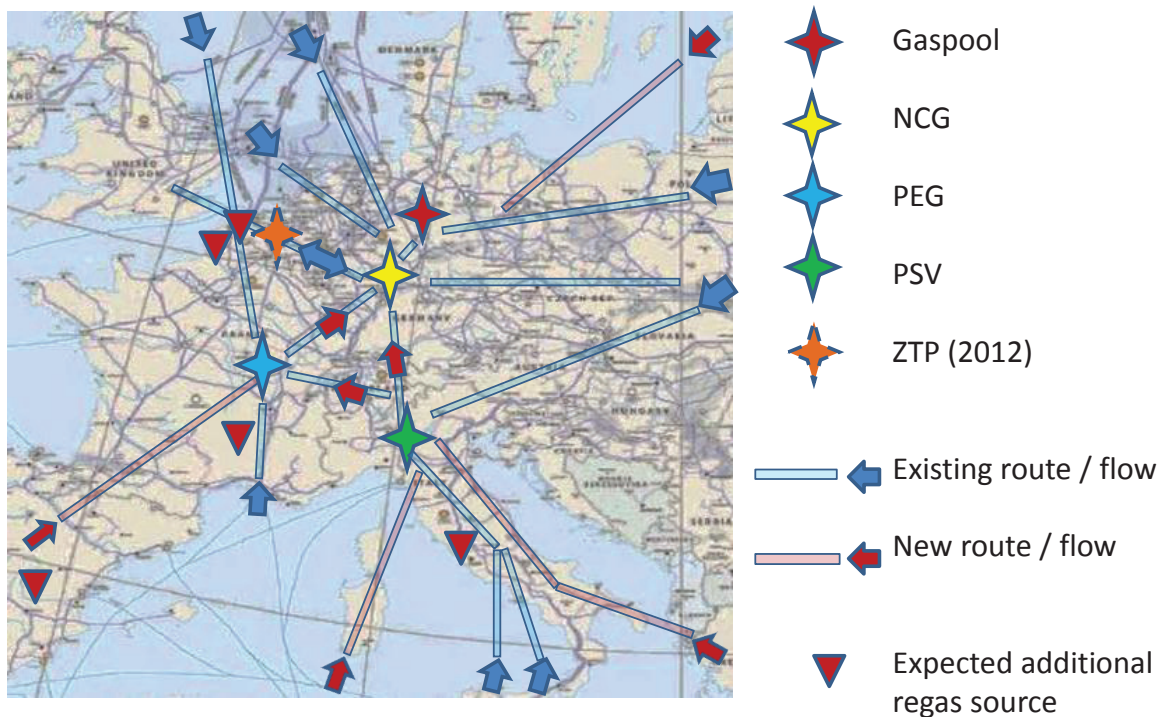


Figure 9: Existing & new routes / flows for Europe supply offer

[8] The text of this section reflects European Commission proposal on priority gas corridors ("Proposal for a Regulation of the European Parliament and of the Council on guidelines for trans-European energy infrastructure" 19.10.2011 COM (2011) 658 final).

In addition to the new import route for Russian gas to Germany through the Baltic Sea (Nord Stream) the countries of the Region, with France and Italy in particular, extended to Belgium, are expected to play a key role in being the European entry points of new sources of gas (with a special role covered by LNG, given that France, Italy, Spain and Belgium gather more than 67% of regasification capacity in Europe) and northward infrastructure developments is the main mean to bring these new supply-source opportunities to the European market.

Moreover, the position of the Region provides the opportunity to play an extraordinary role also with reference to the other two priority corridors identified by the European Commission. Indeed, on one hand, at the south-eastern border of

the Region the “Southern Gas Corridor” will be able to bring gas from the Caspian Basin, Central Asia, the Middle East and the eastern Mediterranean Basin to the European Union^[9].

On the other hand, at the north-eastern border of the Region, the north-south interconnections in central-eastern and south-eastern Europe will enhance diversification and security of supply via gas connections between the Baltic Sea region from one hand with the Adriatic and Aegean Seas and from the other hand with the Black Sea^[10].

[9] The projects referring to the “Southern Gas Corridor” are specifically described in the “Southern Corridor Gas Regional Investment Plan” (already published on April 2012).

[10] The projects referring to this area are partly covered by other publications, in particular the central-eastern Europe Gas Regional Investment Plan (already published on January 2012).



4. Projects



Station Ruswil (CH)

© Image courtesy of Fluxys



The main project illustrated in the Report is the development of South-North Corridor (i.e. the eastern leg of the North South Corridor in Western Europe) and the description of the related gas route (Section 4.1).

The different companies participating to this GRIP provided information related to their initiatives mainly along this gas transmission corridor.

All descriptions provided have been gathered following an Interconnection Point approach, also in the light of a more useful description of the projects to potential interested users.

As for other projects of importance to the region, summarized elements are provided on the planned investments related to:

- the western leg of the North South corridor (Section 4.2);
- the eastern Regional developments (Section 4.3);
- the southern Regional infrastructural enhancements (Section 4.4).

The rationale underlying the description of the above mentioned developments is that they positively affect the interconnection capacities linking the Regional gas hubs and, in the end, they contribute to the European market integration.

In particular, some summarized elements are provided on the planned investment related to the western leg of the North South corridor, since they impact interconnection capacity linking some of the three Regional gas hubs, including NCG, PEG and PSV (Section 4.2).

Other important elements related to planned investments in Italy and Germany^[11] up to the Belgian border are also provided with regard to their importance in connecting the North and South markets and in particular connecting the Italian market to the future Belgian Zeebrugge Trading Point through the German NCG market area (Section 4.3).

Finally, other infrastructural enhancements in the southern part of the Region together with a description of the GALSI project (and Sardinia-Corsica interconnection) concludes this section 4 (Section 4.4).

For each project, a brief but detailed description is provided, with an indication of possible timing, capacity, and other relevant elements and steps already defined or still to be made in order to finalise them.

[11] On April 1st 2012, the German transmission system operators have submitted the first German draft network development plan.



4.1 South-North Corridor

4.1.1. General Elements

This section illustrates the projects in the region for the establishment of a South-North Corridor from Italy through Switzerland to France and Germany, ending up in Eynatten IP with Belgium directly connected to the Zeebrugge Hub and Trading Point

(ZTP) enabling physical reverse flows and enhancing the interconnectivity of the European gas network.

The following picture provides an indicative and graphical overview of the project:



Figure 10: South-North Corridor



4.1.2. Rationales of the Project

The scope of the South-North Corridor development comprises two rationales which, although highly interlinked, can be distinguished by:

- supply-demand evolution
- and
- security of supply (SoS) aspects.

Western Europe supply-demand evolution

The declining European indigenous production and an increased variability on import flow patterns require both a greater flexibility of the European transmission network and the development of additional capacity to allow both for additional flows from traditional sources and to connect new supply sources, especially in the southern part of the Region.

New imports towards the central part of the European gas network together with a better integration of historic transit countries are crucial features of the future European gas market and main investment drivers.

The South-North Corridor will enable addressing the various market evolutions just depicted above, providing additional capacity for gas coming both from North Africa and the “Southern Corridor” ^[12], relying on the Italian network as a bridge to other European countries and improving therefore commercial interconnections in the overall European market.

SoS aspects

A second rationale behind the analysed infrastructure development lies in the new SoS legislative requirements foreseen by Regulation (EC) 994/2010 (SoS Regulation).

From this point of view, the South-North Corridor provides a consistent answer to enabling bi-directional capacity (reverse flow capacity) for each cross-border interconnection.

It should be noted, in fact, that the Italian legislative decree no. 93/2011 (transposing the “Third Package” and adopting some operational provisions related to the mentioned SoS Regulation) explicitly provides for this obligation.

[12] Snam Rete Gas has also developed reverse flow capacity between Italy and Austria at Tarvisio interconnection point. This project is not reported here and for its description please refer to the “Southern Corridor Gas Regional Investment Plan” (published on April 2012).

4.1.3. Project description

The project affects four different Interconnection Points (**Gries Pass, Oltingue, Wallbach** and **Eynatten**) and the following description will consider the main elements affecting the dynamics of each IP.

a) Gries Pass Interconnection Point



Figure 11: Gries Pass IP positioning

Regarding the Gries Pass IP the reverse flow project can be divided into two different phases: a first one, with an indicative time-horizon to 2015, where the infrastructural development will enable the Italian gas system to create an exit capacity up to 53 GWh/day (5 Mcm/day); a second one, with an indicative time-horizon around early 2017, which will enable a substantial increase in the export capacity up to around 423 GWh/day (40 Mcm/day).

Phase 1

At present, the Gries Pass IP is fully dedicated to importing gas from northern Europe (via Oltingue and Wallbach) to Italy.

In order to make the physical reverse flow on the pipeline possible, the project requires the reinforcement of the Italian network in the Po Valley region, the empowerment of associated compressor stations and the adaptation of the metering point in Masera.

These works, which are currently on-going, are expected to be completed by 2015.

The following picture indicates (in red) the main activities briefly described:

Development works are currently in progress on the Poggio Renatico-Cremona (DN1200 – 149 km),

Cremona-Sergnano (DN1200 – 50 km) and Zimella-Cervignano (DN1400 – 170 km) natural gas pipelines. These activities also entail the replacement of about 315 km of the existing lines.

The aim of these projects is to increase and upgrade the capacity of the East-West transportation line across the Po Valley, so as to improve the flexibility and reliability of transportation in the north-western part of the country, thus gradually reducing its dependence on the Entry Point of Gries Pass.

The reinforcement of the compressor stations in Masera which will allow the handling of the outflows from Gries Pass is also under way.



Figure 12: Gries Pass IP and northern Italian gas network developments- Phases 1 and 2

Phase 2

The following steps in the development of exit capacity at Gries Pass, which will be developed during the period 2012-2017, involve new pipelines development and new installed power capacity in the compressor stations to further increase the export capacity from Italy northbound.

Consequently these additional infrastructural developments, the maximum export capacity will reach a total of around 423 GWh/day (40 Mcm/day).

The works to be done include the laying of around 80 km of DN1200/DN1400 pipeline and the realisation of around 95 MW of additional compression power in two new facilities and the enhancement of an existing one.

Both Phase 1 and Phase 2 of the Italian section have already been subject to Final Investment Decision (FID).

b) Transitgas Expansion (from Passo Gries Interconnection Point to Wallbach and Oltingue Interconnection Points)

As mentioned regarding Gries Pass IP for Snam Rete Gas network, also the existing pipeline in Switzerland is dedicated to transport the gas from north Europe to Italy and, in the same time, to satisfy the Swiss gas market needs.

In order to implement the physical reverse flow for Transitgas and TENP, FluxSwiss and Fluxys TENP are studying the necessary modifications of the transportation system.

The Transitgas/TENP Reverse Flow Project provides for the modifications/expansion of the three existing main plants of the system:

- Ruswil Compressor Station
- Wallbach Metering Station
- Lostorf Station

adapting the existing infrastructures and realising the new installations in order to invert the physical gas flow.

At present the activities to develop the detail engineering and to obtain the authorization permits are in progress.

At the completion of these projects, Transitgas is able to transport the gas from Gries Pass IP to the other relevant IP's: Wallbach and Oltingue.

The total capacity from south to north will be depending from the combination of the flow on the two paths, "Griess Pass - Wallbach" and "Griess Pass – Oltingue", taking into account the technical constrains of the expanded system.

Finally, as for interoperability, the possibility that odorised gas may reach all the borders of the Region will be further explored, considering the evolution on the issue.

In the context of the Open Season between Gries Pass and Oltingue (see 4.1.4), to be launched early June, several investment scenarios are proposed to the market. They translate into two types of capacity Entry France, including interruptible and conditional firm.

In contrast to the interruptible capacity, the availability of the conditional firm entry capacity in Oltingue is not dependent on any specific flow scenario in the GRTgaz system but on a sufficiently high pressure level at the Oltingue entry point. FluxSwiss is therefore currently examining potential Additional Investments in Switzerland allowing to increase the redelivery pressure in Oltingue.

Such Additional Investments, if any, will subsequently be transposed in an "increased pressure service" offered to the market by FluxSwiss. Non-binding prefeasibility studies have shown that without such Additional Investments the redelivery pressure in Oltingue would probably be high enough to ensure conditional firm entry capacity not to be interrupted by Grtgaz when the Transitgas pipeline is in full reverse flow modus (i.e. reverse flow from Gries Pass to Wallbach and Oltingue at the same time).

Detailed information will be available in the Information Memorandum.

FID is intended to be taken in Q4 2012.



c) Oltingue Interconnection Point

The main exit point from GRTgaz system to Switzerland (and Italy) is at Oltingue Interconnection Point. Flow levels at this point are currently directed from France to Switzerland and they are historically stable, showing an almost complete use of the available capacity. Until now, no physical entry

capacity is offered at Oltingue IP in the Switzerland to France direction.

The following picture provides the positioning of Oltingue IP with relation to the German, Swiss and Italian networks:



Figure 13: Oltingue IP positioning

Reverse flow development

Regarding the reverse flow development, the investments, foreseen in order to develop a 100 GWh/day (or 9 Mcm/day) entry capacity to France, are now identified, assuming that the "Arc de Dierrey" (further defined in this document) project is completed :

The currently estimated time to build this new infrastructure is around 6 years and completion of "Arc de Dierrey" project is expected by 2015.

- Addition of a 77 km pipe between Morelmaison and Voisines (diameter DN 1050). This core-network investment additionally enables to relieve one of the physical congestions preventing from merging Nord and South zones of GRTgaz network.
- Adapting the interconnections at Morelmaison and Voisines.
- Investment located at Oltingue and Voisines in order to reverse gas flows.



Figure 14: Additional infrastructure foreseen

Forward flow development

Furthermore, GRTgaz has regularly received expression of interest from the market for additional firm capacity from France to Italy via Oltingue. A scenario currently under consideration could increase the capacity of about 60 GWh/d (around 5 Mcm/d).

The investments that are necessary on the French network for such a development are a compression station near Champey and core network reinforcements with an expected time for building these infrastructures estimated about 5/6 years.

Further development on this North-South flow project are subject to enough market interest and to the possibility of increasing the forward flow capacity in Switzerland. FluxSwiss will evaluate in the following months the possibility to increase this capacity.

d) Wallbach Interconnection Point



Figure 15: Wallbach IP positioning

As for the Wallbach IP, the pipeline directly interested is the TENP, which is an existing pipeline in Germany originally built to transport gas from the North Sea and the Netherlands to the German market and, through Switzerland, to the Italian market.

In order to implement the physical reverse flow for TENP, Fluxys TENP has started studies regarding the reversing of this transportation system.

The TENP reverse flow project includes adaptations on the existing infrastructure and the four existing system compressor stations (located in Stolberg, Mittelbrunn, Schwarzach and Huegelheim) in order to reverse the physical gas flow on the pipeline.

e) Eynatten Interconnection Point



Figure 16 Eynatten IP positioning

At the completion of this project, Fluxys TENP would be able to transport gas from Wallbach IP to Netherland (Bocholtz IP) and Belgium (Eynatten IP). Therefore, Fluxys TENP is also studying the feasibility of the "Bretella" project reinforcing the connection between the TENP and the Eynatten IP (increasing the bidirectionality between the NBP market, the NCG

market, the future new Belgian Zeebrugge Trading Point ZTP and the PSV market). This bidirectional project may require new pipeline infrastructure. In the forward flow direction, Fluxys received indication of interest for capacities from TENP to Italy from Belgium.

FID is intended to be taken before the end of Q1 2013.

4.1.4. TSO-TSO coordination

Some Regional TSOs have decided to launch an Open Season to validate market interest for their related sub-projects.

An Open Season will be launched in late May / early June on the Gries Pass to Oltingue route in Switzerland and on the Oltingue entry point in France.

A dedicated Information Memorandum related to the Open Season process will be available on GRTgaz and FluxSwiss websites when the consultation is starting.

4.2 The investments in the western area of the Region

This paragraph deals with the reinforcement in the North zone of the GRTgaz network, that is directly connected to the German networks of Open Grid Europe and GRTgaz Deutschland as well as the Transitgas system in Switzerland, and to the Belgian Fluxys network by a new interconnection point in Alveringem to be implemented by the end of 2015. These reinforcements are driven by the need to better interconnect North-West Europe with the Iberian and South-France area. This would provide an enhanced access of North West Europe member states (mainly Germany) to new abundant sources of LNG.

Detailed information around the related connection of "PEG Sud" with Iberia can be found in the South GRIP (available on TSOs websites as well as on ENTSOG website).

The key investments necessary in the region to implement the western leg are at various state of development.

- "Arc de Dierrey". This 300-km long pipeline in Diameter 1200 mm is a key piece of infrastructure to strengthen the core-network in France and enable to connect the new Dunkerque LNG regasification. It is to be commissioned in 2015.
- Connection of the new Dunkerque LNG terminal with the Belgian Fluxys network by a pipeline to be built between Pitgam compressor station and the new Franco-Belgian interconnection point Alveringem. In Belgium the project will be completed by a 72 km DN900 pipeline between Alveringem and Maldegem. This project connecting the Dunkerque LNG terminal with the Zeebrugge gas Hub zone, creating a link between the PEG Nord and future Zeebrugge Trading Point (ZTP), recently gained FID status. On the French side, the development will involve a modification to the Pitgam interconnection and the creation of a pipeline of roughly 25 km and ND 900 linking the Pitgam interconnection station to Veurne (called the "artère des Flandres"); this pipeline will transmit non-odorised gas from Dunkerque LNG origin.
- GRTgaz decided to proceed with strengthening this corridor in its southernmost part. This project, called ERIDAN, consists in looping the "Artère du Rhône" pipeline by mid-2016. The French regulator, CRE, approved this investment on the 19th of April 2011. In addition, ERIDAN is an essential step in the process of merging zones on the GRTgaz network.
- The looping of "Artère de Bourgogne" pipeline is currently under study in connection with a merger of the GRTgaz network Entry/Exit zones. Total 195 km would be built in diameter 1200 and 1050 mm.
- Strengthening the North-South pipelines in the Lyon area would mean also looping the Est Lyonnais pipeline as well as the Bourgogne pipeline, increasing the transport capacity between Saint Avit and Etrez. These developments are under study.
- Creation of firm capacity to Germany at Obergailbach : preliminary studies have been launched on this reverse capacity which is crucial for market integration. For the first reverse flow capacity threshold, investments are basically compression capacity increase in the North-East of France. This study is conducted in connection with assessment over changes in the odorization process. Discussions in Germany on investment projects for firm and freely allocable entry capacity into the Net Connect Germany area at the French-German border have been started.

The map that is following spots the location of the pieces of investment that are listed above.





Figure 17: Additional piece of infrastructure foreseen on the western area of the Region

4.3 The investments in the eastern area of the Region

In 2011 the German TSOs developed and consulted a scenario framework on the development of the German natural gas demand and supply. This scenario framework was confirmed by the German regulator BNetzA on 1 February 2012. It takes into account the new German energy policy consisting among others of the following main elements:

- phase out of nuclear energy by 2022,
- a foreseen considerable extension of renewable energy production facilities and
- the planned significant reduction of CO₂ emissions

In this context gas fired power plants are expected to play a significant role in Germany's future energy mix. It is expected that an extension of the German gas transmission system is required to fulfil the capacity needs of the gas fired power plants although on a yearly basis all three scenarios of the scenario framework show a decrease of the overall yearly German natural gas consumption.

With respect to the supply of natural gas to Germany, the new Nord Stream pipeline provides a direct connection from Russia to Germany. New gas transmission infrastructure is currently being developed to transport the Russian gas to the main German consumption areas as well as to its European neighbours in Central and North-West Europe.

Based on the scenario framework, the German TSOs developed and consulted a draft of the first German Network Development Plan and submitted it to the German Regulator BNetzA on 2 April 2012. The investment projects until 2022 proposed in Scenario II in this draft German Network Development Plan are shown in the Figure 18 below and can be summarized as follows:

- The Ostsee-Pipeline-Anbindungs-Leitung – Baltic Sea Pipeline Link, OPAL, commissioned in autumn 2011, transports natural gas coming from Nord Stream 470 km onwards to the south towards the Interconnection Point Olbernhau on the Czech border. In the Czech Republic the Gazelle pipeline, which is currently under construction, enables transportation to the Waidhaus Interconnection Point, thereby linking a new supply source to the MEGAL system and the respective markets in the region.
- After commissioning, the North European Gas Pipeline, NEL, will transport natural gas 440 km onwards to the west, linking Nord Stream with the extensive trans regional gas grid in north-western Europe and thereby strengthening Germany's role as a natural gas hub within Europe.
- Extension of transmission capacity to Denmark.
- System enhancements (compressor stations and looping of existing pipelines) to support the connection of power plants.
- System enhancements in southern Germany (Bavaria and Baden-Württemberg).
- The study of a possible project to accomplish reverse flow from Wallbach to the North, including Belgium and the Netherlands (Section 4.1)
- Study related to creating Reverse flow capacity from PEG-North at Medelsheim (see 4.2)





<ul style="list-style-type: none"> ① OPAL ② NEL ③ Extension of capacity to Denmark ④ TENP Reverse Flow including Bretella project ⑤ System enhancements 	<ul style="list-style-type: none"> — Gas transmission system — Projects under construction / FID - - - Connections to foreign UGS ◇ △ ▽ UGS connected to gas transmission system - - - Modelling results pipelines ⬠ Modelling results compressor stations
--	--

Figure 18: Projects proposed in Scenario II in the draft German Network Development Plan



4.4 The investments in the southern area of the Region

This paragraph deals with supplementary reinforcements in the southern area of the Region additional to the infrastructure investments already described in section 4.1.

For the sake of clarity, the section is divided in three parts, respectively dealing with:

- South-North developments in Snam Rete Gas transmission network (other than the reverse flow projects)
- Other potential investment opportunities for Snam Rete Gas beyond 2015
- GALSI and CYRENEE projects (Italian and French sections)

4.4.1. South-North developments in Italy

Other key projects in Snam Rete Gas transmission network additional to reverse flow projects and having Regional relevance are the investments linked to "South-North developments".

In aggregate, these network enhancements will increase the capacity at the southern entry points by around 8 billion cm/year, being associated with the construction of a new pipeline or a LNG terminal in the South of Italy.

The transmission developments are complemented by a plan to enhance storage capacity with projects which should lead to 39 Mcm/day increase of storage deliverability and to a 3 billion cubic meter addition to working gas volume. In percentage terms, storage investments will provide a growth of 14% in terms of peak capacity and of 30% in terms of modulation capacity^[13].

Transmission and storage developments will significantly increase the security and flexibility of the overall gas system.

[13] The figures provided refer to Snam investment plan 2012-2015.





Figure 19: South-North developments in Italy

All of these new projects should be on stream within 2017 and will involve the development of around 1150 km of new pipelines and two new compressor stations along with the upgrade of two existing stations (for a total increase in installed capacity of 170 MW).



4.4.2. Other potential developments

Considering the expected gas consumption as well as the level of flexibility required, the infrastructure enhancements described in the previous paragraph could not be sufficient.

Taking this into consideration, other investment opportunities have been identified in order to provide the level of flexibility and security considered

necessary in the transportation system. These developments, visually summarized in the map inserted hereby below, are now under feasibility study to be potentially developed after 2015.



Figure 20: New potential opportunities



The new potential opportunities beyond 2015 will create an additional capacity at entry points of around 26 billion cm/year. In particular, the initiatives could bring additional capacity with reference to three main areas:

- From North/East: the projects beyond 2015 will increase the capacity at the entry points by around 10 billion cm/year, mainly made up by the 2 additional billion cm/year associated with the expansion of the entry points in the North-East and 8 billion cm/year available for the construction of a new LNG terminal;
- From South: the projects will create 8 billion cm/year of new capacity. This upgrade is largely related to the empowerment of the grid should a new LNG terminal or a new gas import begin operations;
- GALSI project: the investment will add another 8 billion cm/year of new capacity and the Italian section of it will be included in Snam Rete Gas plan following the final investment decision on the project by GALSI company (next section will provide a detailed description of the overall GALSI project).



4.4.3. GALSI and CYRENEE Projects

4.4.3.1. General elements

All information about GALSI project has been derived from public sources as the GALSI consortium (Algeria - Sardinia - Italy pipeline) has not had any involvement in the present GRIP.

As basic background information, we report that GALSI consortium has been created in 2003 as a design company and today is responsible for performing design and pre-engineering activities related to a new pipeline connecting Algeria to

Sardinia and, finally, to Tuscany in the peninsular Italy. GALSI is also in charge of carrying out the permission and authorisation phases linked to the project.

The pipeline is planned to stretch almost 900 km, of which around 600 km offshore with an initial total transport capacity of 8 bcm per year.

The Final Investment Decision is expected after the closing of the authorisation phase and is for now expected by end 2012.

4.4.3.2. Additional elements

European relevance of the project

In the context of TEN-E programme, the project has been declared of European interest.

Moreover, following the European Commission Decision of 13th August 2010, the project has been granted a 120 M€ financing in the framework of the European Energy Program for Recovery - EEPR.

Other relevant elements

On 14th November 2007 an Italy – Algeria inter-governmental agreement for the GALSI project has been signed in Alghero (Italy).

The project is in an advanced stage of development. In particular the FEED (Front End Engineering Design) has been completed, allowing the definition of technical specifications of the project and the launch (30th July 2010) of pre-qualification process for pipe supply and laying.

Authorisation process

- EIA obtained in March 2011
- Construction permit authorisation procedure started in July 2011
- Positive "Conferenza dei servizi" on 22nd December 2011

4.4.3.3 Project description

a) GALSI interconnection with the Italian network

On 7th November 2007 Snam Rete Gas and GALSI signed a memorandum of understanding (MOU) for the realisation of the Italian section of the pipeline. Under the terms of the agreement GALSI will be responsible for the engineering work and for obtaining the relevant permits and main authorisation while Snam Rete Gas will be in charge of the construction and subsequent management of the Italian national section of the pipeline.

This MOU was replaced by a final agreement on 30th September 2008 when Snam Rete Gas and GALSI signed an agreement setting out the conditions for the construction of the Italian section of the new import pipeline.

Currently, GALSI project is under feasibility study stage and will be included in Snam Rete Gas plan following the Final Investment Decision on the project by the GALSI consortium. The project is foreseen to come on stream beyond 2014 creating a new entry point capacity of 8 bcm/year.

The following picture provides the positioning of the whole GALSI project (both Italian national section and offshore pipeline) with relation to the Italian infrastructure network:



Figure 21: GALSI project in the context of the Italian network

b) GALSI interconnection with Corsica

Connecting Corsica to GALSI is part of the last French Multi-Year Indicative Programme (*“programmation pluri-annuelle d’investissements”*), communicated by the French Government on December 2009.

Feasibility studies were conducted in 2008 and 2009 and an initial project outline was subsequently drawn up.

Corsica could be connected to GALSI close to its landfall point, at the Olbia compressor station in Sardinia.

A 94km-long DN 600 offshore pipeline would then link Olbia to Porto-Vecchio in Corsica. An interconnection station would be built in Porto-Vecchio, where odourisation processes and metering would be carried out.

Two pipelines would then be laid from the station:

- a land pipeline between Porto-Vecchio and Bastia through the eastern plain (127km in DN 400);
- a land pipeline between Porto-Vecchio and Ajaccio through the south of Corsica (103km in DN 400).

GRTgaz is preparing to connect the island (CYRENEE project), subject to Final Investment Decision and timeframe of GALSI.

The following picture illustrates the CYRENEE project:



Figure 22: The CYRENEE project

5. Conclusion and the Way Forward



Hügelheim (DE)

© Image courtesy of Fluxys

Developing this Gas Regional Investment Plan for the Region France - Germany - Italy - Switzerland enabled to enhance the existing cooperation between the European TSOs involved in the projects described in this document.

Regular information on the evolutions of the projects described in the Report will be timely provided through the websites of the companies developing the different initiatives above described.

Further opportunities for a following update with a pan-European perspective will be represented by the publication of 2013-2022 TYNDP and the next Gas Regional Investment Plan.

The co-authors will be available to illustrate the contents of the Gas Regional Investment Plan in the next Gas Coordination Group meetings and in other appropriate institutional and/or informative platforms, such as the Gas Regional Initiatives.

Moreover, the co-authors welcome any feedbacks from stakeholders and, if indicated in these reactions, they will be happy to organise ad-hoc informative events.

Stakeholders' responses will be particularly valuable if dispatched to co-authors by July 2012 in order to allow proper evaluations and, if needed, to organise Regional answers.

Anyway, all comments and suggestions will be carefully evaluated in order to improve the benefits of future GRIP releases for the development of the European gas market.

Finally, the co-authors thank ENTSOG for the valuable support provided in facilitating the cooperation between GRIPs activities and in supporting the editing of this Report.



6. Legal Disclaimer



© Image courtesy of SNAM Rete Gas

GRIP co-authors have prepared this Report based on information collected and compiled from their internal source, from stakeholders and from other sources as of 15th May 2012. GRIP co-authors do not audit or verify the truth or accuracy of any such third parties' information.

The content of the Report (hereinafter referred to as "Content") is provided on an "as is" basis. GRIP co-authors do not guarantee the accuracy, completeness or timeliness of the Content. GRIP co-authors are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content.

In no event shall GRIP co-authors be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses, including, without limitation, lost income or lost profits and opportunity costs, in connection with any use of the Content.

The co-authors have done their best efforts to make sure that conversions between volumes and energy units of measurements are both accurate and correct, but they take no responsibility for any inaccurate or incorrect conversions produced.

All analyses and forecasts are mere statements of opinion as of the date they are expressed and not statements of fact or recommendations. When making decisions of any nature, any party shall rely exclusively on its own information, forecast, skill, judgment and experience and not on the Content.

FLUXSWISS 

FLUXYS 

TENP 

 GRTgaz

 GRTgaz
Deutschland

 Open Grid Europe
The Gas Wheel



SNAM RETE GAS

SWISSGAS 



© Image courtesy of SNAM Rete Gas

Gas Regional Investment Plan South-North Corridor **2012 - 2021**